Change and Sustainability in Healthcare
Quality: the Future Challenges

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Study of Influencing Factors on the Utilization of Non-Urgent Medical Resources in Emergency Department in Taiwan

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Objectives: Overcrowding of emergency department (ED) is a common global phenomenon. The non-urgent medical seeking, one of the reasons for overcrowding in ED, which would not only harm the patients’ safety, but also lead to a waste of medical resource. Because of the convenience in medical system and patient visit from Taiwan to other country, the waste of medical resources and the frequency of ED visit were worse. The purpose of this study is aimed to evaluate the ED usage of non-urgent patients and to identify the influencing factors.

Methods: A retrospective research is conducted from the 2010 Longitudinal health insurance dataset and registration files of National Health Insurance research database (NHIRD) since January, 1, 2007 to December, 31, 2011. According to the rule of ED triage set by Ministry of Health and Welfare, we divided the patients into urgent and non-urgent groups by “Treat Code” in NHIRD. The utilization of urgent care (triage level 1-3 for both old and new triage system) and non-urgent care (old triage level 4 and new triage level 4-5) from 2007 to 2011 is demonstrated with descriptive statistics. Generalized estimation equation for logistic regression model is conducted to identify influencing factors on non-urgent ED utilization.

Results: The use of ED medical resource increased from 15.85% in 2007 to 24.84% in 2011, in which the rate of non-urgent group increased from 1.10% in 2007 to 25.66% in 2011, around 22.3 times. The average person using the emergency number from the 2007 to 2011 increased 0.107 times, the number of non-urgent medical use per capita increased 0.383 times. The factors influencing non-urgent medical seeking included patient’s characteristics (female, ≤20 years old, income ≥72,801 NTD), patient’s health condition (Charson’s index: 0 point), type of health care providers (public hospital, regional hospital, out-of-area health care utilization), and type of illness (main 3 diseases: perinatal period associated illness, skin and subcutaneous tissue disease, tumor), which met statistical significance.

Conclusion: We concluded that the excessive ED medical use of non-urgent patients existed in Taiwan. This study is not only to evaluate the use of non-urgent medical resources, but also provide a suggestion for establishing medical and payment policy of ED care.
REDUCING THE INCIDENCE RATE OF VACUUM PUMP MALFUNCTIONS
Y.-C. TSENG¹, Y.-H. Huang¹, C.-C. Li¹, Y.-H. CHEN²
¹Division of Maintenance, Landseed Hospital, Taoyuan, Taiwan, ²Department of Quality Management, Landseed Hospital, Taoyuan, Taiwan

Objectives: Vacuum pumps support the health care suction devices in hospitals, and it is very important the pumps function properly when a suction treatment is in session. However, the pumps are constantly working even when the suction devices are not in use. This results in poor efficiency and risks to patient treatment. Therefore, the quality control circle must be improved to reduce the risks of vacuum malfunctions and ineffectiveness of suction devices during a treatment due to insufficient pressure. This will further improve the health care quality and guarantee patients safety.

Methods: Dealing with overheat of vacuum pumps due to excessive working must be prioritized in adverse events. The overheat issue is not only a risk to patients' safety, it also wastes energy and ages the facilities much faster. This can bring negative publicity to hospitals; in serious occasions, death cases might occur if treatment and support cannot be delivered in time. This issue should be resolved immediately and we expect the outcome to reach our annual goal for patients' safety. A comprehensive quality control circle including the human resource support and collaboration from different units is engaged to examine the issue from various aspects, such as facilities, environment and users. We look into the overall operation power, pipelines, controls, pressure switches and the meters that control ambient temperatures and humidity. The problematic structure that causes the excessive working of vacuum pumps is investigated from the three aspects and redesigned to resolve the issue. A PDCA action plan is also created to monitor the effects at the start of the structure modification, during and the end of the improvement procedure.

Countermeasures: 1. Providing onsite training to make sure the consistencies of staff operation.
2. Installing a remote warning device to alert staff with abnormal situations in time.
3. Setting up an automatic control of mistake proofing measure.

Results: I. Suction device malfunction rate is reduced from 54.2% to 27%, which is much lower than that of the initial goal. The incidence rate is reduced to 25% after the quality control process remodeling.
II. Target achievement rate is 107%; progress rate is 53.9%.
III. Additional benefits: an effective operational control extends the life of the pump and conserves energy and save NT$108,000 annually.

Conclusion: The quality control circle improvement project has reached beyond the targeted 27% rate. Although there remain some residual issues, such as the leakage from the outlet of the wall the device is attached to (gas wall leakage), we have started to review and look into the issue and will continue to monitor the outcomes to make sure the vacuum pumps are working properly.
ENHANCE OPERATIONAL EFFICIENCY OF CENTRAL SUPPLY ROOM IN HOSPITAL
S.-C. Chen1,*, S. Chi2,3, Y.-F. Wang2, T.-Y. Liao4
1Financial, 2Medical Quality, E-DA hospital, 3Nursing, I-SHOU University, 4Central Supply Room, E-DA hospital, Kaohsiung, Taiwan

Objectives: To more effective use of CSR’s resources in hospital we reset new SOP, more Bar-code items, regularly check surgical instruments set, cloth and surgical supplies.

Methods: To find out the major factors of wasting in CSR. We collect and analyze every department of surgery’s habits in using surgical instruments set and cloth. We find out most surgeon require more than use. This is because more surgical instruments set, cloth and surgical supplies on the operating table can make they feel psychologically safe. According to the discovery, we use QC story (task achieving) to improve and enhance CSR’s operational efficiency. First, we select three department of surgery (the most wasteful), Urology, Obstetrics and Gynecology and Plastic Surgery to improve, discuss and set new SOP of additional demand, standardize the packages of surgery. Regularly check surgical instruments set, cloth and surgical supplies and reduce or increasing automatically. By increasing Bar-code items to handle the quantity more accurate. Handle operating room’s demand, from operating room to CSR.

Results: The average of packages of surgery from 31 to 13 and amounts of return from 7 to 2. The additional demand amounts from 234 to 45 significantly reduced. Spend less time to deal with the surgical instruments set, cloth and surgical supplies from 421 to 218 seconds. At the same period of time, use big autoclaves from 9,386 to 9,123 times and 7,144 to 7,057 times in small one. At the same time, the number of surgeries from 2013 to 2014 growing up 6.3%, 27,718 to 29,461(p-value 0.0088), at this period we do not have any danger of surgery patient. Besides we not only save about 378,000 NT Dollars, but also reduce water (3,566.81 degrees per year) and gas (1,327.18 degrees per year) usage, emissions of carbon dioxide 7.7 kg per year. For one thing, we enhance operational efficiency of Central Supply Room and save cost; for another we do something to prevent global warming. demand, from operating room to CSR.

Conclusion: Enhance operational efficiency of Central Supply Room in hospital, make us save the waste and can deal with more by using the same equipments, space and people. Next step is to spread from three department of surgery to all.

APPLYING LEAN THINKING TO REDUCE DISCHARGE TIME FOR PATIENTS FROM DEPARTMENT OF MEDICINE

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Objectives: Implementing DRG in National Health Insurance System resulted in stricter control of bed postponement costs by hospital administrators. Evaluation of health insurance profits in 2014 found that prolong discharge time had vital impact on the following admission. Owing to people’s awareness of time management, waiting time has gradually become an important indicator of quality of health services. Hospital is an organization with highly specialized operation and delegation. Discharge process is extremely complex, which involves different specializations, roles, and departments, thus increasing the risks of miscommunications. Therefore, this study applied the concept of lean thinking to review unnecessary waste of waiting in discharge process, by using Quality Control Circle tools on patients from Department of Medicine, which owned 71% of the entire patients of the hospital, to reduce the waiting time of discharge and to elevate the quality of discharge.

Methods: The action strategies to improve discharge process by lean thinking included: 1. setting up a cross-team action group for discharge from Department of Medicine; 2. agenda planning: scheduling event agenda by Gantt chart; 3. field check of actual process: preparing checklists for discharge patients in each step to check and control the needed time; 4. introducing Just-in-Time concept of triage management: cut by 9 am to deal with discharge time by triage management team, reducing may-be-discharged and discharge jam; 5. establishing four strategic groups: (1) increasing the implementing rate of may-be-discharged: providing incentives and related standards, (2) improving the time of ward round: establishing short message system and team work care system, (3) reducing time of discharge: applying visual management and information board to set up SOP, (4) reducing examination time on day of discharge: discharging patients assigned in priority examination list and re-check the necessity; 6. enhancing team communication: arranging 12 group meetings and each member can issue their ideas and discuss according their field experience; 7. shaping quality discharge culture and developing slogan: setting up slogan “higher may-be-discharged, quicker discharge, earlier ward round, healthier home", inviting senior administrators to participate in advocacy week.

Results: The indicators of effectiveness on patient discharge quality improvement before and after a year of projection and implementation are as follows: 1. the total discharge waiting time from beginning to leaving hospital reduced from 160 to 112 minutes; 2. may-be-discharged rates increased from 28.4% to 40.8%, further analysis indicating that the total discharge waiting time reduced from 116 to 70 minutes, which representing elevated rate of may-be-discharged reduced total discharge waiting time; 3. rate of ward round later than 9 am reduced from 20.2% to 9.3%; 4. rate of discharge later than 12:00 reduced from 20.5% to 4.6%; 5. rate of examination on the day of discharge reduced from 10.3% to 1.1%.

Conclusion: The reduction of waiting time in discharge process requires multi-departments cooperation and resources integration. Lean thinking is helpful to review every step in discharge and then improve the process by Value Stream Mapping. It is also helpful to the evaluation of action strategy implementing in constraint time and further improves the quality of discharge.
THE EFFECTS OF INSOMNIA ON HEALTH CARE UTILIZATION AND MEDICAL CARE OUTCOME
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Objectives: Insomnia can cause adverse health care outcomes and increase health care utilizations. It brings heavy burdens to the health care system. Relative researches are still limited in Taiwan. This research examines the medical care outcomes and health care utilization for patients with or without insomnia.

Methods: This research is a retrospective secondary analysis that applies data from the National Health Insurance Database. People who are diagnosed with insomnia are in the case group and people without insomnia are in the control group. To reduce the difference of each group, we applied the Propensity Score Matching. Gender, age and the Charlson Comorbidity Index(CCI) score were matched based on the 1:1 proportion. Statistics analyses include t test, chi-square test, multiple linear regression and multivariate logistic regression.

Results: Study results showed that there was a higher prevalence of insomnia in female adults, whose ages are between 45–64, and also have a higher clinic visit rate and emergency room use. In addition, the research results revealed that patients with insomnia had a higher risk of visiting a psychiatrist (OR=5.56); higher risk of visiting the emergency room due to insomnia (OR=73.42), and higher rate of visiting emergency room due to any other reason (OR=1.61).

Conclusion: Patients with insomnia present higher utilization rate of health care and lower quality of medical care outcome. The study results may provide valuable reference for better quality of care for patients with insomnia.

References:


IMPACT OF ANEMIA ON HEALTH CARE OUTCOMES AND UTILIZATIONS IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Objectives: Chronic Obstructive Pulmonary Disease (COPD) is a major cause of both morbidity and mortality in patients all over the world. It is the third-leading cause of death in Europe and fourth leading cause of death in the United States. The population of COPD is increasing over time. Meanwhile, anemia is a common comorbidity in COPD patients. Anemia is significantly associated with an increase in healthcare resource utilization and costs of care for COPD patients. However, limited study exists regarding this issue in Taiwan. Therefore, this study aims to fill in the research gap and to explore the impacts of anemia on health care outcomes and utilizations as a result of COPD care.

Methods: This research is a retrospective cohort study. We applied national representative data sets from the Bureau of National Health Insurance from year 2006 to 2012. We identified the years 2006, 2007, 2008 as three cohorts with new COPD cases, and each cohort was followed for five years. The case group includes patients who have COPD and anemia, and the control group includes those with COPD only. Data information includes demographic factors and medical care facility characteristics. Charlson Comorbidity Index (CCI) was applied as a proxy measurement of individual health status. We used the Propensity Score Matching (PSM) to reduce the sample selection bias and chance of incorrect impact estimates when compared with a randomized design. Descriptive analyses, multivariate logistic regressions, and multiple linear regressions estimated the basic information, health care outcomes and health care utilizations.

Results: Final selection included 3012 patients. Among them, 753 patients were from the case group and 2259 patients were from the control group. The average age is over 75 years old for both groups. The number of male patients was more than the number of female patients. The case group (patients with anemia) had significantly higher probabilities of hospitalization, ER use, outpatient cost and mortality rate than the control group (no anemia) (p<0.05). The probabilities of hospitalization and ER use were also significantly increased as a result of the following factors: increase in age, if patients were female, if they sought care in a teaching hospital, lived in suburban or rural areas, or if they had higher CCI scores (p<0.05). Moreover, the case group had a significantly higher outpatient and inpatient cost expenditure than the control group (p<0.01). Higher CCI scores also significantly increased the outpatient and inpatient costs (p<0.01).

Conclusion: Anemia significantly worsened the health care outcomes and increased health care costs for the care of COPD patients. There is great need to pay more attentions to this concurrent disease on clinical treatment and chronic disease management for better quality care of COPD patients in the health care system.
THE ANALYSIS OF “INTER-PROFESSIONAL BAR CODE INTEGRATE SYSTEM” IN RETURN REMAINING MEDICATION PROCESS

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Objectives: The quality of returning medicine to pharmacy from the wards (return remaining medication process) in hospital may affect the patient safety and also affect the satisfices between pharmacists, nursing staffs that including in this process. We developed an inter-professional bar code integrate system to simplified this process, easier to be implemented.

Methods: Identification of causes & data analysis: Statistic indicated that in a teaching hospital, that have twenty-five wards, between Jan. 2014 to July. 2015, staffs spend 212.9 minutes/day for return remaining medication, and every pharmacists related to this process have to over time 60.7 minutes to deal the issue. Only 55.6% of nurses were satisfied with this process.

The reasons being time consuming and low satisfaction rate are: (1).Cumbersome process: 19 processes. (2).The process can be initiated after the medicine delivered to the ward then the nurse in the ward can start the process. (3).Pharmacist and nurse have to record the returning medicine one by one with patient’s information, name of medication, dosage form, and quantity. (4).Error of return remaining medication caused the patient can’t take the medicine properly.

Developing the solutions: for above 4 issues caused time consuming and low satisfaction rate, we have consolidated opinions, comments and suggestions from Pharmacy, Nursing dept., General affairs dept., Social Welfare Dept., and Information Technology (IT) Dept. and decided simplified current procedure by incorporated bar code system and IT.

Trial implementation: (1). Simplified the process flow and minimize man power to 13 processes. (2). Process of delivery medication to the ward and return remaining medication executed simultaneously, no longer waiting for medicine trolley to arrive the ward to start this process. (3). Newly created inter-professional bar code integrate system utilize WiFi device, just scan the bar code of the returning drug the IT recorded and confirmed related information. (4). System with visualize color interface, if scan the medicine that patient still need to take to the system, the computer screen will alert with color indicate the mistake.

Results: Effectiveness analysis: (1). The return remaining medication process time reduced from average 212.9 minutes/day to 98.8 minutes/day in the pharmacy by inter-professional bar code integrate system, savings of about NT $ 47,541.7 of labor costs per month. (2). Return remaining medication telephone inquiry was reduced from average 24.7 calls to 9 calls per month. (3). Reduce the error rate of return remaining medication drop from average 59.2 cases to 41.7 cases per month. (4). Nurse satisfaction rate increased from 55.6% to 88.7%.

Standard operating procedures: In the trial implementation of counter measurement reduced 29.6% of the error rate of return remaining medication. 2015 November we did re-PDCA discovered that in many cases nurse leave the medicine inside the medicine box and send back to pharmacy directly as repercussion. For this case we add 2 sign boards “Medicine inside” and “Medicine cleared” to each medicine box to remind nurse to make sure no medicine inside before they put the “Medicine cleared” board on. We evaluated the result that “error of return remaining medication” cases dropped from 59.2 cases to 26.0 cases per month, an improvement of 67.2%.

Conclusion: The inter-professional bar code integrate system is a newly created technology has the functions of recording, error prevention and reminding. It protects patient’s medication safety, time saving for medical personnel and increase satisfaction rate for the work.
EFFECTIVENESS OF PAY-FOR-PERFORMANCE INCENTIVE DESIGNS ON DIABETES CARE
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Objectives: Taiwan's National Health Insurance program implemented a pay for performance program (P4P) based on process measures in 2001. In late 2006, the P4P was revised to also include achievement of outcomes measures. The study examined whether a change in P4P incentive design structure affected diabetes outcomes.

Methods: We used a longitudinal cohort study design using two population-based databases. Newly enrolled P4P diabetes patients in 2002-2003 (Phase 1) and 2007-2008 (Phase 2) made up the study cohorts. Propensity score matching was used to match comparable cohorts in each phase. In total, 46,286 matched cohorts in Phase 1 and 2 were analysed. Process measures were defined as the provision of tests of HbA1C, low-density lipoprotein (LDL), cholesterol, and blood pressure, and outcome measures as changes in those values between baseline and last follow-up within 3 years. Patient-level generalized linear regression models were used and patients characteristics, physician characteristics, and healthcare facility characteristics were adjusted for.

Results: Our results indicated that the process measures HbA1C and LDL cholesterol testing did not differ significantly between two phases. However, when additional targeted intermediate measures were rewarded in Phase 2, improvement were noted in outcome measures for the Phase 2 patients (i.e., HbA1C level and lipid profiles), while non-incentivized measures (e.g., blood pressure) showed no negative unintended consequences.

Conclusion: Quality of care tended to be better when both process and targeted outcome measures were combined as quality metrics in the program in Taiwan.
DISCUSSION ON FAILURE
FRP FULL SANITARY EQUIPMENT CONSTRUCTION REMODELING OF HOSPITAL WARDS

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Objectives: In recent years, fiber reinforced plastic (ABS or FRP) full sanitary equipment construction was very popular in hospital ward, due to its elegant and beautiful outward appearance and shorter remodeling construction timeline. After subsequent proof, we found that it was hard to clean and raised the equipment maintenance costs, on the other hand, also difficult for patient to access. Those reason made remodeling failed and we tried to improve it.

Methods: After subsequent proof, we reviewed and compared the traditional wet compartment way and FRP for full sanitary equipment construction as following:

Traditional wet compartment construction: The price is higher (200 thousands NTD / set), long construction period (14days), but good sound insulation effects and easy to clean, single equipment failure can be easily replaced, interior can be free to mix and match, ditches design makes patient easy and safe to access.

FRP full sanitary equipment construction: Lower prices (120 thousands NTD / set), short construction period (5days), but poor sound insulation effects, hard to clean, built-in interior, single equipment failure needs to replace the entire surface, and due to drain sticking out from ground and made a height difference of bathroom, it was insecure for disabled patient to access.

Results: Among previous converted 40 sets FRP full sanitary equipment, in the first year, the failure exception have been occurred, hospital management paid higher maintenance costs, and due to the height gap of entrance made some patient with limited mobility difficult to access. Furthermore, FRP surface on account of long-term wet and mildewed, it became hard to clean. According to those bad current situations, we had been gradually transformed hospital ward sanitary equipment into traditional wet compartments construction.

Conclusion: Although traditional wet compartment construction has higher cost and long construction period, it is seems to affect inpatient to rest, but after subsequent proof, we found that FRP full sanitary equipment is not applicable for medical institution to use in ward. By reviewed previous project, we shared our experience to those who had new or improved reconstruction works in hospitals for reference.
Objectives: Although adequate access to healthcare services is an essential component of healthcare quality, the inequitable geographic distribution of physicians remains a serious issue in many countries. Previous studies have generally examined this topic under the assumption that all patient age groups have similar healthcare demands. However, healthcare demands differ between younger and older populations. It is unknown whether the geographic distribution of physicians in Japan is improving or worsening when healthcare demand is taken into account. Thus, we conducted a longitudinal examination of the geographic distribution of physicians by adjusting healthcare demand according to the changing age structure of the Japanese population.

Methods: This study used data from 2000 to 2014. We analyzed the number of physicians per 100,000 “population”, as most studies that have addressed this issue use a similar measure. The following three types of “populations” were used to adjust the healthcare demand of the population.

1. raw population: all Japanese people
2. aged population: only people aged 65 and above
3. demand-adjusted population: all Japanese people adjusted for healthcare demand by age

The demand-adjusted population was computed by applying the adjustment coefficient to the raw population, and the coefficient was calculated based on the health expenditure per capita for each age group. The geographic unit of analysis was the secondary medical area (SMA). We calculated the number of physicians per population and the Gini coefficient for each SMA. We also examined the trends of the number of SMAs where the physician supply was in shortage (i.e. under some criterion). Finally, we examined the increase rate of physicians per population for each SMA according to whether the SMA was urban or rural and whether there was originally a higher or lower physician supply.

Results: The study produced three major findings. First, the equity of the geographic distribution of physicians was found to have worsened throughout the study period despite consistent increases in the absolute number of physicians. The Gini coefficient for the number of physicians per 100,000 demand-adjusted population was higher and deteriorated more than the coefficient for the raw population. This indicates that the regional disparity of physicians was more severe in the demand-adjusted population. Second, the number of SMAs with an insufficient physician supply decreased in the raw population, but increased in the aged and demand-adjusted populations. Finally, rural areas showed a decreasing trend in the number of physicians per population. Notably, urban areas that originally had a higher physician supply also demonstrated downward trends in demand-adjusted physician supply due to the rapidly aging population.

Conclusion: The number of physicians per 100,000 raw population has increased in both urban and rural areas. However, the number of physicians per demand-adjusted population generally decreased, with the exception of urban areas that originally had a lower physician supply. In addition, the equity of physician distribution had consistently worsened between 2000 and 2014. The sufficiency and equity of physician supply is expected to continuously worsen throughout all types of areas, including urban areas, if major reforms are not implemented.
ECONOMIC AND CLINICAL BURDEN OF ANTIMICROBIAL-RESISTANT INFECTIONS IN JAPANESE INPATIENTS.

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Objectives: Little is known about the quantitative impact of antimicrobial-resistant infections (ARI) on real-world healthcare resources. This study aimed to estimate the hospital burden of ARI in inpatients as well as methicillin-resistant Staphylococcus aureus (MRSA) infections in community-acquired pneumonia inpatients.

Methods: We conducted a two-step estimation as follows. First, we estimated the burden of MRSA in community-acquired pneumonia using a claim administrative database. Then, we planned to estimate that in all inpatients using a clinical database matched to a claim administrative database. The latter results will be shown at the presentation. Using a large nationwide administrative claims database, we analysed pneumonia patients who had been hospitalized in 1,066 acute care hospitals. Patients with anti-MRSA drugs were categorized into an anti-MRSA drug group, and the remaining patients comprised the control group. We estimated the burden of length of stay, in-hospital mortality, total antibiotic costs, and total hospitalization costs. Risk adjustments were conducted using propensity score matching. Then, we planned to match an administrative claims database and a clinical database to obtain AIR information and to estimate the economic and clinical burden of all disease inpatients in the same way as the former one.

Results: The study sample comprised 634 patients who were administered anti-MRSA drugs and 87,427 control patients, indicating that MRSA infections occurred in 0.7% of the sample. In propensity score (1-to-1) matching analysis, the median length of stay, antibiotic costs, and hospitalization costs of the anti-MRSA drug group were significantly higher than those of the control group (21 days vs 14 days, p<0.001; US$785 vs US$179, p<0.001; US$9,072 vs US$5,254, p<0.001; respectively); the attributable excess of these indicators were 9.0 days (standard error [SE] 1.6), US$1,083 (SE: 105) and US$5,755 (SE: 602), respectively.

Conclusion: This study quantified the burden of MRSA infections in pneumonia inpatients using a large sample size from over 1,000 hospitals, with detailed risk adjustments to accurately reflect the impact of infection. The hospitalization costs of the anti-MRSA group were approximately 1.7 times as much as those of the control group. These estimates may have applications in developing effective countermeasures against ARI.
EXPLORING THE RELATED FACTOR OF PATIENT REVISITED EMERGENCE DEPARTMENT WITHIN 72 HOURS AT A TEACHING HOSPITAL IN TAIWAN

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Objectives: Emergency Department(ED) is to provide emergency services for serious diseases and medical treatment patients. We analysis of the related Factors of emergency patients revisited ED within 72 hours and apply evidence based reference to improve the process during the healthcare procedure.

Methods: A survey study was performed, from January, 1st, 2014 through December, 31, 2014. Data analyses were done using SAS9.2, SPSS 19.0, Regression and One way ANOVA.

Results: We collected 98,032 patients who visited ED from January 1, 2013 to December 31, 2015. There are 2.99% (2,734) revisited ED within 72 hours. 6.8% (435) revisited ED the condition changed to serious, Male patient slightly high than female. 634 elderly people were over 65 years-old, including 343 patients older than 75 yrs; 45.2% of patients in the emergency residence time less than 2 hours, 177 patient (72%) less than 6 hours in the emergency observation period; 50.1% of patient chief complained of symptoms did not resolve after the medication, 883 (34.1%) because of the new generation symptoms; 43.8% (1,114) patient visit ED during evening shift higher than the other shift. Chi-square test found that age aspect, the elderly revisited condition becomes severe were the higher proportion. 87 (25.36%) patients were >=75 yrs compared to other age groups have a higher proportion (P = 0.03). Last emergency residence time > 6-24 hours becomes serious proportions up to 124 patients (20.70%). The day shift revisited becomes severe highest proportion of 19.98% (174). The causes of revisited, 177(20.25%) of patient returned to ED becomes severe of new generate symptoms. Over 75-year-old patient s condition becomes serious odds ratio is 1.75 folds (≤ 17-year-old group). Last time stay ED > 6-24 hours patients becomes serious odds ratio is 1.40 times (stay ≤ 2 hours). Recent visit during day shift and evening shift return ED becomes serious odds ratios were 1.83 times as large as the night shift for patients and 1.46-fold. After taking the symptoms did not resolved.

Conclusion: (1) The elderly patients: the physiological performance degradation and decline in cognitive function and comorbid lead to ED revisits, ED staff should improve multidisciplinary team according to a cooperation and provide continuity of care services to enable elderly patients get safety, (2) extend observation period: It is recommended to distinguish between serious emergency observation level I, II, when patients receive appropriate medical treatment also enhance physician efficiency. Observation and health education, disease or wound home the care and medication compliance for patient and prevent medical disputes. (3) Recruiting medical staff and adjustment day and night shift nurse or physician to facilitate the lifting of emergency care quality. The healthcare provider apply a high Quality care is the important issue to reduce the harm during ED. Patient revised ED increase the length of stay cause of high costs and legal issue. There are various factors related to revisit. Based on the result, the healthcare provider informed consent process and educate patient with families before medical treatment to enhance and provide valuable database to identify the importance issues. The medical staff provide not only high-quality but also to reach the goal of patient safety when patients during ED.

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UTILIZING MULTIPLE INNOVATIVE STRATEGIES TO ENHANCE SURGERY SAFETY OF A MEDICAL CENTER IN TAIWAN

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Objectives: In 2015, the Joint Commission of Taiwan included "the enhancement of surgery safety" as the patients’ safety goal. The author worked in a general surgical ward that usually has the most number of operations performed in the hospital. During 2014, two thousand and sixteen operations had been performed and the preoperative preparation completion rate was only 86.3% (N=276). Incomplete rate was the highest in hospital. Although the three-shift nurses went through the checklist before surgery, incomplete removal of jewelries and missing of surgery related items still occurred. After analyzing, the following problems were found: (1) lack of preoperative preparation standard procedures; (2) preoperative preparation checklist items were not set for the three-shift nurses to go through; (3) lack of assisted tools for preoperative preparation checklist; (4) lack of colored picture health instruction leaflets for preoperative care. Incomplete preoperative preparation is not only time consuming; it may also result in more manpower, delayed surgery and even severe life-threatening. Therefore from January 2015, the utilization of multiple innovative strategies was involved to enhance the patients’ surgery safety.

Methods: The project was developed by the team members of the operating room, ward director, head nurse and staff nurses after revising the problem and related references, which included: (1) establishment of preoperative preparation standard procedures; (2) setting preoperative preparation checklist items; (3) design of “man identity chart for surgery safety” and “colored cards for jewelry removal”; (4) production of “colored pictures of preoperative health care instruction leaflets”. The implementation of this improvement program began since February 2015, by providing patients with “colored cards for jewelry removal” and “colored pictures of preoperative health care instruction leaflets” before surgery. The primary nurse applied the “man identity chart for surgery safety” to verify the progress of preoperative preparation. On the day for surgery, the primary nurse will confirm that the “man identity chart for surgery safety” does not have any omissions before the patient was sent to the operation room.

Results: After the intervention of multiple innovative strategies, the completion rate of preoperative preparation increased from 86.3% to 95% in the first quarter of 2015, and with a further increase to 100% in the second quarter. The number of incomplete events decreased from 276 events in 2014, to 25 events in the first quarter of 2015, and further decreased to 0 in the second quarter.

Conclusion: Through the intervention of developing multiple innovative strategies by the team members of the operating room and the ward, the preoperative preparation completion rate was successfully enhanced to 100%; meanwhile it lessened the nurses’ time for repeated checking and improved the nurses’ job satisfaction in preoperative preparation. Hopefully, this program of multiple innovative strategies can be extended throughout the whole hospital, to maintain the patients’ surgery safety and promote the quality of patient care.

Objectives: In 2014, the emergency preparedness committee has conducted and reviewed the Hazard Vulnerability Analysis (HVA) and 8 hazards were recognized. After analyzing the risks of those hazards, the safety of emergency resuscitation at the proton and radiation therapy center takes priority over any other issue. The proton and radiation therapy center, a new care service, was launched in July 7th 2014 with the estimated 1,300 proton therapy patients and 3,000 radiation therapy patients annually. By using a proactive risk analysis tool, Healthcare Failure Mode and Effect Analysis (HFMEA), the team reviewed the process and evaluated the risks in order to prevent the possible adverse events.

Methods: A multidisciplinary team, including a team leader, radiation oncology, nursing, medical equipment, engineering, quality management and occupational safety and health staff, was assembled with a total of 17. The team has developed the flow diagram of the new process, identified possible/potential failure modes, determined the severity and probability of each possible cause and calculated hazard scores (HS). The severity and probability rating are listed on a scale from 1-4, with 1 being no harm to the patient or rarely happening and 4 being severely harmful to the patient or happening up to 2 or more times a day. Using the decision tree to determine if each possible cause of failure mode should be eliminated, controlled or accepted and the team developed some improvement plans.

Results: The flow diagram composed of eight processes and twenty-two sub-processes. Twelve failure modes are identified and 18 possible causes are listed with the total of HS of 64. Six preventive actions were taken, including supporting mechanism of resuscitation team, alarm system outside the building, area localization outside the building, resuscitation drill plan, evaluation of resuscitation exercise and elevator card reader for emergency. The risk of emergency resuscitation for the proton and radiation therapy center has decreased from 64 to 27. One cardiopulmonary resuscitation was performed at the center from August, 2014 to October 2015.

Conclusion: HFMEA is a valuable risk assessment tool to prevent adverse events and enhance patient safety. It can help identify the failure modes of new process as well as the significantly reduce of possible risks to ensure the safety of patients.
PATIENT SAFETY PINPOINT: HAN DOVER-POLISHED HEALTH CARE QUALITY
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Objectives: Medical team-ensued effective communication was a way to assure the health care quality. In the Joint Commission-contained sentinel events from June 2011 to June 2013, the rate of the communication barrier was 61.15%. Thus, the effective communication was obviously important in the patient safety. The project was in: cutting the handover time; increasing the completion rate; maintaining the patient safety. Accordingly, overtime avoiding amended the nurse life quality.

Methods: Based on the Identify, Situation, Background, Assessment and Recommendation (ISBAR)-extracted words for memorization and identification of the patient and clinical risks, clinical risks, clinical history/presentation, clinical status, care plan and outcomes/goals of care (ICCCO), the handover was classified and focused. Successively, thanks to the communication-caused department consensus, the solutions for habit changing were to: combine the computerized handover; standardize the flow; have the education training-amended knowledge and skill; continue auditing and controlling. When the handover consistency was constituted, the department rules (the training approach; flow) affirmatively kept the effect. He handover for standardizing the flow; promote the education training for handover literacy; continue auditing and controlling; subsequently ensure the regularization of the handover in the formal on-the-job training for the new employees.

Results: The handover accuracy rates were from 69.25 to 96.71%; average handover periods, from 55.36 to 26.01 minutes; overtime prevention rates, from 57.83 to 100%. Thus, the aim was achieved.

Conclusion: Accordingly, the handover for the clinical nursing process was indispensable, should be clinical nurses-appreciated via effectively passing the nursing key information and accurately recording, and eventually augmented the patient safety.

IMPROVED SAFETY WITH USING THE CPOES IN TRADITIONAL CHINESE PHARMACY PROCESS

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Objectives: In Taiwan, about 13 million people visit Chinese medicine doctors each year. Because of the payment structure of National Health Insurance Administration, about 90% of physicians will choose to use concentrated Chinese medicine. Concentrated medicine is prepared by water-extraction, concentrated into fluid extracts. Excipients are added to the extracts to create powders or fine granules. It is difficult to tell the differences between two types of concentrated Chinese medicine, especially when one formula contains many types of powder or granule. Because there are many medical facilities, people have become accustomed to use both traditional Chinese medicine and Western medicine or health food products for the treatment or prevention of disease. To assure Chinese medicine drug safety, China Medical University Hospital has devoted more than four years to establish a complete and effective intelligent management system for Chinese medicine pharmacy. Computerized Physician Order Entry System (CPOES) uses barcode detection to control and offer an audio reminder to prevent any errors from dispensing and packaging drugs. Furthermore, this system can be used to check the ID of patients in order to prevent any mistakes.

Methods: Chinese medicine intelligent management system were discussed and designed by Chinese medicine physicians, pharmacists and engineers. The design ideas were as follows: (A) The barcode can be used in every step of drug dispensing, packaging, and checking. Combine with electronic prescription system to set up the voice tips and screen icons. (B) Escalate the drug checking to scan QR-code, which can record the usage of drug. Quickly retrieve the wrongly delivered drug from patients. (C) The CPOES will record the production date of each drug, and warn the expiration of drugs. (D) Use the electronic scales to record weight in order to insure the precise dosage of each drug. (E) The smart drug-packaging machine is designed with multi-security management functions, such as printing individual patient identification data, show the number of bags, the clearance of poisonous drugs and adjust the bag length according to the dose calculation. (F) Print QR-code on the prescription order and medication bag to provide patients with the dispensing timetable and necessary medical information. (G) For patients taking drugs with the same high-risk pharmacological ingredients and taking drug with Chinese and Western medicine interaction, the system will alert pharmacists to investigate medication history and perform health education services.

Results: (A) The near miss rate of dispensing is at average of 0.5%. (B) The error rate has reduced from 0.00194%(24 cases) in 2010 to 0% in 2015. (C) Delivering error rate has reduced from 3 to 6 occurrences annually to zero occurrence by double check before and after the implementation of barcode. (D) Streamlined pharmacy synchronous linking prescriptions has saved about 25,000 sheets of paper and printing cost per month, and also reduced how often pharmacists have to stamp for approval. (E) Eight groups of drugs with similar looks and sounds have been detected by the system frequently. (F) The patients who receive consulting service have increased 150 cases monthly for the high-risk of taking both traditional Chinese and Western medicine.

Conclusion: The CPOES incorporates a lot of “patient- centered “innovative designs and modern technology. The goal is to reduce the error rate of the pharmacy process, in particular to solve the problem of many concentrated Chinese medicine powders having similar appearance in order to promote the safety of patient medication use.
ASSESSING ADVERSE DRUG EVENTS USING MODIFIED NARANJO ALGORITHM: THE JADE STUDY
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Objectives: Reporting all suspicious incidents associated drug use to health authority is mandatory in Japan, meanwhile all reported suspicious incidents are not necessarily clinically relevant adverse drug events (ADEs). Reliable tool to identify ADEs are warranted to take actions to prevent ADEs.

Methods: The Japan Adverse Drug Events (JADE) study was a prospective cohort study including 3459 inpatients. After research nurse reviewers collected all suspicious incidents from these patients, physician reviewers discussed and determined ADEs by clinical judgement and literatures. Independently, physicians gave Naranjo algorithm's (NA) scores on each suspicious incidents. NA consisted of 10 components assessing the likelihood of ADEs and each NA component has score from -1 to 2. We investigated sensitivity and specificity of NA to determine ADEs.

Results: A total of 1,579 suspicious incidents were reported in 962 patients. The physician reviewers identified 997 ADEs. Percentage of determined ADEs in each component of NA was summarized (table). The likelihood of ADEs was 94% if sum of NA score reached 5. The components of 6 through 10 were not well utilized. Modified NA based on component 1 through 5 well discriminated the likelihood of ADE with AUC 0.92, which was the same AUC from the original NA. If cut off value was set at 5, the specificity was 0.95 and sensitivity was 0.59. When we reclassified NA components as binary variables, the specificity increased to 0.98 with cut off value of 4.

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Conclusion: We showed NA was able to detect ADEs from suspicious incidents efficiently using large scale JADE database. When we used the simplified NA, we effectively determined ADEs with high likelihood. When we utilize this tool for pharmacovigilance system, we will be able to effectively screen all suspicious incidents and determine ADEs to take next action promptly.

EXPLORING THE PREDICTOR VARIABLES ASSOCIATED WITH RISK FACTORS FOR FALL INJURIES AMONG HOSPITALIZED PATIENTS

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Objectives: The study aimed to explore the risk factors for fall injuries among hospitalized patients.

Methods: This retrospective observational study was carried out from May 1st, 2009 to December 31st, 2014 using the “Patient Safety Reporting System” of a regional hospital in Taiwan with fall events record. The independent variables included demographic characteristics, activity status of fall, pharmacological classifications, clinical symptoms of patients, and supportive system. Dependent variable was the presence of injury. Population statistic variables were presented as descriptive analysis. Initially we tested the association between each of the independent variables and the presence of fall injury. A logistic regression further analyzed the association between.

Results: Six hundred ninety-eight inpatients, 451 men (64.6%), 247 women (35.4%) were enrolled in this study. Among them 335 patients (48.0%) had fall injuries and 363 patients (52.0%) had falls but without injuries. Fall injuries among inpatients were significantly associated with the following main risk factors: division, event time, location at time of fall, and gait stability. Analysis by logistic regression revealed that fall-related injuries occur more often in the medical ward than surgery ward (OR 2.41, 95% CI [1.60, 3.63]), during night shift than day shift (OR 1.83, 95% CI [1.20, 2.80]), in areas of special medical care than general ward (OR 5.39, 95% CI [2.46, 11.80]) and in patients with than without unstable gaits (OR 1.54, 95% CI [1.01, 2.33]).

Conclusion: It is concluded that the risk factors associated with fall injuries were division, event time, location at time of fall, and gait stability, in particular, the medical ward, event time factors such as during night shift, location such as at areas of special medical care, and unstable gaits were associated with increased frequency of fall injuries among inpatients.

References:
QUALITY IMPROVEMENT INITIATIVE TO REDUCE TUNNELED CATHETER-RELATED INFECTIONS IN HEMODIALYSIS PATIENTS IN A TERTIARY HOSPITAL
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Objectives: Aim to reduce the rate of tunneled catheter-related infections (CRI) in hemodialysis patients in a tertiary Hospital by 50% over 18 months.

Methods: CRI is defined as exit site infection, tunnel infection or catheter-related bloodstream infection of hemodialysis tunneled catheter (TC). Quality improvement workgroup was formed in October 2014 with representatives from Renal trainees, dialysis nurses, renal coordinators and outpatient hemodialysis center nurse managers (National Kidney Foundation, NKF; Fresenius Medical Care, FMC), facilitated by Directors from Infection Control and Hemodialysis units, Singapore General Hospital (SGH). Key areas of concern were identified through discussion of tunneled catheter insertion and care workflow, patient survey and detailed cause & effect analysis (Fishbone diagram). Main root causes identified in Pareto chart analysis were inconsistent TC care practices among dialysis centers, lack of standardized audit and knowledge deficit of hemodialysis patients on TC self-care. The former two causes were voted as of highest priority. The workgroup formulated a set of evidence-based standardized TC care bundle protocols which emphasized the use of chlorhexidine gluconate 2% with alcohol 70% antiseptics and “scrub-the-hub” disinfection practice, consistent with Centers for Disease Control and Prevention recommendation. The protocols were implemented in SGH and 5 selected pilot outpatient centers from March 2015. All CRI data in SGH were prospectively collected and analyzed. The protocols were fully implemented in SGH, 29 FMC centers and 28 NKF centers (75% of all dialysis centers in Singapore) from September 2015. To ensure adherence to TC protocols, we developed a set of TC maintenance checklist as standardized audit tool and implemented in all dialysis centers from October 2015, targeting a frequency of 1 to 2 audits per month per dialysis center.

Results: After full implementation of interventions, median CRI rates of 11 episodes per month (range, 7 to 14) or 3 episodes per week (range, 0 to 5) has been reduced to 5 episodes per month (range, 1 to 6) or 0.5 episode per week (range, 0 to 4), respectively for consecutive three months. This represented reduction rates of 55% and 83% in monthly and weekly CRI episodes, respectively. Audit monitoring revealed a median adherence rate of 98% (range, 96 to 98%) in all centers.

Conclusion: In summary, the study objective of CRI rate reduction by 50% among hemodialysis patients has been achieved within three months after initiating combination interventions of standardized TC care bundle protocols and regular audit monitoring with high adherence. CRI rate reduction can potentially result in reduced patient morbidity, shorter length of hospital stay and healthcare cost saving.

MEASURING REGIONAL VARIATIONS IN INPATIENT CARE AND OUTCOME FOR ACUTE ISCHEMIC STROKE: APPLICATIONS OF JAPAN'S NATIONAL CLAIMS DATABASE
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Objectives: Japanese guidelines for the management of stroke have been published, and it is thought that care management has been improved. However, little is known how the care provisions and outcomes vary among regions. This study measures regional variation in acute ischemic stroke inpatient care and examines the relationships between care indicators.

Methods: Design: Retrospective observational study
Participants: Patients who were over 65 years old and covered by National Health Insurance or Long Life Medical Care System and with acute ischemic stroke admitted to and discharged from hospitals during April 2012 to March 2014. Admitted cases were extracted from the National Claims Database in Japan considering with provision of care which were described in the guideline.
Main Outcome Measures: 1) In-hospital mortality, 2) Tissue plasminogen activator (tPA) utilization rate, 3) ICU or SCU admission rate, 4) surgical procedure rate, 5) early rehabilitation rate which within the first 3 days of admission rate, 6) early CT or MRI utilization rate across 349 geographic regions which defined by each prefectural government. Regions with fewer than 3 hospitals or with fewer than 10 cases during the study period were excluded from analysis. These measures were adjusted by age, sex and region where patients belonged by using multilevel modeling approach.

Results: This study included 287,962 hospital admissions with acute ischemic stroke. Overall crude in-hospital mortality was 7.70% and coefficient of variation (COV) of adjusted rates was .198. Among patients with acute ischemic stroke, 4.20% received tPA, 21.7% admitted to ICU or SCU, 2.75% preformed surgical procedures, 57.7% received early rehabilitation and 97.3% underwent early CT or MRI imaging. Regional COVs of all interventions except for the early CT or MRI utilization were significantly larger than that of adjusted in-hospital mortality. Each intervention was significantly positively associated with each other except for the early CT or MRI utilization.

Conclusion: Our study showed that there was marked variation in the process and the outcome of acute ischemic stroke care across regions. These regional-level care indicators can provide a benchmark for planning better healthcare system at local and national level.
THE ANALYSIS OF TRANSFUSION ERROR EVENTS IN A METROPOLITAN HOSPITAL
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Objectives: For the last five years, the percentage of blood transfusion related errors that our hospital had informed to TPR (Taiwan Patient safety Reporting system) was 1.58%, which was slightly higher than the rate of 0.89% from JCT (Joint Commission of Taiwan). The goal of such action is to improve the quality of our blood bank.

Methods: We collected the errors related blood transfusion from 2010 to 2014 and categorized into four phases, blood typing phase (phase1), blood preparation phase (phase2), transport phase (phase3) and blood transfusion phase (phase4), in order to investigate the risk within this system.

Results: The total number of blood transfusion related errors was 42 during the last five years in our hospital, and the percentages of errors were 4.8% (2 cases) in phase1, 64.3% (27 cases) in phase2, 19% (8 cases) in phase3 and 14.3% (6 cases) in phase4. In 2013, the numbers of blood transfusion related errors reported to TPR were 550 and the percentages of errors in the four phases were 13.6%, 51.6%, 18.2% and 22.5%. According to the statistical comparison, TPR and our results were had the highest percentage in blood preparation phase but our results were much higher in transport phase. In our case, there were 27 error cases occurred in blood preparation phase (5.4 cases per year in average) that divided to 17 near miss cases and 10 harmed cases. Most reasons of the near miss cases were mislabeling by laboratory (10 cases, 58.8%) and delayed of blood preparation in harmed cases (8 cases, 80%).

To improvement the quality of blood transfusion we created new barcode labels to reduce mislabeling occurring in the blood bank. Furthermore, we build a warning list and validity time of each types of blood agent supply to shorten the waiting period for patients who require blood transfusion. We have also established a system to remind medical technician the related examination results for blood preparation. In the transport phase, each blood bags supply was labeled and distributed individually in a cooler bag so that the blood quality and delivery accuracy were ensured. Before blood transfusion, we used barcode system to confirm the patient’s name, type of blood agent and the prescription. Ultimately, the blood transfusion management platform was also engaged for monitoring and improvement of the whole procedure. The error cases in 2015 were the indices of outcome improvement. There were 4 blood transfusion related cases (0.8%, 4/506) showed a significant improvement, including no errors in blood typing phase, 3 cases in blood preparation phase (lower than the average cases in the past five years), 1 transport error case, and 1 blood transfusion error case. These errors are undergoing a continuous monitoring.

Blood transfusion is one of the most complicated procedures in a hospital because it requires a joint effort by multiple units such as treatment, examination, nursing, and distribution. The blood preparation phase is the most liable to errors among the four phases. We need to monitor the system continuously and observe if the alternatives can effectively reduce the error rate during the blood preparation phase.

Conclusion: To satisfy patients’ needs and to provide the accurate and instantaneous blood agents, the integrated information system must be utilized to simplify the blood transfusion procedure and to minimize error cases. This will further improve our health care quality and guarantee our patients safety.
PROMOTING EARLY MOBILIZATION TO SHORTEN THE DURATION OF MECHANICAL VENTILATOR FOR PATIENTS WITH ACUTE RESPIRATORY FAILURE IN THE INTENSIVE CARE UNIT IN TAIWAN

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Objectives: Acute respiratory failure (ARF) followed by the use of mechanical ventilation (MV) may increase mobility and mortality in intensive care unit (ICU). To prevent pulmonary and immobilization complications, rehabilitation and mobilization has increased benefit when initiated early during ICU treatment. This study was conducted to find an answer to whether early mobilization is better than previous routine physiotherapy in reducing the length of MV and ICU stay in MV patients.

Methods: The study was conducted in a 19-bed medical ICU of a medical center in Southern Taiwan. An Interdisciplinary Team (critical care nurse, nursing assistant, respiratory therapist, physical therapist and family) initiated the protocol within 72 hours of mechanical ventilation when patients become hemodynamically stable (no vasopressor and a fraction of oxygenation<60%). The protocol was divided to 4 levels modified by Morris PE et.al in 2008 [1], also seen in Figure 1, as level I: passive extremities movement for unconscious patients; level II: active extremities movement and interaction with the physical therapist for conscious patients with a sitting position on the bed; level III: similar to level II, but sitting on the edge of bed; level IV: similar to level II, but active transfer to chair beside the bed. We performed twice daily during the family meeting time (30 minutes each time) and cooperated with family if possible. The study periods were divided to phase 1 (before improvement, from Jan 1 to Mar 31, 2014), phase 2 (during improvement, from July 1 to Oct 31, 2014) and phase 3 (after improvement, from Nov 1 to Dec 31, 2014). We performed an education program of quality improvement from Apr 1, to June 30, 2014.

Results: Compared with previous routine physiotherapy (only level I) on phase 1, the mean length of MV was decreased from 6.3 days to 4.4 days on phase 2, and eventually dropped to 4.1 days on phase 3. Besides, the mean ICU stays were decreased from 10 days to 7.5 and 6.1 days, the mean hospital costs also decreased from 329,000 New Taiwan Dollars (NTDs) to 241,000 and 186,000 NTDs. There was no any unplanned extubation, nor falling down episode during the study period.

Conclusion: With a multi-disciplinary quality improvement project, including the cooperation with family, we significantly improved the expenditure and quality of MV patients with ARF, as similar to other studies [1-3]. We will apply the successful experiences to the other ICUs in our hospital, and may serve as a benchmarking for other hospitals in Taiwan.

USING THE HOSPICE WORKSHOP TO ENHANCE NURSES’ COMPETENCIES AND KNOWLEDGE OF HOSPICE PALLIATIVE CARE IN THE EMERGENCY DEPARTMENT

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1Nursing Department, Chi-Mei Medical Center, Tainan City, Taiwan

Objectives: As the global population continues to age rapidly, a growing number of people are accepting hospice palliative care. Hence, emergency department nurses are caring for increasing numbers of terminally ill patients over time. However, most related training programs still focus on intensive care for terminally ill patients rather than hospice palliative care in emergency departments. This situation poses a challenge for nurses in maintaining a high quality of care for these patients in a limited time frame. Therefore, we established a hospice workshop to increase nurses’ competencies and knowledge of hospice palliative care.

Methods: The hospice workshop was divided into 12 courses and was held over 6 weeks in a medical center of southern Taiwan. We employed a structured questionnaire to collect data regarding participant satisfaction with the course design and testing the competencies and knowledge of the participants in hospice palliative care. The participants completed questionnaires before and after the workshop.

Results: Of the 330 participants who attended the workshop, 100% expressed satisfaction with the course design and 94 of them exhibited increased by 27.8% (from 68% to 95.8%) of the score in nursing care competencies and knowledge of hospice palliative care.

Conclusion: Nurses confront numerous difficulties in caring for terminally ill patients. The hospice workshop explained key concepts about administering hospice palliative care in an emergency department, staff would keep this concept in their mind. Nurses shared their caring experiences during the workshop, after which the attendees’ exhibited increased competencies and knowledge of hospice palliative as well as more positive attitudes toward terminally ill patients. Therefore, this workshop provided attendees with practical insights into administering hospice palliative care.

PHARMACIST-MEDIATED ESTABLISHMENT OF A RISK AVOIDANCE SYSTEM AIMED AT PROMOTING THE APPROPRIATE USE OF DRUGS ON WARDS
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Objectives: Since 2005, with the Six Sigma methods and QC story, the Pharmacy Department of Mazda Hospital has performed various activities aimed at promoting the appropriate use of drugs on wards. We established a system facilitating the avoidance of various risks that may occur during a series of working procedures from prescription made by physicians, to drug dispensation, and then to drug deliveries performed by nurses.

Methods: 1) Intervention in the process of prescription made by physicians: Since 2010, pharmacists, physicians, and nurses on the orthopedic ward have recorded recently prescribed drugs, including those brought by patients, using written forms. These pharmacists have supported prescriptions with the approval of these physicians. 2) Improvement in the process of prescription-checking: Before drug dispensation, pharmacists have confirmed the disease of the patient, drugs brought by them, their laboratory values, and high-risk drugs. 3) Intervention in the process of preparing for drug delivery: In 2005, pharmacists of the internal medicine ward began to improve the preparation for drug delivery. In 2008, drug delivery carts were introduced to the ward in order to increase the efficiency of such preparation. In 2012, to prevent patient misidentification at the time of delivering drugs managed by nurses, the hospital began to use its original barcode-based patient identification system.

Results: 1) After the intervention, the rate of prescription made by physicians outside business hours decreased by 45.5%, and that made by pharmacists the day before specified dates increased by 58.8%. 2) Concerning prescription-checking, by confirming the disease of the patient, drugs brought by them, their laboratory values, and high-risk drugs (e.g., CHADS2 score), the number of opportunities to prevent risks increased from 128 in 2012 to 506 in 2014. 3) On the internal medicine ward, by adopting a checking system between nurses and pharmacists, the incident report rate decreased from 3.8 to 0.21%. In addition, by introducing drug-delivery carts, and through pharmacists’ intervention in the setting of single-dose drugs that are prescribed regularly, the time need to prepare for drug delivery was shortened by 52%. Furthermore, by introducing a barcode-based system facilitating the prevention of drug mix-up and patient misidentification at the time of drug delivery, we have been able to clarify and prevent the possibility of such misidentification, with the rate of preventing patient misidentification being 0.54% from November 2012 through to December 2015.

Conclusion: 1) Pharmacists’ support for the prescriptions may reduce the burden on physicians and nurses, and promote the appropriate use of drugs. 2) It was suggested that prescription-checking performed before drug dispensation is beneficial in risk prevention. 3) Intervention in the preparation for drug delivery may be helpful in improving a system to check drug deliveries, as well as in reducing the burden on nurses. In addition, by introducing a system to prevent patient misidentification, the rate of preventing such misidentification decreased, which indicates that such systems are highly beneficial in ensuring patients’ safety and nurses’ ultimate responsibility. The results of this study suggest that, to establish a risk avoidance system, pharmacists play a crucial role in alleviating various psychological factors that occur during a series of healthcare providers’ working procedures, as well as in improving prescription-checking systems that take patients’ symptoms into consideration.
VALIDATION OF THE SAFE DISCHARGE FROM ICU (SD-ICU) SCORE. A RISK ASSESSMENT TOOL OF UNPLANNED ICU READMISSION.
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Objectives: The aim of this study is to validate the SD-ICU as a tool to predict unplanned readmissions to the intensive care unit.

Methods: This prospective observational cohort study included all adult patients discharged from a 45-bed medical-surgical ICU from April 2014 to March 2015. At the time of ICU discharge, the SD-ICU score was calculated using the scores for age, therapeutic intervention scoring system 28 (TISS-28), Charlson comorbidity index (CCI) and the ICU length of stay (1). All patients with a SD-ICU score above 14.5 were classified with risk for readmission and had a risk alert recorded in the discharge report.

Results: The data of 1,329 patients were included in the analysis. Ninety-five patients were readmitted to the ICU (7.1%). Readmitted patients were older, had higher APACHE IV score and spend more time in the ICU. TISS-28 and CII were also significantly higher in readmitted patients. The mean SD-ICU score was 15.4 +/- 8.9 in readmitted patients and 9.0 +/- 9.0 in no readmitted (p < 0.0001). In this validation study a cut score of 14.5 yield a positive likelihood ratio of 1.56 and a negative likelihood ratio of 0.73, with specificity of 67.6% and sensitivity of 50.5%. Using the data of this validation study the cutoff point according to Youdent criterion was 12.5 points. This cutoff has a sensitivity of 65.3%, a specificity of 61.4%, a positive likelihood ratio of 1.69 and a negative likelihood ratio of 0.57. The area under ROC curve was 0.677 (CI 95%, 0.625 – 0.729; p < 0.0001). Calibration was good with a Hosmer-Lemeshow goodness-of-fit test chi-square of 9.84 and p= 0.08.

Conclusion: This validation study confirmed that a risk score tool based on easily measured parameters at the bedside is able to predict the risk of ICU readmission with moderate accuracy.

References: (1). Intensive Care Med 2014; 40 (suppl 1) S16.
PROACTIVE APPROACH TO ENHANCE NURSE-RELATIVE RELATIONSHIP: A BEDSIDE COMMUNICATION TOOL

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Objectives: Under an infirmary care setting like Wong Chuk Hang Hospital (WCHH), ineffective communication between nurses and relatives causes frequent interruption to nurses especially during long visiting hours. This poses significant impact on patient safety and care continuity, and potentially contributes to medical errors. Time for relatives’ repeated enquiry reflects the effectiveness of communication, which may indicate for improvement. Evidences show that proactive communication by nurses can avoid costly errors, save time and allow nurses to deliver quality care to patients. Thus, a workflow improvement project is launched to reduce enquiry time of relatives through proactive communication by a trial of providing bedside communication booklet in an infirmary ward of WCHH. The objective of the project is to pilot test the effectiveness of bedside communication booklet in reducing enquiry time of relatives and the fidelity, acceptability and feasibility of its implementation.

Methods: A lean six sigma DMAIC model was adopted and a one-group, pre-test, post-test pilot design (N=25) was done between November 2014 to January 2015. A bedside communication booklet was designed and distributed to bedside of each patient in the ward during visiting hours. Total enquiry time of all relatives was measured before and after the use of the bedside communication booklet. Change in time was tested with paired samples T-test.

Results: With the use of the bedside communication booklet, enquiry time by relatives reduces from a mean of 15 minutes to 8 minutes (-46%, p=0.003). Meanwhile, positive feedbacks are received from family care givers.

Conclusion: Implementation of bedside communication booklets is feasible in WCHH and has the potential to enhance communication between nurse and relatives and improve patient safety. Further review for the right timing of providing the booklet, frequency of updating the booklet and the enhanced approach are needed.

Implication on service enhancement
Effective communication is a critical component of high quality, safe care and essential for engaging relatives and healthcare providers. The proposed strategy of using patient-centered and proactive approach is integral to quality care of patients and can be utilized concomitantly in the entire healthcare settings. This can address to relatives’ general concerns, alleviate their stress and reduce their care burden, which in turn, reduce interruptions to care procedures so that quality and safety of care delivery can be better assured.
NIPPED: NURSE INITIATED PAIN PROTOCOL IN THE EMERGENCY DEPARTMENT
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Objectives: To reduce median time to analgesia within 4 months by implementing a Nurse Initiated Pain Protocol (NIPP) for patients presenting to the Emergency Department (ED) with lower back and limb pain.

Methods: The workgroup developed a nurse initiated pain protocol to be used at triage in the Singapore General Hospital ED. A standard itemized form was created; nurses identified suitable patients and initiated analgesia administration. The protocol was continually reviewed and revised during the 4-month study to improve effectiveness. Data recorded included time to receiving analgesia from triage, as well as pain scores before and after administration of analgesia. The collected data was plotted on a run chart to identify significance.

Results: The project is currently in its fifth week, with ongoing data collection. Preliminary data shows a reduction in median time to analgesia by 2 hours. Median pain score is also reduced by 3 points on the Visual Analog Scale. More substantial data will be available by the time of the conference.

Conclusion: As the project is still ongoing, the conclusions that can be drawn at this time are limited. However, the data is promising for a significant shift in time to analgesia at the ED. Implementation of a nurse initiated pain protocol effectively reduces time to analgesia for patients. This translates to more effective pain control and better patient outcomes.

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THE PROJECT OF IMPROVEMENT ON THE INCIDENCE OF INPATIENT FALLS
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Objectives: Patient falls account for 25-84% in all medical adverse events among inpatients, with an increased mortality of 2.2% as compare to patient without falls. A fall may result in patient injury, comorbidity, prolonged hospitalization, increased medical expenses, and probably medical disputes. Coussement et al. proposed preventing inpatient falls by reinforcing other medical staffs is a way to ensure a safe medical environment. According to Taiwan Clinical Performance Indicator (TCPI) system, the incidence of falls in our hospital was 0.02% in 2013. Although it was lower than feedback peer value (0.06%), it was the leading cause in medical adverse events. Therefore, we proposed a multidisciplinary teamwork to improve inpatient fall incidence by lowering a SD as a target value(0.01%).

Methods: Each case of inpatient fall was reported in detail as medical adverse event. We used quality control methods including Root Cause Analysis (RCA) and Healthcare Failure Mode and Effect Analysis (HFMEA) to analyze the causes of falls. Solutions for preventing falls were proposed to every units by a Plan-Do-Check-Act (PDCA) cycle. The Effect of preventing falls was followed by a U-control chart.

Results: The causes of inpatient falls were analyzed mainly as unsafe environment, inappropriate standard operating procedure in preventing falls, and unimplemented procedures of preventing falls. The incidence of falls reduced from 0.02% (22/141,646) in 2013 to 0.01% (20/191,095) in 2014. Patient falls due to environmental factor reduced from 50% to 30%. The satisfaction of inpatient and family to fall-preventing instruction by nursing staff increased from 89.2% to 97.5%.

Conclusion: Good communication between nursing staffs, patients and families plays a crucial role in a successful hospital fall prevention program. Fall prevention in hospitals can ultimately be achieved by implementing a fall prevention program, continuous monitoring and auditing, plus active participation of patients and families.

REDUCING RADIATION DOSE AND OPTIMIZING IMAGE QUALITY TO THE PATIENTS FOR 64-MDCT CORONARY ANGIOGRAPHY

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Objectives: Coronary CT angiography (CTA) has become a reliable imaging modality for the assessment of coronary artery disease (CAD). The purpose of this study is to present a novel adaptive body mass index (BMI) model for reduction of radiation dose and image quality of 64-MDCT coronary angiography.

Methods: We collected 1565 patients underwent 64-MDCT examination from July 2013 to December 2015. The scan parameters for 64-MDCT were 120kVp and gantry rotation of 350 milliseconds. We applied the adaptive BMI model to adjust the parameter of mA in order to reduce the radiation dose for the patients. The image quality of the coronary vessels was assessed subjectively by three experienced cardiovascular imaging radiologists. The dose-length product (DLP) is an estimation of the radiation exposure for the entire CT examination. Effective radiation dose was calculated as the DLP multiplied by a previously published conversion coefficient.

Results: 435 patients performed the CTA examination with previous scan parameters. The average radiation dose was 12.28 mSv. After 2014 January, 1130 patients were imaged with scan parameter according to the adaptive BMI model. The average radiation dose was 6.31 mSv. Overall radiation dose was significantly lower about 49%. In subanalyses of the patients with BMI less than 24, radiation dose was more lower about 57%. All images were good for the radiologists to evaluate the condition of coronary artery.

Conclusion: Application of the adaptive BMI model is effective to reduce radiation dose and to optimize image quality for the patients.
FACTORS ASSOCIATED WITH HOSPITALIZATION OF ELDERLY PEOPLE RECEIVING HOME CARE NURSING
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Objectives: The past decade has seen a great deal of growth in home nursing care services, increasing from 125 to 491 providers, thanks to its coverage by the National Health Insurance in 1995. The majority of its users pertained to the aged, physically disabled due to chronic diseases, particularly those suffered from cerebral vascular diseases. A combination of age syndromes, physical disabilities, and in some cases the intubations has led to patients’ repeated hospitalizations, putting a great burden on both their family and medical resources. Despite of its importance, research on the subject regarding factors associated with hospitalization of patients using nursing services at home was conspicuously scanty. This study attempted to fill the void in the literature.

Methods: This study pertained to a cross-sectional and correlational design. Data collected from patients using nursing services at home were collected by face-to-face interviews, using structured questionnaire constructed for this study. A portion of data were extracted from medical charts. Those elders age 65 and over who used nursing care services provided by a home care unit of a teaching hospital in northern Taiwan This study used the Andersen’s behavioral Model of medical service utilization. Logistical Regression was used for the model with its dependent variable measured dichotomously, while Ordinaly Least Squares method was used for the model with its dependent variable measured continuously. SPSS-20.1 was used for statistical analyses.

Results: The result from multiple regression analyses showed that financial resources, dietary route, and the number of intubations were significantly correlated with the length of hospital stay. The result from logistic regression analysis indicating patients’ educational level and financial supports from daughters vs from other resources were significantly associated with the probability for hospitalization.

Conclusion: The findings from this study pointed to the need to target those users of nursing care at home who were at risk of being hospitalized.

ESTABLISHING LOCAL DIAGNOSTIC REFERENCE LEVELS IN ANGIOGRAPHY IN TAIWAN
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Objectives: The current study is the first attempt, in Taiwan, to establish local diagnostic reference levels (LDRLs) in angiography. We propose a new mode for Taiwanese medical institutions to not only achieve adequate diagnostic image quality, but also ensure that patients are treated with reasonable radiation dose.

Methods: We collected 123 cases of TACE (transarterial chemoembolization) for liver tumors in 2013, using the angiography equipment, GE, Innova 3131-IQ biplane. Using the standard weight range (60-70 kg) as our inclusion criterion, we selected 48 cases with a mean of 64.38kg. In angiography procedures, two modes are commonly used: the fluoroscopy mode and the record mode. The fluoroscopy duration and the number of images taken can represent an equipment’s radiation output as well as the dose to which a patient is exposed. As such, we recorded the dose area product (DAP) (cGy·cm²) under the fluoroscopy mode and the record mode, respectively. Hence, the year 2013 serves as our first-year reference, and the respective means of the recorded measures across our selected patients are our LDRLs. After the LDRLs have been established, subsequent annual DRL will be evaluated against the LDRLs in order to monitor the changes, if any, in the average DAPs (1). Researchers have proposed that if an annual DRL and the LDRL differ by more than 20% and by more than two SEMs (standard errors of the mean), the cause of difference in DAP needs to be examined (2). Researchers further proposed that if an annual DRL and the LDRL differ by more than 10% but less than 20%, the LDRL could be updated using the current DRL (3). In our context, we propose that if the two differ by more than 10% but less than 20%, the LDRL could be updated by taking a weighted average between the annual DRL and the LDRL according to their respective sample sizes. Taking the weighted average serves to mitigate the effect of sampling variation due to a small sample size for DRL in a given year.

Results: Using data from the 2013 sample, we established our LDRLs in the fluoroscopy mode (3,735.4 and 10,360.07 cGy·cm² for a duration up to 15 minutes and more than 15 minutes, respectively) and the record mode (2,944.57 and 6,762.85 cGy·cm² for up to 120 images taken and more than 120 images, respectively). By referencing these LDRLs, we can conduct annual assessments of the stability of radiation output, and thereby establish a proactive procedure to ensure patient safety.

Conclusion: Medical institutions in Taiwan will be able to perform annual inspections of radiation output and dose monitoring, and thus promote patient safety by establishing LDRLs for medical equipment producing ionizing radiation. In our proposal, we suggest that periodic updates on LDRLs would be necessary if empirical data suggested so. Finally, future research may combine the LDRLs with the annual quality assurance operation of radiographic fluoroscopy to maintain equipment output quality and to meet the recommended as low as reasonably achievable (ALARA) exposure.
INTRODUCTION OF THE WHO SURGICAL SAFETY CHECKLIST IMPROVES PERIOPERATIVE NON-TECHNICAL SKILLS OF SURGEONS
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Objectives: In addition to technical skills, excellent non-technical skills (NTS) are important for performing safe surgical operations, but NTS are objectively evaluated in only a few institutions. Numerous previous studies have shown that implementation of the WHO Surgical Safety Checklist (SSC) results in improved surgical outcome. Against this background, this study aimed to evaluate the effect of the WHO SSC on perioperative NTS of surgeons.

Methods: Circulating nurses evaluated perioperative NTS of the operating surgeon in surgeries performed in general surgery departments of University Hospital A (685 beds), Core Hospital B (430 beds), and Core Hospital C (662 beds) using the Mie Easy Non-Technical Surgeon Assessment Scale (MENAS). This scale is an evaluation tool for perioperative behavior at 8 steps in the timeline of a surgical operation—behavior upon arrival at operating room, initial greeting, briefing, time-out, intraoperative behavior, postoperative instrument/needle count, debriefing, and concluding remarks—with each step scored on a scale from 0 to 3. Evaluation was performed 1 or 2 months before and after introduction of the WHO SSC from 2012 through 2014 at each institute. Results were statistically analyzed using the Mann-Whitney U-test. This study was approved by the University A Institutional Review Board.

Results: Evaluation was performed for 2260 operations (Hospital A: before n=325, after n=653; Hospital B: before n=376, after n=346; Hospital C: before n=311, after n=249). After introducing the WHO SSC, the ratio of favorable NTS scores was significantly increased for all steps in Hospital A, for all steps except intraoperative behavior in Hospital B, and for all steps except behavior at admission to the operating room in Hospital C. In addition, although there were 10 cases with the lowest score for both intraoperative behavior (Unacceptable behavior such as shouting at staff or throwing objects) and concluding remarks (Active criticism/deriding staff) at the 3 institutes, after introduction of WHO SSC, there was only 1 such case of unacceptable behavior.

Because 6 of the steps in MENAS (behavior at admission to the operating room, initial greeting, briefing, time-out, and postoperative instrument/needle count) are included in the WHO SSC, it was expected that favorable NTS for these 6 steps would increase. Although 2 items (intraoperative behavior, concluding remarks) are not included in the WHO SSC, favorable NTS in these steps increased as well. These results show that the series of procedures recommended in the WHO SSC may contribute to the improvement of perioperative NTS.

Conclusion: Implementation of the WHO SSC may improve perioperative NTS of surgeons.
IMPROVING THE CARE FOR DISABLED HOME CARE PATIENTS ABLE TO INTAKE FOOD ORALLY

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Objectives: (Background: The disabled population in Taiwan is expected to grow to 1.18 million in 2031 and, currently, 92.4% of the disabled population require long-term care and are cared for at home; thus, home care is an important method of care. Nutrition is a crucial aspect of home care that is highly correlated with the patient's prognosis and quality of life. Disabled patients who require help intaking food orally often have poorer nutrition; if malnutrition is not prevented or treated, it may lead to a worse prognosis and increased morbidity and mortality rates.)

To increase the frequency with which home care providers evaluate nutrition and the effectiveness of dietary guidance in order to improve the nutrition of disabled home care patients able to intake food orally, reduce the incidence and prevalence of comorbidities, rehospitalization rates, and hospital costs, and increase quality of life.

Methods: The participants in this study were patients from the home care division at a medical center in New Taipei City, Taiwan. This study took place from January 1 to March 31, 2015 and collected data from home care records, nursing nutrition exams, caregiver nutrition exams, and Mini Nutritional Assessment questionnaires. Analysis found that only 65.5% of home care providers assess nutrition; only 61.7% of home care providers correctly understood nutrition evaluations; only 54.0% of caregivers correctly understood nutrition evaluations; and 32.1% of disabled home care patients able to intake food orally suffered from malnutrition. This study suggests several solutions: provision of in-service education on home care nutritional evaluation by nutritionists; revision of home care electronic medical records to include physical assessment and self-appraisals of nutrition; creation of a home care nutritional evaluation procedure; inclusion and regular testing of nutritional assessments as an indicator of departmental quality control; revision of work standards for home care providers to refer nutritionists; creation of individualized nutritional requirement substitution magnets and nutritional pamphlets; convention of monthly interdisciplinary nutrition meetings; provision of community long-term care resources, such as home care nutritionists and referrals.

Results: The percentage of home care providers who assess nutrition increased from 65.5% to 100%; the percentage of home care providers who correctly understood nutrition evaluations increased from 61.7% to 100%; the percentage of caregivers who correctly understood nutrition evaluations increased from 54.0% to 90.8%; and the percentage of disabled home care patients able to intake food orally who suffered from malnutrition decreased from 32.1% to 14.3%.

Conclusion: This study effectively reduced the percentage of disabled home care patients able to intake food orally who suffered from malnutrition, improved nutritional and health conditions, and improved quality of life by improving home care providers’ understanding of nutritional assessments, conducting regular nutritional assessments, early detection of patients at risk for malnutrition, and providing individualized nutritional education.
DEPARTING SAFE AND EFFECTIVE TEST RESULT COMMUNICATION, MANAGEMENT AND FOLLOW UP: AN AUSTRALIAN RESEARCH STUDY

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Objectives: The aim was to develop a research study to establish safe and effective test result management systems.

Methods: Across a two year period, a four step approach was used: identification of issues for improvement; formation of a collaboration; development and securing funding for the research proposal; and, commencing implementation of the project.

Results: Healthcare academics, building on previous research, simultaneously reviewed empirical literature and discussed key findings with colleagues across their industry networks. The key issue identified was the need for a test result management governance system to utilise evidenced-based practice, health information technology and consumer engagement. This iterative process formed a research collaboration, with representatives from: an academic research institute; a pathology laboratory service; the national healthcare quality and safety agency; a network of acute services; and, specialist medical colleges. The collaboration is to be aided by an international advisory body containing experts across the study issues. The collaboration's discussions derived a study proposal with three aims and associated tasks:

Aim 1: Improve the effectiveness and safety of test result management through the establishment of clear processes of communication, responsibility and accountability. Tasks: mapping of test management practices; development and implementation of an organisational test result management clinical governance checklist and processes; and, the identification and implementation of test result follow-up interventions.

Aim 2: Harness health information technology to inform and monitor test result management. Tasks: establish thresholds for normal/critical results and notification processes; and, investigate the effects of a range of test result follow-up interventions - based on the use of the test result management clinical governance checklist - by conducting a controlled pre/post study across three Emergency Departments with outcome measures, including care process and outcome indicators.

Aim 3: Enhance the contribution of consumers in the establishment of safe and effective test result management systems. Tasks: establish a Consumer Reference Group (CRG), consisting of 10–15 people to meet bi-annually; and, the CRG to provide input and feedback about the study findings impact on aspects of patient care, thus helping to shape the direction of the research program.

In 2014, a study proposal was assessed under the National Health and Medical Research Council of Australia research grants scheme, rated highly, but not funded. The revised proposal was submitted and secured funding in late 2015. The research study implementation has commenced in 2016 with a stakeholder workshop to plan initial activities.

Conclusion: Quality patient care is predicated on reliable test follow-up and appropriate, timely action. Our research collaboration will: demonstrate an effective test result management clinical governance checklist and process; and, derive evidence about the safety and effectiveness of major test result follow-up interventions across laboratories, medical imaging departments and hospitals. The collaboration across academic, health services and professional institutions brings the required diverse skills and expertise together for a successful study. Additionally, they provide multiple networks and avenues to translate findings to drive practice change and develop the knowledge base in this area.
REDDUCING WAITING TIME FOR EMERGENCY OPERATION AND PATIENT MORTALITY USING TEAM RESOURCE-BASED INTERVENTION STRATEGY

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Objectives: Shortening the waiting time for patients in need of emergency surgery is vital for reducing mortality and morbidity. This study aimed at assessing the effectiveness of implementing a team resource management (TRM)-based improvement program in curtailing the waiting time in this patient population.

Methods: An interventional program was implemented between May 2013 and February 2014 in an attempt to reduce waiting time for patients at the emergency department requiring emergency operations. Patients with two periods [i.e., between January and December 2012 (n=119) vs. between October 2013 and December 2015 (n=240), corresponding to the period before and after program implementation, respectively] were compared for assessment of program effectiveness in terms of mean reduction in waiting time, percentage of operations with waiting time <30 minutes, mean length of stay at intensive care unit (ICU), and patient mortality. Interventional procedures included assigning designated operation rooms for emergency surgeries, establishing standard operating procedure for emergency surgery, and utilization of TRM tools (including briefs, huddles, two-challenge rule, check-back, handoff, shared mental model using text messages, collaboration, feedback) for effective communications. Five-point Likert scale was used for evaluating personnel satisfaction.

Results: After program implementation, the mean waiting time for emergency surgery was reduced from 43.62±23.59 to 20.29±8.81 minutes (p<0.001). The percentage of operations with waiting time <30 minutes was markedly elevated from 29.4% to 91.7% (p<0.001). Patient mortality dropped from 30.3% to 17.9% (p<0.05). Personnel satisfaction rose from 2.91±0.67 to 3.87±0.53 (p<0.001). Mean ICU stay decreased from 10.67±7.93 to 9.43±6.66 without reaching statistical significance.

Conclusion: Through improving administrative strategies and communications using TRM tool, healthcare quality and patient care were effectively improved.
UNDERSTANDING SERIOUS ADVERSE EVENTS: A PROCESS TO IMPROVE ORGANIZATIONAL CULTURE

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Objectives: To describe the role of the huddle and debrief in an organization’s response to a serious adverse event and to understand how to use Performance Improvement tools when reviewing serious adverse events.

Methods: The Mount Sinai restructured the organization’s response to serious adverse events (SAE) in order to have a process that was more responsive in terms of turn-around time for investigations and a more structured process for accountability. The new response process includes a formalized notification chain, immediate huddle, formal debriefing within 72 hours of the event, Root Cause Analysis (RCA) using Performance Improvement (PI) tools and defined roles, and senior leadership participation. The huddle and debrief are designed to be non-judgmental and focus on systems, not individuals. Debriefings are usually led by the Chief Medical Officer, with support from Risk Management and Departmental Leadership in determining the need for an RCA. Using PI tools in the RCA process provides a structured approach to gathering information and uncovering root causes. PI tools, such as Process Maps and Causal Trees, focus and drive analysis, while also identifying opportunities for improvement. These tools reveal why an event may have happened by displaying the numerous steps chronologically. Extensive training of both the Risk/Patient Safety Specialists and the Physician Leaders who serve as RCA Chairs has been instrumental in standardizing the process and creating accountability through clearly defined roles and responsibilities. As the RCAs have become more robust, the corrective action plans are more targeted. The new SAE response process has been instrumental in furthering the hospital’s ability to learn from past events, advance the safety culture, and establish leadership involvement in a non-punitive event process. Critical outcome measures that are tracked include total number of occurrences, near misses, events with severe/permanent harm, and total reportable events. This study uses a retrospective cohort design comparing outcomes for pre and post-intervention periods, 2013 and 2015 respectively, using data from the Medical Event Reporting System (MERS). Analysis performed using Chi-square testing.

Results: In 2013, there were 12,612 occurrences reported in MERS compared to 11,535 in 2015. In 2013, The Mount Sinai Hospital conducted 49 RCAs and in 2015 conducted 168 debriefings in 2015, leading to 68 RCAs (40 %). There was a significant decrease in the number of events reported with severe/permanent patient harm, from 90 to 18, which represents an 80% reduction (p<0.01). In addition, the number of near misses reported increased from 105 in 2013 to 217 in 2015, a 106% increase (p<0.01).

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Number of Occurrences</strong></td>
<td>12612</td>
<td>1153</td>
</tr>
<tr>
<td>Near Miss: planned or unplanned recovery</td>
<td>105</td>
<td>217*</td>
</tr>
<tr>
<td>Event w/ interventions or treatment, with temporary harm</td>
<td>1091</td>
<td>682*</td>
</tr>
<tr>
<td>Event w/severe permanent/permanent patient harm</td>
<td>90</td>
<td>18*</td>
</tr>
<tr>
<td><strong>RCA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Debriefs conducted^</td>
<td>n/a</td>
<td>168</td>
</tr>
<tr>
<td>Number of RCA conducted</td>
<td>49</td>
<td>68</td>
</tr>
</tbody>
</table>

* p<.01; ^ Process started 2/2014

Conclusion: An increase in near miss reporting with a corresponding decrease in events with temporary or severe harm illustrates how an SAE response process can further a hospital’s ability to create a safety culture. Organizational culture about reporting adverse events has shifted as investigations focus on systems and are not seen as punitive, as evidenced by the increase in near miss reporting. The huddle and debrief provide information and data for continuous learning and improvement. The new process allows for higher quality investigation completed in a more efficient and effective manner.
TOWARDS A NEVER EVENT – A QUALITY AND SAFETY JOURNEY INTO THROAT PACK INCIDENTS IN A SPECIALIST PAEDIATRIC HOSPITAL

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Objectives: Throat packs are frequently used in shared airway surgeries. Adverse events relating to their use can potentially cause catastrophic harm to the patient. Despite considerable patient safety measures and guidelines, critical incidents involving throat packs still occur. We conducted a retrospective audit on throat pack incidents in our institution. Our objectives were to determine the incidence, identify key contributory factors and review the effectiveness of current processes.

Methods: We conducted a retrospective review of critical incident reports related to throat packs used in surgeries from January 1999 to December 2015. Data was collected from anaesthesia charts and perioperative surgical records after IRB approval.

Results: There were 13 throat pack incidents reported over the 17-year period. Types of surgical disciplines include 9 plastics and reconstructive surgeries (of which 7 were cleft lip and/or palate), 1 cardiac, 2 ENT and 1 dental. All incidents were reported as not causing serious harm to the patients. Cleft lip and/or palate patients were most at risk due to the following factors: young patients with smaller airways requiring cutting of throat packs and a multi-step throat pack insertion process due to dental moulding. The contributory causes reported can be classified into:

1. Process failures: improper documentation, inconsistent throat pack count; and
2. Personnel factors: miscommunication, distraction of staff.

Root cause analyses were done for all throat pack incidents. Safety initiatives were introduced after each root cause analysis (RCA) to prevent recurrence of such incidents. These include:

1. System changes - Introduction of bright orange “THROAT PACK” stickers as visual reminders.
2. Improvement in documentation - Charting of throat packs in the anaesthetic and perioperative nursing charts; documentation on the operating theatre notice board.
3. Improvement in communication between nurses, surgeons and anaesthetists - Introduction of a sign out at the end of surgery where throat pack count was part of the check list.
4. Introduction of guidelines - Anaesthetists were advised to do a post surgery direct laryngoscopy to check for any throat pack in situ.

Despite these changes, we were still reporting throat pack incidents. A throat pack incident is a complex multi-step process and involves multiple personnel. We realized that using RCA to investigate these incidents only addressed the specific failure points of each case. In 2015, we decided to conduct a Failure Mode and Effects Analysis (FMEA) to identify all possible failure points. We worked with theatre nurses, surgeons, anaesthetists and the hospital’s risk management team to identify all potential weaknesses in our current system. Some of the weaknesses identified include:

1. Failure to account for remnants of cut throat packs
2. Lack of standardized accounting procedures
3. Knowledge deficit of the consequences of throat pack mismanagement

In response to the results of the FMEA, we have harmonized the count between the scrub nurses and the anaesthetic nurses.

Conclusion: The process of throat pack insertion and removal is a complex system. Despite changes to prevent the occurrence of a throat pack incident with each RCA, we continued to have throat pack incidents. Stopgap measures are inadequate. Through FMEA, we identified all potential weaknesses in our current system and are working towards improvement. It is our aim that throat packs should be a “never event” in our practice.

A PROACTIVELY APPROACH TO REDUCE SHARPS INJURIES: PROMOTING 3V SAFE SHARPS BEHAVIOR FOR OPERATING THEATRE

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Objectives: (1) To reduce the rate of sharps injuries by minimum 50%
(2) To enhance staff’s awareness and promote safety culture by changing unsafe work behavior.

Methods: A Plan - Do - Check - Act (PDCA) cycle was used to carry out the change.
(1) Plan - established the work group to identify risk factors for implementation of strategies; created posters and evidence-based slogans to increase encouragement.
(2) Do – developed in-service training sessions on safe handling of sharps to enhance staffs’ skill and to arouse their awareness on safe culture; launched “3V Safe Sharps Plan” (Verification of Neutral Zone, Visual Contact and Verbal Notification) strategies to integrate safer habit into daily practice
(3) Check - nominated operating room in-charge to monitor sharps handling by scrub persons; performed an observational hazards assessment by formulating a checklist to ensure safe work process and compliance; conducted spot checks for improvement; evaluated the programme with a survey and monitoring statistics on Injury on Duty (IOD).
(4) Act – reviewed the process and took appropriate actions for future improvement.

Results: The compliance rate of safety practice is 97.5%. A total 71 (95%) of 75 nursing staff and technical assistants participated in satisfaction survey. Over 90% staffs agreed that the program was effective to reduce sharps injuries. Until December 2015, sharps injury rate was remarkably reduced by 66% compared with the last year.

Conclusion: The program is successful in reducing incidents of sharps injuries. It encourages staff to follow safe practice and raise safety awareness on sharps handling through ‘3V’ safety practice. Safety culture is effectively built up and promulgated. In order to sustain the practice, monitoring and surveillance would be continued.

HEART REHABILITATION CAN IMPROVE THE EFFECTIVENESS OF MEDICAL CARE IN PATIENTS WITH CHRONIC HEART FAILURE

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Objectives: Exercise tolerance and cardiac output have a major impact in affecting the quality of daily lives of heart failure patients. Rehabilitation exercise programs can improve exercise tolerance, body oxygen utilization and the quality of daily living of heart failure patients.

Methods: A prospective study was conducted to evaluate the effect of cardiac rehabilitation in patient with heart failure. Patients with LVEF less than 50% were included in this study. We randomly assigned patient into control and interventional group. In interventional group, we arranged individualized heart rehabilitation program including exercise rehabilitation, diet education and management of daily activity for 3 months. Information including general data, laboratory data, the scale of life quality and maximal 6 minutes walking distance before and after intervention were recorded in all patients of this study.

Results: Patients receiving heart rehabilitation program have statistically significant improvement in cardio-pulmonary test (84.7 VS 87.7, P=0.01), peak oxygen utilization (18.2 VS 20.9, P=0.02), MET (5.46 VS 5.96, P<0.01) and maximal 6 minutes walking distance (420m VS 461m, P=0.03) by paired T test. In conclusion, patients receiving heart rehabilitation program can increase 14.2% of peak oxygen utilization, 37% of scale of life quality and 41 meters of maximal 6 minutes walking distance. Heart rehabilitation program also improved 90 days re-hospitalization rate to save the medical resource effectively and improve quality of medical care.

Conclusion: Our program of quality management in providing heart rehabilitation for patients with heart failure can increase 14.2% of peak oxygen utilization, 37% of scale of life quality and 41 meters of 6 minutes walking distance. After performing heart rehabilitation, we can save the medical resource and reduce the rate of re-admission within 90 days effectively through providing holistic medical care.
COMPLIANCE WITH THE SURGICAL SAFETY CHECKLIST: A PROSPECTIVE AUDIT
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Objectives: Introduction
Surgery forms an important treatment modality but is riddled with the potential for errors due to human factors, system failure or a combination of both. Complications are not uncommon and occur in 3% to 16% of all surgical procedures with permanent disability or mortality rates ranging between 0.4% - 0.8%. In 2007, the WHO implemented a Surgical Safety Checklist (SSC) which has been shown to improve surgical outcome, decrease complications and improve patient safety. But the checklist is beneficial only if the compliance and implementation is proper.

Aims and Objectives
Evaluate the effectiveness and quality of implementation of the checklist.

Methods: Methods
This was a prospective observational study which commenced after approval from the hospital IEC and registration with the Clinical trials registry of India. Implementation of a modified version of the WHO SSC during elective surgeries was observed passively by a trained research nurse. A random number table was used to select the OT to observe the implementation of the checklist. Of the three parts of the SSC, 11 items were studied. A convenience sample of 200 cases was studied. Effectiveness of the SSC was assessed by measuring the compliance with the checklist and the number of items prompted by the checklist resulting in change of action. For quality of implementation, we observed the level of interaction between the three team members involved in the implementation.

Results: Results
Effectiveness:
- Analysis showed 100% compliance with the Sign-in part of the checklist and in majority of the cases this part was initiated by the surgeons 234/237 (98.7%). Time-out was done only in 78.48% of the cases of which surgeons initiated it in 113/186 (60.75%) and anaesthetists in 73/186 (39.25%). Sign-out was done in 74.5% of the observed checklists and surgeons initiated it in 141/158 (89.24%) cases.
- 158/2582 (6.11%) items prompted by the checklist provoked a change in action proving the importance of using the checklist.

Quality:
- The interaction between all three representatives which denotes active participation between the team members was found only in 71 (29.9%) cases during the sign-in part, 152 (81.7%) during time-out and 100 (63.29%) during sign-out part.

Table I: Surgical Safety Checklist Implementation

<table>
<thead>
<tr>
<th>Parts of checklist</th>
<th>Compliance n (%)</th>
<th>Initiation n (%)</th>
<th>Interaction n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Surgeon</td>
<td>Anaesthetist</td>
<td>Nurse</td>
</tr>
<tr>
<td>Sign –in (n=237)</td>
<td>237(100)</td>
<td>234(98.73)</td>
<td>3(1.27)</td>
</tr>
<tr>
<td>Time –out (n=237)</td>
<td>186(78.48)</td>
<td>113(60.75)</td>
<td>73(39.25)</td>
</tr>
<tr>
<td>Sign-out (n=212)</td>
<td>158(74.52)</td>
<td>141(69.24)</td>
<td>15(9.50)</td>
</tr>
</tbody>
</table>

Checklist Items

<table>
<thead>
<tr>
<th>Number of times prompted by checklist (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sign –in Confirmation of patient and side of operation</td>
</tr>
<tr>
<td>Specific instruments for surgery availability</td>
</tr>
<tr>
<td>Confirmation of blood from blood bank</td>
</tr>
<tr>
<td>Preparation for position</td>
</tr>
<tr>
<td>Pulse oximeter functionality</td>
</tr>
<tr>
<td>Recognition and preparation of difficult airway</td>
</tr>
<tr>
<td><strong>Time-out</strong></td>
</tr>
<tr>
<td>------------------------------------</td>
</tr>
<tr>
<td>Verbal confirmation of patient and side of operation</td>
</tr>
<tr>
<td>Antibiotic prophylaxis</td>
</tr>
<tr>
<td>Display of essential imaging</td>
</tr>
<tr>
<td>Filling of pathology form</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sign-out</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Count of instruments, sponge and needles used during surgery</td>
<td>37 (17.45)</td>
</tr>
</tbody>
</table>

**Conclusion:**
- Though the checklist is an important tool for improving patient safety, its implementation is not always as recommended.
- To improve compliance and team involvement, it is essential to concentrate on educating all team members regarding the importance of SSC for patient safety.
- Equally important in implementation of the checklist is the support from hospital management and senior medical staff.
TRENDS IN CLINICALLY SIGNIFICANT PAIN PREVALENCE AMONG HOSPITALIZED CANCER PATIENTS AT AN ACADEMIC HOSPITAL IN TAIWAN: A RETROSPECTIVE COHORT STUDY
W.-Y. Wang, S.-T. Ho, C.-M. Chu, K.-Y. Wang

Objectives: This study aimed to characterize the trends in CSP among cancer patients and to examine the differences in the prevalence of CSP across repeated hospitalizations.

Methods: A hospital-based, retrospective cohort study was conducted at an academic hospital. Patient-reported pain intensity was assessed and recorded in a nursing information system. We examined the differences in the prevalence of worst pain intensity (WPI) and last evaluated pain intensity (LPI) of ≥ 4 or ≥ 7 points among cancer inpatients from the 1st to the 18th hospitalization. Linear mixed models were utilized to determine the significant difference in the WPI and LPI (≥ 4 or ≥ 7 points) at each hospitalization.

Results: We examined 88,133 pain scores from the 1st to the 18th hospitalization among cancer patients. The prevalence of the four CSP types showed a trend toward a reduction from the 1st to the 18th hospitalization. There was a robust reduction in the CSP prevalence from the 1st to the 5th hospitalization, except in the case of LPI ≥ 7 points. The prevalence of a WPI ≥ 4 points was significantly higher (0.240-fold increase) during the 1st hospitalization than during the 5th hospitalization. For the 2nd, 3rd and 4th hospitalizations, there was a significantly higher prevalence of a WPI ≥ 4 points compared with the 5th hospitalization. We also observed significant reductions in the prevalence of a WPI ≥ 7 points during the 1st to the 4th hospitalizations, an LPI ≥ 4 points during the 1st to the 3rd hospitalizations, and an LPI ≥ 7 points during the 1st to the 2nd hospitalization.

Conclusion: Although the prevalence of the four CSP types decreased gradually, it is impossible to state the causative factors on the basis of this observational and descriptive study. The next step will examine the factors that determine the CSP prevalence among cancer patients. However, based on these positive findings, we can provide feedback to nurses, physicians and pharmacists to empower them to be more committed to pain management.
INNOVATIVE SMART MANAGEMENT SYSTEM TO ENHANCE THE SAFETY OF PATHOLOGY SPECIMEN IN THE EXAM ROOMS
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¹Center for Quality Management, Chang Gung Memorial Hospital, Linkou, Taoyuan, Taiwan

Objectives: Any error occurring during the procedure from pathology specimen collection to report completion could compromise physician’s diagnosis and patient’s right. Wrong pathology report would lead to misdiagnosis and endanger patient safety. News about mislabeling biopsy specimens struck hard on healthcare as well as the hospitals. By learning from other’s lesson, we re-evaluated the procedure and established a surgical pathology specimen management system. To ensure the accuracy and safety of patient identification and to prevent the specimen labeling errors, a smart specimen management system was built with the use of barcode technology by real-time monitoring of specimen handling and tracking the completion timeliness of report.

Methods: A task force was formed, including the department of medical specialties, pathology, nursing, information technology, hospital management, committee of exam rooms and center for quality management. After risk assessment was performed, the inconsistency of specimen handling among exam rooms and lack of information technology system assisting the procedure were identified. The following are the interventions for improvement.
1. To standardize the specimen handling procedure-the policy and procedure of patient identification and verification for invasive procedures, which requires performing the procedure once a patient, completing patient identification and site mark, and executing “sign in-time out-sign out” before/after the procedure.
2. To add technology devices-each exam table equipped with a set of computer, monitor, barcode scanner, barcode printer and barcode reader to perform identification procedure.
3. To build a smart pathology specimen management system with the use of barcode technology-applying the information technology system to connect the request sheet with the specimen, a number automatically generated at the pathology department desk and the specimen identification procedure assisted with barcode technology.
4. To conduct training sessions-the department of regulation and information technology instructing the pathology specimen handling procedure, while exam rooms demonstrating it.
5. To audit the performance- pathology specimen collection checklist formed to audit the compliance of the procedure.

Results: In August of 2015, center for quality management audited 4 ICUs, 4 outpatient clinics, 8 wards and 16 exam rooms and the average compliance rate reached at 97.5%. Some of the failures are the lack of technology devices at the exam table and incomplete signature after delivering the specimen. The compliance rate measured up to the goal at 100% after follow-up audit. The total number of near-miss specimen mislabeling events reported is 0.

Conclusion: Interdisciplinary team works to reinforce the importance of pathology specimen management and improve the safety of environment as well as management mechanism. By means of creating an innovative smart care management system, we are able to control each steps of the procedure and ensure staff’s compliance with the standard procedure in order to maintain the quality and patient rights of pathology specimen collection, transfer and processing.
USE OF HFMEA IN THE IMPROVEMENT OF OPERATIONAL INTEGRITY OF INHALATIONAL NITRIC OXIDE SYSTEM FOR NEONATES

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Objectives: Inhalational nitric oxide (iNO) has been shown to regulate pulmonary blood flow, alleviate pulmonary hypertension, and relieve respiratory symptoms in neonates. This study aimed at investigating the effectiveness of implementing a project for improving the integrity and accuracy for respiratory therapists in operating the iNO system for neonates using HFMEA.

Methods: In response to one reported case of NO leakage at a tertiary referral hospital, a HFMEA-based improvement program for respiratory therapists was implemented from June to December 2015 adopting the following strategies: (1) Educational program to reinforce relevant knowledge after pretest for assessing personnel understanding of iNOS system; (2) Establishing standard operating procedure including relocation of equipment and daily monitoring of operation status; (3) Providing standard operation instructions for users including strict monitoring for NO concentration; (4) Regular audit for environment (i.e., monitoring of NO leakage) and personnel performance (i.e., compliance with ISBAR handoff checklist). Outcome parameters included the incidence of NO leakage, integrity and accuracy of iNO system operation, and hazard score.

Results: Totally 28 respiratory therapists participated in the program. Monitoring for NO leakage was not performed before program implementation, while compliance with monitoring every shift was 100% after implementation. Besides, the integrity of operation procedure for iNO system increased from 89.81% to 95% and the hazard score was reduced by 51.8% from 166 to 80.

Conclusion: The results of the present study demonstrated that implementation of an improvement program based on HFMEA could effectively improve the integrity of iNO system operation and reduce the risk of NO leakage, thereby reinforcing staff and patient safety as well as the quality of healthcare.
NUTRITION SCREENING COMPLIANCE – THE FIRST STEP FOR EARLY INTERVENTION OF MALNUTRITION IN A REHABILITATION HOSPITAL IN HONG KONG

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Objectives: Nutrition screening is beneficial for early intervention of malnutrition. This program aims to promote nutrition screening practice using a validated nutrition screening tool and to ensure the compliance of its implementation. This program aims to promote nutrition screening practice using a validated nutrition screening tool and to ensure the compliance of its implementation.

Methods: The Audit Commission (2001) stated around 40% adult in-patients are malnourished when admitted or during their stay in hospital. BAPEN’s Malnutrition Advisory Group launched the malnutrition universal screening tool (MUST) in 2003 to identify patients who are underweight and at risk of under-nutrition in hospitals. In Hong Kong, Hospital Authority Coordinating Committee (Dietetics) completed the validation of the MUST for the Hong Kong Chinese (HKC-MUST) in June 2007. The implementation of this screening tool cannot be automatically translated into efficient practice without leadership and advocate. A Nutrition Management Team was established in 2012 to ensure appropriate infrastructure, processes and resources are in place for good nutrition care. The team composes of doctor, nurses, dietitian and member of Quality Department. The HKC-MUST Malnutrition Screening Tool is adopted. A protocol driven Nutrition Management Care Plan was formulated based on the risk scores identified and is listed on the form to facilitate staff to follow and to ensure weekly nutritional risk assessment. This tool was applied to the most vulnerable patient groups included the geriatric patients and patients with respiratory and neurological disorders. Nurses conduct nutrition screening within 48 hours after patient’s admission and further reassessment and actions. High risk individuals (score \( \geq 2 \)) are referred to dietitian for further management. A validated tool is of little use if health professionals are unaware of its context. A cycle of trainings included hospital-wide briefing sessions and 4 workshops were held in 2012 to 2015 in order to enhance the knowledge and skills of nurses on nutrition assessment and management. Continuous monitoring, support and feedback by senior nurse and dietitian enabled the nurses’ behavior change in its implementation. A compliance audit by the end of 2015 was conducted to observe the compliance.

Results: 150 in-patient medical records for patient admitted from 1 Aug 2015 to 30 Oct 2015 were randomly selected for retrospective review. The overall compliance was 92%. 100% (N=150) had initial screening by using the HKC-MUST form with 95.3% (N=143) performed within 48 hours after admission. 90.5% (N=133) overall risk score of malnutrition was correctly calculated. 93.4% (N=114) re-screened weekly. Nursing care plan and appropriate allied health consultation was initiated when patient had low albumin level, refused diet, suboptimal appetite and swallowing problem even when the risk score was 0 in order to look after those patients who are not indicated as high risk by the screening tool.

Conclusion: The Nutrition Management Team provides the leadership and advocate for the screening practice and enables the development of training and audit cycle. Building nutrition screening into routine nursing assessment could enable early detection of nutritional risk in patients. Senior support, regular training and audit could enhance the compliance for long term implementation. The nutrition screening could be considered as important as other risk screening like fall and pressure ulcer risks as a quality indicator.
HOW TO SELECT ADEQUATE INTERVENTIONS TO IMPROVE OUTCOMES IN HEALTH CARE – THE CASE OF AORTIC VALVE DISEASE

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Objectives: Firstly, to present strategies for the systematic identification and selection of effective improvement interventions applied to the case of aortic valve disease. Secondly, to combine various methods of process and outcome assessment into one integrated approach for quality improvement.

Methods: We used a multimethodology to identify improvement interventions and to build a basis for dialogue between various disciplines in the delivery of care for aortic valve disease. The methods identified are selected based on the value-based health care (VBHC) concept, previous research and expert opinions. First, we performed a systematic benchmarking analysis of outcome measures using data from the Dutch Measurably Better (MB) registry. Second, data from the MB registry was further explored. This was complemented by an additional literature search. Third, we performed analyses on process and structure indicators, using a value chain approach as suggested by the VBHC concept. Fourth, we introduced a monitoring system for standard processes that take place in order to improve quality of care. For the selection of interventions, we conducted interviews and used an adjusted Delphi method with a multidisciplinary group of experts. We applied a self-developed ‘causal chain approach’ for weighing the expected impact of possible interventions and to order them, according to rank, into a list of options.

Results: Our study has resulted into a toolbox consisting of two main phases that can be used (a) to identify potential for improvement, and (b) to select effective interventions that are expected to lead to the desired improvement. The first identification phase includes the following methods: benchmark outcomes, data and literature exploration, process and structure indicator analysis, and monitoring of standard processes. The subsequent selection phase consisted of the identification of the causal chains and if applicable intermediate outcomes and the final selection of an intervention. We applied an adjusted Delphi method to reach consensus. The improvements identified to the case of aortic valve disease include: anticoagulation policy, increased attention to nutritional status of patients and determining frailty of patients before the treatment decision. The selected improvement interventions could be combined into a bundled intervention to reach improvement in outcome measures. Clear guidance on how to potentially obtain better outcomes has been achieved through the development of the toolbox, which complements the VBHC concept.

Conclusion: Identifying potential for improvement and selecting improvement interventions based on outcome registry data demands a multifaceted framework. The framework needs to integrate both process activities according to the VBHC concept’s value chain, including primary activities, as well as outcome measures through various quantitative analyses and qualitative approaches. Our toolbox could be useful for various outcome registries with the aim of improving outcomes.
THE ACTIVITIES FOR IMPROVING ACCURACY ON ISSUING CERTIFICATES
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Objectives: The number of issuing certificates on medical treatment is increasing with various extensions on public assistance and growing number of private insurance applicants other than national health insurance. Thereupon leading to a remarkable lengthening in standby time and decline in satisfaction of the applicants. Lack of guidelines acquaintance causes faults of commission and omission, resulting to unnecessary revisits of customers for correction. The process of supplementation for omitted required documents also frequently causes subsequent complaints. Therefore, we saw the need to make more systematic and specific management protocol to improve customer’s satisfaction.

Methods: We applied the method of Plan-Do-Check-Act (PDCA) for this project. In the first ‘Plan’ stage, we investigated the accuracy and measured the number of customers who waited for over 20 minutes for issuing certificates. As a result, we received a 1.8 % (69 out of 3,825) error rate and a 8.0%(77 out of 968) of exceeded time rate. Errors on certificates were observed mainly due to the lack of knowledge for certificate and inaccurate documentation by errors on database or misidentification of treatment information. We thought it was necessary to utilize a certificate guideline, to correct database accuracy, and to develop treatment verification information easily. It was equally found that much time was spent on client’s documents verification and correction of errors. Thus, we thought it was of importance to integrate applicant’s preparedness guidelines, in order to reduce the chances of issuing errors.

In the second ‘Do’ stage, our activities designed and performed with the goals of reducing both error rate and standby time. With regards of reducing errors, firstly, we developed certificate guidelines by putting together various legislations and offered both the paper and electronic versions for an initial participation. Secondly, we developed an easy lookup and copy and paste program for test results, to reduce previous errors by partial checkup. Thirdly, we corrected errors on database such as English name of department. Lastly, we developed a brief checkup guideline for clerk at the issuing counter that was readily accessible on line and easily verifiable for each applicant.

With regards of reducing standby time for each applicant, the following were developed; We first developed required documents checklist for applicants other than patients. This was followed by preparing the place for inpatients only so as to reduce complaints from those who misunderstood it by interruption. Also, we changed lunch break from two shifts with two persons to four shifts by each person. In addition, we provided one stop service for both the issuance of medical certificates and image CDs. Lastly, we posted required documents using mobile application and behind the seats of standing by applicants.

Results: In the third ‘Check’ stage, we found that the error rate was 1.21% and the exceeded time rate was 4.78 %. Our results were statistically significant (p<0.05) by using X2-test for pre and post measurements.

Conclusion: Certificates issuing counter is the last point for most of its customers. Most of whom are already tired waiting for their turn. Therefore, increase in standby time led to the filing of some complaints. Based on the study results, we were able to significantly reduce the number of filed in complaints from our applicants. The study also benefitted from a significant positive feedback on customer’s satisfaction. Further findings are needed for accuracy that will involve updating certificate guidelines and checklist for required documents with continuous monitoring for accuracy and standby time in future.
The Effectiveness of Taiwan’s Center Catheter Bundle Care Quality Promotion Program Implementation Results from 2013 to 2014

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Objectives: The surveillance data from Centers for Disease Control, Taiwan (Taiwan CDC) shows the incidence density of ICU-acquired central catheter-related bloodstream infections (CLABSI) in medical center (5.1‰) and regional hospital (3.6‰) per 1,000 person-days were both higher than 1.7‰ which announced by U.S. CDC’s NHSN in 2009. The aim of the study was to assess the effectiveness of promoting strategies for implementing center catheter bundle care quality promotion program.

Methods: In 2013, Taiwan CDC developed “center catheter bundle care quality promotion program” to systematically promote central catheter bundle care, in order to enhance the knowledge of medical staff, and reduce the rate of CLABSI.

Joint Commission of Taiwan (JCT) undertook the program to develop various promotional strategies for central catheter bundle care (contain elements of line placement and care of the line) by reference the international measures, such as U.S. CDC, AHRQ and Keystone ICU project.

In this program, JCT developed 20 hours e-learning courses, 2 instructional videos, 8 promotional products to continue facilitate and remind medical staff through a series of training materials. Moreover, JCT also invited experts from other countries to exchange the experiences from the workshop and on-site visits. Also nationwide workshop for medical students has been held to enhance their knowledge and ability in the practices of infection control.

Under this program, JCT established and implemented the operations of Hospital Center Catheter Bundle Care Quality Assessment. The number of participated hospitals has increased from 64 to 110 from 2013 to 2014. The on-site survey has been conducted for 2 to 3 times each year. Moreover, JCT also held result presentation as a platform for benchmarking and learning.

In addition, JCT also completed the guidelines of center catheter bundle care with the inputs from 7 demo-hospitals.

Results: The 133 intensive care units from 50 hospitals participated in this program, used a total of the central conduit 520,269 person-days from March 2013 to December 2014. The results of the implementation plan are as following.

Table 1. Estimated outcome from implementation in intensive care unit

<table>
<thead>
<tr>
<th>Item</th>
<th>Effectiveness</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection density</td>
<td>decrease 33.6%</td>
<td>3.99‰→2.65‰</td>
</tr>
<tr>
<td>Infected people</td>
<td>decrease 380 people / year</td>
<td>520,269x (3.99‰ - 2.65‰) ≈697</td>
</tr>
<tr>
<td>Estimated healthcare expenditures</td>
<td>decrease USD1.71 million per year</td>
<td>380x45,000 ≈$1.71 million</td>
</tr>
<tr>
<td>Days in hospital</td>
<td>decrease 6,080 days per year</td>
<td>380x16 ≈6,080 days</td>
</tr>
<tr>
<td>Estimated number of deaths</td>
<td>decrease 88 persons per year</td>
<td>380x23% ≈88 persons</td>
</tr>
</tbody>
</table>

Conclusion: This program established a successful model for introducing central catheter bundle care through collaboration of industry, government and academic societies. To implement the bundle care in clinical practices, it still needs the executive support, leadership, and full teamwork. We expect to extend this model to nationwide hospitals, to achieve our goals in patient safety, medical staff health and reduce catheter-related bloodstream infection.

IDENTIFYING IMPORTANT ERROR TRENDS THROUGH THE USE OF A STRUCTURED INCIDENT TAXONOMY
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Objectives: In the medical field, incident management is one of the key avenues to enhance patient safety. The objective of this study was to evaluate if the use of a structured taxonomy (classification system) developed for classifying errors can effectively identify important trends that are conducive to incident learning and prevention.

Methods: A taxonomy model for errors was developed based on the World Health Organization "Conceptual Framework for Patient Safety" and other taxonomy models from relevant industries. The radiotherapy treatment planning and delivery pathway was used for review in this study. Safety reports for this medical pathway submitted between January 2010 and June 2012 at a Canadian cancer centre were retrospectively classified using the taxonomy into the following categories: incident nature, incident type, impact, stage of origin, stage of discovery, contributing factors and preventative strategies. Two observers validated the classified data independently before trend analysis was performed.

Results: Of the 544 safety reports retrieved, 25% were classified as actual incidents (AIs), representing errors that reached the patient, and 75% as near misses (NMs), representing errors that were corrected before reaching the patient. After classifying the AIs and NMs using the newly developed taxonomy, several interesting trends were identified. First, AIs were found to be significantly different from NMs in relation to the type of incident (p<0.001) and stage of origin (p<0.001). This suggests that AIs reflect different failure modes and should be analyzed separately from NMs. Second, while staff factors were identified as the most prevalent contributing cause for both AIs and NMs, “rule-based errors and slips” were more common (>50% of all staff factors) than “knowledge-based errors” or “policy/protocol violation”. This finding suggests that preventative strategies such as automation or forcing function should be considered for these events as opposed to other strategies such as training or reinforcement. Third, >40% of NMs were found to occur in earlier stages of the medical pathway examined, suggesting that opportunity exists to improve control measures in these areas.

Conclusion: In this study, the use of a newly developed taxonomy revealed several important trends in incident and near miss data that have implications for improving the quality assurance program. Such methods in developing a taxonomy and analyzing safety reports should be used for future incidents to further enhance our understanding of incident management and prevention.
SET UP OF A CARDIOPULMONARY RESUSCITATION TEAM AND THE SURVIVAL OUTCOME IN A HONG KONG PRIVATE HOSPITAL

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Objectives: As a patient safety strategy to provide around the clock, rapid and systematic Cardiopulmonary Resuscitation (CPR) to all patients with cardiac/respiratory arrest, a multidisciplinary CPR Team was formed in 2007 in Union Hospital, the only private hospital with Emergency Department in Hong Kong. Led by Emergency physicians, the CPR team is mainly comprised of ICU and A&E staff. To maintain the knowledge and skill update of the team, continuous training programme on Advance Cardiac Life Support according to the standard of International Liaison Committee on Resuscitation is available to all team members. Hospital-wide and departmental drills are in place to ensure the team stays vigilant and prepared. The performance of clinical emergency is regularly evaluated by the CPR committee, which is responsible to oversee the hospital-wide strategy on CPR management and delineation of clinical guidelines. The aim of this study was to examine the effectiveness of CPR Team on survival outcome by 1) assessing the pre-and-post effect of CPR Team on CPR outcome in hospital and 2) identifying the determinants associated with survival outcome in hospital.

Methods: Records of all CPR events in Union Hospital between 2003 and 2014 were retrospectively reviewed. Patient demographics and CPR event data were used for analysis. Survival rate was defined as the return of spontaneous circulation immediately after CPR. The pre-and-post effect of formation of CPR team was evaluated in terms of survival rate using independent t-test. Multivariate analysis was used to determine factors associated with CPR outcomes. A two-sided p-value of 0.05 or less was considered statistically significant.

Results: There were 93 CPR events during the study period, of which 24.7% (n=23) of them occurred prior to the set up of the CPR Team. A majority of CPR cases were male (62.1%) with a median age of 70 (IQR: 54.8-82.3). The most common rhythm identified during arrest was Asystole (28.8%), followed by Ventricular Fibrillation/Ventricular Tachycardia (22.7%). The average survival rate before and after the team set up was 19.6% and 68.4% respectively. Enhancement of survival rate was found statistically significant (p=0.001). 61% of CPR occurred in daytime (08:00-20:00) and survival rate in daytime is statistically higher than that in nighttime (p=0.01). No significant association between other variables and survival outcome were found.

Conclusion: Remarkable improvement in immediate survival after the formation of CPR team was well demonstrated in this study. Rapid response from a multidisciplinary team was considered one of the controllable factors that could improve CPR outcome. Management’s commitment in empowering CPR team in terms of training and drills were of utmost importance to the success of CPR team implementation. Association between factors and survival outcome were also explored. Consistent with findings from other studies, time of arrest was associated with immediate CPR survival rate in hospital.
USE ME! I'M CLEAN! TO ACHIEVE 90% CLEANLINESS OF COMMODE CHAIRS IN WARD 64 WITHIN THE NEXT 9 MONTHS.

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Objectives: To achieve 90% cleanliness of commode chairs in ward 64 within the next 9 months.

Methods: The team brainstormed on ward problems. Decision matrix was used to select the project. Glo germ gel was used to simulate presence of germs in commodes. The gel is applied every morning and UV light is shone at night. Commodes that glow were considered unclean. Daily data was recorded. Initial data shows 0 to 20% cleanliness in commodes. The team set a target of 90% cleanliness within 9 months. Gantt chart was utilized as a timeline to monitor the progress of the project. Cause and effect diagram was mapped out to identify root causes. Root-cause analysis was conducted and multi-voting was done to select the vital few. The team brainstormed on solutions. Tree-diagram was plotted to analyze and select the best solutions considering relevant criteria. Prioritization matrix was used in deciding the final solutions. Plan, Do, Study, Act (PDSA) cycles were implemented. Data was collected and analyzed. Modifications were made accordingly. Three PDSAs were implemented: Conducting in-service education (March 16, 2015); Installing cleaning kits (May 11, 2015); Providing cleaning guide (June 8, 2015).

Results: Preliminary data shows a range of 0-20% meaning only 1 in 10 commodes is clean before implementation. After PDSA 1, there was no significant improvement in clean commode percentage (0-22.2%). Education alone wasn’t effective in increasing compliance. After PDSA 2, there was a significant improvement in percentage (44.4- 77.8%). After PDSA 3, there was a slight improvement of results (55.6-88.9%). Throughout the project, there was marked improvement in commode cleanliness from 10% to 72.3%. The project’s actual impact is the increased number of clean commodes reflecting increased compliance to cleaning process. It made cleaning process clearer by using the cleaning guide. It made materials accessible. Consequently, it improved infection control practices. Improved infection control translates into improved patient safety.

Conclusion: The project helped to significantly improve compliance to commode cleaning process. We needed a multipronged approach since improving compliance rate requires a combination of well-planned solutions to produce significant sustained results. Teamwork is needed to achieve positive results. Communication plays an integral part in eliciting change. Staff responded well when engaged in implementing change. The project was implemented hospital-wide in January 2016 in an effort to improve infection control practices. This proves that even the simplest change can create significant impact. Adhering to cleaning process upholds patient safety. Safe practices improve patient outcomes. Ensuring cleanliness curbs and prevents infections. Ultimately, this project has not only improved processes but also ensured patient safety through safe, efficient and personalized healthcare practices.
OBJECTIVES: Evidence suggests that technological innovations and reimbursement schemes of the National Health Insurance Service may have impacted the management of coronary artery disease. In the Republic of Korea (ROK), all Koreans are required to participate in the National Health Insurance (NHI) program. Thus, in addition to differences in the clinical characteristics of coronary artery disease in different individuals, the practice patterns for coronary revascularization in the ROK might differ from those in other countries due to reimbursement policies. In this study, we investigated changes in the practice patterns of PCI procedure through analysis of health insurance data.

METHODS: The Health Insurance Review and Assessment Service (HIRA) is the sole organization in South Korea responsible for the review, quality assessment, and the setting and management of benefit standards of the National Health Insurance System. Medical claims data reported to the HIRA between 2006 and 2010 were used to identify cases of coronary revascularization. We identified cases of coronary revascularization among patients admitted with cardiovascular disease (ICD10_I21-I25) who were ≥20 years old. PCI procedures were classified as MBS or DES based on the medical service does in the HIRA system; the types of DES were further classified as first, second, or third generation. The proportional differences in sex, age, stent type, and in-hospital mortality were investigated using the chi-square test. The rate ratios (RRs) of coronary revascularization were estimated with the Poisson regression model after adjusting for age and gender. The risk of in-hospital mortality was estimated with a generalized linear mixed-effects model for binomial data using a logit link function.

RESULTS: The proportion of patients who received DES continuously increased from 89.1% in 2006 to 93.0% in 2010 (Table). The coronary revascularization rate increased from 116.1 (95% confidence interval, 114.9–17.2) in 2006 to 131.0 (129.9–32.1) in 2010. Compared to the rate ratios in 2006, the rate ratios for percutaneous coronary intervention (PCI) and coronary artery bypass graft (CABG) surgery in 2010 were 1.16 (1.15–1.17) and 0.80 (0.76–0.84), respectively. Among patients who received PCI, the percentage with drug-eluting stents increased from 89.1% in 2006 to 93.0% in 2010. In-hospital mortality rates from PCI significantly increased during the study period (p=0.03), whereas those from CABG significantly decreased (p=0.01). The in-hospital mortality rates for PCI and CABG were higher in elderly and female patients and at the lowest-volume hospitals.

Table. Annual Number of Coronary Revascularization

<table>
<thead>
<tr>
<th></th>
<th>2006 (n=40653)</th>
<th>2007 (n=45025)</th>
<th>2008 (n=48963)</th>
<th>2009 (n=50662)</th>
<th>2010 (n=53589)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI Stent type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.000 1</td>
</tr>
<tr>
<td>Angioplasty</td>
<td>4197 (11.2)</td>
<td>4727 (11.4)</td>
<td>5480 (12.1)</td>
<td>5693 (12.0)</td>
<td>6101 (12.1)</td>
<td></td>
</tr>
<tr>
<td>BMS</td>
<td>2467 (6.6)</td>
<td>2349 (5.7)</td>
<td>2569 (5.7)</td>
<td>2059 (4.3)</td>
<td>1550 (3.1)</td>
<td></td>
</tr>
<tr>
<td>1st-gen DES</td>
<td>29145 (78.1)</td>
<td>26751 (64.4)</td>
<td>24797 (54.6)</td>
<td>16393 (34.6)</td>
<td>8268 (16.4)</td>
<td></td>
</tr>
<tr>
<td>2nd-gen DES</td>
<td>4101 (11.0)</td>
<td>11314 (27.2)</td>
<td>16756 (36.9)</td>
<td>27470 (57.9)</td>
<td>33827 (67.0)</td>
<td></td>
</tr>
<tr>
<td>3rd-gen DES</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4860 (9.6)</td>
<td></td>
</tr>
<tr>
<td>In-hospital mortality</td>
<td>544 (1.5)</td>
<td>615 (1.5)</td>
<td>707 (1.6)</td>
<td>748 (1.6)</td>
<td>900 (1.8)</td>
<td>&lt;0.000 1</td>
</tr>
<tr>
<td>CABG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-hospital mortality</td>
<td>3330 (8.2)</td>
<td>3460 (7.7)</td>
<td>3519 (7.2)</td>
<td>3257 (6.4)</td>
<td>3100 (5.8)</td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSION: The annual volume of coronary revascularization continuously increased between 2006 and 2010 in Korea, although this trend differed according to the entering new medical technology in health insurance scheme. This study shows that new medical technology has an impact on the financial increase. A high percentage of drug-eluting stent procedures and a high rate of in-hospital mortality at low-volume hospitals were noted.
USING THERAPEUTIC PLAY IN REDUCTION OF PRESCHOOLER’S PAIN UNDER THE VENIPUNCTURE: A STRATEGY FOR PAIN REDUCTION
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Objectives: The aim of this study is to evaluate the effectiveness of Therapeutic Play and interaction with children patients’ pain reaction when performing peripheral venipuncture in preschool children

Methods: 1、Planning stage(15th June ~ 25th June, 2015)
   The research population consisted of hospitalized preschool children during venipuncture. Reactions and behaviors of the research participants were registered, according to the behavioral parameters for expression of pain in children, in the form of "Child venipuncture evaluation form" and Faces Pain Scale (FPS)
   2、Execute Stage(5th July ~5th Aug, 2015)
   We prepared materials needed and told story for the child how to perform venipuncture technique, through an ITP session. To perform the ITP session we invited the child to show the procedure and play with us. They will win the gift during the play and the child then was again observed systematically during the procedure, and their pain reactions were recorded.
   Statistic analysis with the "Child venipuncture evaluation form" and Faces Pain Scale (FPS) was done.

Results: 33 patients who were venipunctured within a month study period were analyzed. The result showed that of the 30 patients (90.9%) has severe pain reaction, but after the ITP intervention the pain reaction severity decreased from 90.9% to 42.4%.

Conclusion: Using the ITP and interaction with child patients, story telling and explanation to diverse their attention to decrease their pain reaction and give them gift after venipuncture was effective reducing the child pain reaction severity decreased from 90.9% to 42.4%. This procedure also improves nurse patient relationship and provides a warm friendly environment for the patient and family.
USING ROOT CAUSE ANALYSIS AND TEAM RESOURCE MANAGEMENT TO PREVENT MALPRACTICE OF STEREOTACTIC RADIOSURGERY: A COMBINED MULTIMODALITY QUALITY-IMPROVING PROJECT

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Objectives: Stereotactic radiosurgery (SRS) is a specific type of radiotherapy, characterizing a large fraction size and requiring a multimodality team work. Thus, a high treatment precision is essential. Otherwise, medical mal-practice will occur, leading to unnecessary damages to tumor-adjacent normal tissues, such as the brain stem. Hence, the present quality-improving project intended to use root cause analysis (RCA) and team resource management (TRM) to prevent malpractice of stereotactic radiosurgery.

Methods: Condition analysis: In 2013, a malpractice was found in patient who received SRS. After the head frame was fixed onto the patient’s head by using the head nails, the radiation physicists found that optical guidance platform (OGP) cannot be well fitted onto the head frame of SRS. This mismatch stopped the SRS procedure. Alternatively, on-board cone-beam CT was used for treatment localization, which might slightly affects treatment precision. Hence, by using healthcare failure mode and effects analysis (HFMEA), we found this malpractice had a risk score of 4. Thus, we used RCA and then TRM methods to further define and prevent this malpractice.

Quality-improving methods:

1. First, we used RCA to identify the root cause – using four long head nails to fix the SRS head frame in a patient who had a relative large head circumference.
2. Second, we hold a multimodality team – including radiation oncologist, neurologic surgeon, medical physicist, radiologist, and oncologic nurses – to apply TRM. Multi-modality checklists were used after discussion of the combined meeting.
3. Third, blue dye was applying on the head nails for visualized preventing misuse.
4. All checklists and established TRM teaching profile were used for further education regularly.
5. We also used questionnaire to survey the whole quality-improving procedures.

Results: After our improving methods, 25 patients were treated with SRS in further 2 years. No more such a malpractice was identified. A perfect preventing rate of 100% was noted. In addition, an overall satisfactory score of 88.4 among our team members was recorded.

Conclusion: Using RCA to investigate the underlying etiology and then using TRM to adopt simple countermeasures are useful in preventing medical malpractice.
METHODOLOGICAL QUALITY OF SURGICAL MORTALITY STUDIES USING LARGE HOSPITAL DATABASES: A SYSTEMATIC REVIEW

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Objectives: Nationwide hospital data are increasingly used to investigate surgical outcomes. However, poor data granularity and coding inaccuracies may lead to flawed findings. We aimed at assessing the methodology of surgical mortality studies to control for potential confounders.

Methods: We conducted a systematic review in accordance with the PRISMA statement in six major journals (NEJM, Lancet, BMJ, JAMA, Medical Care, Annals of Surgery) until 31 December 2014. Two reviewers independently reviewed citations. Using a pre-designed data collection form, we extracted information about study aim and design, data source, selected population, outcome definition, patient and hospital adjustment, statistics and sensitivity analyses. The methodological quality of studies was assessed based on 5 criteria and explored over time.

Results: Among 89 included studies from 1987 to 2014, 54 explored surgical mortality determinants, 13 compared surgical procedures effectiveness, 13 evaluated the impact of healthcare policy and 9 described outcome trend for specific procedures. A total of 89% (n=79) of studies did not describe population selection criteria at patient and hospital level, 64% (n = 57) did not consider secular trends, 52% (n = 46) neglected hospital clustering or characteristics, 21% (n = 19) did not perform sensitivity analyses and 4% did not adjust outcomes for patients risk (n=4). The mean numbers of quality criteria increased significantly from 2.3 (1.0 SD) until 1999, to 2.5 (1.0 SD) between 2000 and 2009 and 3.1 (0.9 SD) after 2010 (p=0.002).

Conclusion: Although methodological quality of studies improves over time, confounders control could be improved through an appropriate study design, a homogeneous population, the consideration of hospital factors and secular trends influencing surgical mortality, and systematic conduction of sensitivity analyses.
THE IMPLEMENTATION OF A TRANSFUSION BUNDLE SIGNIFICANTLY REDUCES THE NUMBER OF INAPPROPRIATE RED BLOOD CELL TRANSFUSIONS IN AN INTENSIVE CARE SETTING.
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Objectives: Restrictive red blood cell (RBC) transfusion has been widely implemented in transfusion guidelines. However compliance to these guidelines is poor. Therefore, we developed a care bundle for the transfusion of RBCs in the intensive care (ICU). We investigated the effect of application of the transfusion bundle on transfusion practice, hypothesizing that the implementation of the transfusion bundle would lead to a reduction of inappropriate RBC transfusions.

Methods: We conducted a before and after study between January to December 2014 in a medical-surgical ICU of a university hospital in Amsterdam, the Netherlands. The primary outcome was the percentage of appropriate transfusions, which were in accordance with the patients’ individual pre-set Hb threshold.

Results: The mean pre-transfusion Hb level was 7.3 g/dL (SD=1.15) during the baseline period and decreased to 7.1 g/dL (SD=1.04) after introducing the transfusion bundle, 95% CI: 0.009 to 0.308, p-value = 0.04. The number of appropriate transfusions significantly increased from 75% (328/439) during the baseline period to 85% (238/280) during implementation, difference 10%, 95% CI: -0.164 to -0.0416, p-value 0.001. The number of appropriate transfusion further increased to 88% (325/370) post-implementation. The logistic regression analysis shows that the chance to find an appropriate transfusion is approximately two times bigger after the implementation of the transfusion bundle.

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<tr>
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<th>OR (95% CI)</th>
<th>p value</th>
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<tr>
<td>Baseline – interventions: bundle</td>
<td>2.05 (1.47 to 2.86)</td>
<td>&lt;0.001</td>
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<tr>
<td>Pre transfusion Hb</td>
<td>0.26 (0.20 to 0.34)</td>
<td>&lt;0.001</td>
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Conclusion: Introduction of a transfusion bundle results in significant reduction of the number of inappropriate RBCs transfusions in the medical-surgical ICU. Our results suggest that introduction of transfusion care bundles may help to improve compliance to transfusion guidelines in daily practice.

THE NURSES' DECISION MAKING IN PROTOCOL BASED CARE FRAMEWORK
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Objectives: Protocol based care (PBC) transcends traditional approaches to reduce the variability of clinical practice by bringing to the forefront the need for applying the use of reflection to the achievement of a fair balance between standardisation and individualisation in the provision of care. To effectively introduce PBC, it is key to understand how nurses make decisions within this paradigm. This study contributes to this general aim by proposing a theoretical framework on nurses’ decision making in PBC that allows for future robust investigations of the phenomenon.

Methods: The framework was developed on the basis of existing (1) general theories on clinical decision making; and (2) empirical literature on nurse’s decision making in standardisation of care. The latter was identified through bibliographic searches in CINAHL, PUBMED, Web of Science and PsycINFO. For the analysis and integration of theoretical and empirical knowledge, Hage’s (1972) recommendations for the development of conceptual frameworks were followed. Thus, the process of nurses’ decision making in PBC, as well as the elements and interrelation between elements involved in this process, were identified.

Results: The process of nurses’ decision making in PBC was defined as a flexible process consisting of four phases: 1) gathering information about physical, emotional and social situation of the patient and the context; 2) interpretation of information; 3) assessment of the cost-benefit of alternative actions and; 4) selection of a course of action regarding the application of standardisation tools. Having into account the original definition of PBC, the exercise of balancing standardisation and individualised care was established as a core element throughout the entire process. This core element was identified as closely influenced by seven further elements: intuition, reason, perception of knowing the patient, risk perception, perception of decision-making power, lack of time and organisational culture. The first two elements, intuition and reason, competed for prominence attending to contextual factors such as certainty regarding the consequences of the decisions, information available and time for decision making. Further contextual factors circumscribing nurses’ decision making in PBC are: clinical experience, past experiences, awareness of the importance of application the standardised care approaches and the Organisation. The core elements can affect positively or negatively in this process.

Conclusion: The present theoretical framework on nurses’ decision making in PBC provides guidance for investigating this elusive phenomenon. Understanding nurses’ decision making in PBC is key to designing implementation programmes taking into account the core elements which influence this process, and thus, to effectively introducing PBC and in turn reducing variability in clinical practice. This framework may also be useful in training nursing students and professionals in making balanced decisions regarding the application of standardised care tools.

THE ISSUE OF USING CLINICAL PRACTICE GUIDELINES AS EVIDENCE IN MEDICAL MALPRACTICE LAWSUITS IN JAPAN

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Objectives: Clinical practice guidelines (CPG) for numerous diseases have been adopted as a tool to assess evidence of medical malpractice in Japan's judicial system, particularly in civil lawsuit cases. However, the initial purpose of the CPGs was to make patients fully aware of the currently available treatments in order to support their decision-making autonomy, a trend that has become prevalent worldwide. In spite of the original intention of the CPG authors, it is becoming more common for the CPGs to be used to support evidence of negligence or tort committed by the defendants in medical malpractice lawsuits. The main purposes of this study were to summarize the precedent cases associated with the CPGs, and to address how the CPGs are used to generate decisions in medical malpractice lawsuits.

Methods: We assessed the public records of civil lawsuits using a leading online case retrieval system available in Japan (1). We searched only the first trial of civil actions using “clinical practice guidelines” as a key word. We excluded the following cases: appeal trials if the both the first and appeal trials adopted the same CPGs; lawsuits related to dentistry; industrial accident insurance or traffic accident lawsuits; and claims for insurance or pharmaceutical companies.

Results: Out of the 71 search result cases, 40 first trials and one appeal trial were included as of February 9, 2016. Among the 40 first trials, CPGs were quoted in 33 trials, four of which quoted CPGs on the disease under primary treatment in cases of co-morbidity or complications, such as sepsis or immunosuppressive reactions. Including overlaps, the CPGs were cited most frequently in cases of hepatocellular carcinoma (n=8), followed by acute pancreatitis (n=5), and sepsis and breast cancer (n=4). CPGs were used to form a court judgment on medical malpractice in 29 cases, and were merely quoted to provide a definition or introduction of a specific disease in three cases.

Conclusion: According to Japanese Supreme Court judgments, the medical treatment standards for physicians should be judged based on whether the CPGs present the following three factors: an indication of the physician’s specialty; disease-appropriate characteristics of the medical setting; and disease-appropriate characteristics of the treatment location, such as local medical environment. We found that research results presented through grants from the Ministry of Health, Labor and Welfare of Japan are highly regarded by Japanese courts when they interpret the contents of CPGs. CPGs, which are published by various groups of medical professionals and institutions, are in fact not established standards and are a product of ongoing efforts. Thus, they should be used with caution and not regarded as a resource for fully established treatments for a particular disease. Even among the evidence-based CPGs authorized by a notable academic association, very few have been recognized as established guidelines at the time of their publication and disseminated widely in the medical community. Therefore, it is crucial that future CPGs note that these guidelines are recommended for future use, and that they should be used as a reference for the future direction of certain treatment methods for the disease. Any new, important recommendations on medical practices that are already recognized by the relevant medical association need to be evaluated externally before the CPG is published. Dissemination of new information as well as promotion of CPG user education are important.

References: (1)Westlaw Japan www.westlawjapan.com
A RISK FACTOR ANALYSIS OF FALL INJURY AMONG INPATIENTS IN A SOUTHERN LOCAL COMMUNITY HOSPITAL

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Objectives: Patients may result in different severity of injuries due to fall. It may cause reduced activity or the life-threatening. The cases collected from the regional hospital comprehensive wards of this study had the highest incidence of falls among all accidents. In addition to causing psychological impact, falls may make a patient the more impact on the physiology. As a result of the fall events are caused by the interaction of many factors, this study aimed at investigate the characteristics of patient of falls at comprehensive wards and established the relevant factors of falls of patient harm.

Methods: Using abnormal event files to make retrospective collections, it was from January 1, 2013 to November 30, 2014 incident patient falls at comprehensive wards of a hospital in a southern local community hospital. The statistical methods used are descriptive statistics, chi-square test, and logistic regression statistical analysis.

Results: The statistical results are:(1) Descriptive statistics of fall event: Age seventy-one and older, unsteady gait, during hospitalization having family or caregivers accompany, night shift, unused aids, fall place beside the bed, and hospital stay one to three days have the larger rate of fall occurred; (2) The chi-square test of injurious falls: For injurious falls, the related factors such as vertigo, self-care ability for inpatient were statistically significant risk factors (P<0.05); (3) Logistic regression: The vertigo factor and the factor of injurious falls are significantly negative correlation (P=0.044, OR=0.185), and the odds ratio of vertigo patients of injurious falls is 0.185 times of no vertigo. The self-care ability factor and the factor of injurious falls are significantly positive correlation (P=0.044, OR=13.25), and the odds ratio of partially dependent patients of injurious falls is 13.25 times of the self-care of themselves.

Conclusion: The results of this study, dizziness and self-care skills are related with injurious falls, can provide some references as clinical nurses to assess patients at high risk of falls and to down the cases of injurious falls. To avoid posture change causing dizziness, for such patients we suggest to provide urination and defecation aids and activities auxiliary tool, and to give patient health education adopting progressively off the bed.
A PROGRAM TO IMPROVE THE ACCURACY OF PEDIATRIC NURSES FOR THE BARCODE MEDICATION ADMINISTRATION SYSTEM

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Objectives: Fully implementing the barcode medication administration system (BCMA) has been shown to help improve medication safety. We have promoted the barcode medication administration system in our hospital since May 2012. However, the rate of implementation was just 61.5% from April 2 to 8, 2013. The purpose of this project was to improve accuracy, prevent medication errors, generate online records of medication administration, and increase the rate of implementation from 61.5% to 100%.

Methods: This project employed both qualitative interview and questionnaire survey. We identified the major obstacles to fully implementing the barcode system as: (1) nurses were not accustomed to BCMA system; (2) nurses were familiar with their use of nursing Kardex; (3) lacking of educational training; (4) e-nursing carts are heavy and difficult to maneuver; (5) scanning difficulties with barcodes; (6) Having a time-consuming process while switching network interfaces; (7) poor internet connection; (8) infusion configuration flow does not conform; (9) lack of barcode medication administration of the audited.

Results: The rate of implementation of the barcode medication administration system increased from 61.5% to 100%. During the project implementation, medication administration error rate dropped from 0.24% to 0.04%, 0% administration error event from November 1 to 31 December, 2013.

Conclusion: Fully implementing the barcode medication administration system (BCMA) has been shown to help improve medication safety. This project significantly increased the use of the barcode medication administration system by our nursing staff. The procedures used in this project may be referenced by administrators at other hospitals with low rates of barcode medication administration system usage.

References:
Objectives: In this research, we put the major focus on two key elements of the high reliability organization theory (HROT), ‘management’ and ‘safety culture’, to draw important insights on ‘how’ the underlying influence of medical staff’s perception of management affects the safety culture of healthcare organizations by employing a mediation analysis approach. As the variable that measures safety culture, safety climate is selected for its ease and effectiveness in measuring safety culture. The key objective of the research is not only to check the effect of Perception of management but also to see how Perception of management influences Safety Climate.

Methods: This study was conducted at Taichung Veterans General Hospital in Taichung City, Taiwan. The dataset is based on the participants of the internal survey in 2013. The demographic information of the respondents in the dataset is summarized in Table 1. The hospital internal survey used in our study is the safety attitude questionnaire (SAQ) by Sexton et al. (2006). For this study, a mediation analysis called the causal steps approach popularized by Baron and Kenny (1986) was applied to our research model. To incorporate our model which has multiple mediators, the method proposed by MacKinnon (2010), which revised the original procedure of Baron and Kenny (1986), was employed as a four-step procedure.

Results: Finally, the experimental results can be said that the mediator variables fully mediate the causal relationship from Perception of management to Safety Climate. And if the effect from Perception of management to Safety Climate is reduced but significant, it indicates that the mediator variables partially mediate the causal relationship from Perception of management to Safety Climate. Therefore, it has been shown that Teamwork Climate, Working Condition, and Job Satisfaction fully mediate the effect of Perception of management on Safety Climate, and that explains how Perception of management influences Safety Climate. The degree of how much the medical staff trust the management influences Safety Climate of a hospital through other dimensions, not directly, which means the effect is underlying and not easy to see. But the impact on the safety climate of a hospital is critical (Total effect of 0.898).

Conclusion: The following managerial implications might be suggested: In a medium term, since the effect of Perception of management is fully mediated by Teamwork Climate, Working Condition, and Job Satisfaction, the management must try to earn more trust from the medical staff by showing strong will and then by implementing actual follow-up actions to improve Teamwork Climate, Working Condition, and Job Satisfaction in everyday work. In a long term, hospital management need to invest more efforts in creating a management system that can promote two-way trust between the management and the staff, for example, a system where the staff can trust the management in terms of reporting safety issues and the management can trust what they get from the staff and use it for future improvement. It's clear that Teamwork Climate is the most critical dimension which directly impacts Safety Climate. Therefore, hospitals may start their efforts of Safety Climate improvement from working on Teamwork Climate in a short term.
ISQUA16-1710

SAFER TEAMS IN THE PEDIATRIC OR? – A 5 YEAR EVALUATION OF THE EFFECTS OF IMPLEMENTING CREW RESOURCE MANAGEMENT ON TECHNICAL SKILLS, NON-TECHNICAL SKILLS AND SAFETY CULTURE
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Objectives: Pediatric surgery is a complex, multidisciplinary activity. There is growing evidence that combining team training and systems improvements in the form of standardised operating procedures can promote safer care, but many studies include small populations and with limited follow-up. The objective of this study was to evaluate effects over time of implementing a safety program following Crew Resource Management principles in a pediatric operating unit on both non-technical and technical skills as well as safety culture.

Methods: This prospective mixed methods case study reports on multiple level effects over time of implementing a combined team training and system improvement effort based on Crew Resource Management principles. The study setting was the pediatric surgery department at Astrid Lindgren Children's Hospital, a unit of the Karolinska University Hospital, is a large academic pediatric surgery center providing approximately 25% of pediatric hospital care in Sweden. Reactions were captured through course evaluations and learning through interviews. Adherence to the designed work practices including the use of safety tools such as WHO checklist, formal briefings standardized hand-off’s, etc. was monitored and the impact on perioperative teamwork was evaluated by repeated observations using structured observation protocols (MedPACT). Safety culture was measured using the S-HSOPS. We also studied outcomes from a representative, common surgical procedure, laparoscopic appendectomy, by structured review of medical records from 2008-2011. In addition to in-patient record reviews, data were obtained (2008-2013) on patients’ ED visits, unplanned readmissions and returns to the OR.

Results: Nontechnical skills and the use of safety tools throughout the surgical clinical areas, as well as medical procedures for appendectomy patients all improved significantly over time. Significant safety culture improvements were found in teamwork across and within units, supervisors’ expectations and actions, non-punitve response to adverse events and to the over-all safety perception. Unplanned readmissions following appendectomy declined significantly.

Conclusion: Implementation of Crew Resource Management and associated safety tools (checklists, standardized procedures and handoffs, etc.) improved both technical and not-technical skills, adherence to new work practices, outcomes and safety culture.
ASSOCIATION BETWEEN PHYSICAL THERAPISTS’ YEARS OF WORK EXPERIENCE AND INCIDENCE AND INCIDENT LEVEL OF PATIENT FALLS IN JAPAN

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Objectives: The objective of this study was to analyze the association between physical therapists’ years of work experience and the incidence and incident level of patient falls in the physiotherapy department of a general hospital.

Methods: We retrospectively analyzed the data regarding 34 of 70 patient fall incidents that occurred between September 2006 and June 2015 in the physiotherapy department of Honjo General Hospital in Japan. We obtained data regarding physical therapists’ years of work experience and the incidence and incident level of falls. Incident levels were determined using the incident level classification system established in a safety management council of national university hospitals in Japan. This classification system assigns each incident into one of eight grades. Summary of the classification system is as follows: Level 0 is “a fall occurred but did not involve a patient.” Level 1 is “no harm to the patient.” Level 2 is “treatment was unnecessary.” Level 3a is “simple treatment was required.” Level 3b is “extensive treatment was required.” Level 4a is “caused sequelae, but dysfunction did not occur.” Level 4b is “sequelae and dysfunction occurred.” Level 5 is “death.” We also studied the number of falls by years of work experience and incident level. The association between years of work experience or number of falls and incident level of falls was tested using Spearman's rank-correlation coefficient. The level of significance was set at 5%. This study was conducted with approval from the Institutional Ethics Review Board of Honjo General Hospital.

Results: Physical therapists with less than 1 year of work experience were involved in six fall incidents (17.6%). Physical therapists with less than 4 years of work experience were involved in 18 fall incidents, accounting for over half (52.9%) of all fall incidents. There was a strong negative correlation between years of work experience and the number of falls (rs = −0.89, p = 0.001). There were 20, 13, and 1 falls at incident levels 1, 2, and 3b, respectively. There was no significant correlation between incident levels and years of work experience (rs = −0.03, p = 0.84).

Conclusion: Patients undergoing physical therapy often have motor function that is reduced by various factors, such as sensory impairments, pain, muscle weakness, and/or reductions in range of motion. Therefore, many patients are at high risk of falls due to patient-related factors. In addition, there are also physical therapist-related factors that affect the risk of falls. Length of work experience is one such factor. In general, inexperienced physical therapists are considered to be at higher risk of being involved in patient falls, which was confirmed by our study. However, although the number of falls was higher among physical therapists with less work experience, our results suggest there is a risk for falls even among physical therapists with many years of work experience. In this study, there were many low incident level cases and the results indicate no correlation between incident levels of falls and years of work experience. Limitations of our study include no firm definition of a fall. However, the general definition of a fall is understood by physical therapists. Even if the incident level is low, we believe that in most cases a report of the fall is submitted. This is supported by the fact that the incident levels in the present study were low. We assumed the tendency to report falls is independent of the physical therapist’s years of work experience.
THE USE OF HEALTHCARE FAILURE MODE AND EFFECT ANALYSIS (HFMEA) IN THE PREVENTION OF MEDICATION ERRORS
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Objectives: The issue of patient safety in the use of medications has always been of great importance to the public. Negligent use of medical drugs could lead to a series of mistreatment. From the perception of fortune or to having adverse effects on the patient, it may therefore result in severe injury and additional subsequent medical costs to the patients. We hope that by carrying out the healthcare failure mode and effect analysis (HFMEA), it can prevent errors in dispensing medication. By establishing effective preventative measures and revising current operational processes, it will reduce incidences of medication errors and improve a patient’s medication safety.

Methods: By applying the healthcare failure mode and effect analysis (HFMEA) on data collected between July 1, 2013 and June 30, 2014, of abnormal medication dispensing events from the clinic, we identified the main cause of failure in the process. Through further analysis of the main cause of failure, we classified the data on its severity and incidence based on a risk index score. Followed by the use of decision tree analysis, we use this to determine the importance of corrective action plan used and giving the highest priority to risk index scores that are $\geq 8$. Via the process of brainstorming, group members propose the appropriate corrective actions to address the issue. After the implementation of the corrective action plan used, continual follow up of abnormal medication dispensing events from with the clinic needs to be pursued.

Results: Through the use of the healthcare failure mode and effect analysis (HFMEA), implementing the action plans for improvement included modification to drug names which are similar and its computer related settings, implementing a categorization process of medication bags, separating easily confusable drugs with their own storage space, enhance drug identification, and to educate and provide training for new pharmacist trainees. Data recorded from July 1, 2014 to December 31, 2014, no longer recorded any abnormal medication dispensing events from the clinic with the continual follow up of the successive effect.

Conclusion: The Department of Pharmacy utilizes the healthcare failure mode and effect analysis (HFMEA) to carry out the prevention of errors in dispensing medication for process improvement. To establish the specifications and associated processes for the prevention of errors in dispensing medication, although the process being time-consuming, can provide a comprehensive review of the process systems and also effectively predict and prevent the probability of the dispensing errors from occurring in order to ensure the patient’s safety.
USE QUANTITATIVE INDICATORS TO IMPROVE THE TEACHING QUALITY OF TEACHING HOSPITALS PERFORM “2-YEARS MEDICAL STAFFS TRAINING PROGRAM” IN TAIWAN
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Objectives: The “2-years medical staff training program” was planned by the Ministry of Health and Welfare (MOHW) to connect the clinical training between school education and post-graduation in Taiwan. This program provided subsidies to each teaching hospital to perform the training programs for post-graduation medical staffs. The MOHW has entrusted the Joint Commission of Taiwan (JCT) to assess the performance of “2-years medical staffs training program” since 2007. Therefore, we attempted to set quantitative indicators to monitor the performance of teaching hospitals’ training programs and guide its teaching quality been improved since 2011.

Methods: In order to ensure the teaching quality of trainees, we established a committee to design the objectives and formulas of quantitative indicators. The members of committee have been invited from medical professional groups and specialists. There were total 10 quantitative indicators been classified into four perspectives based on the "Balanced Score Card", including: 1.Customer: C1- Trainee's questionnaire, C2-Preceptor's questionnaire; 2.Internal processes: I1-The ratio of new trainees accomplished the pre-assessment, I2-The ratio of trainees accomplished post-assessment of every training phase, I3-The ratio of trainees accomplished the assessment in the end of training programs, I4-The ratio of preceptors be assessed by multiple assessment; 3.Learning and growth: L1-The ratio of trainees performed interprofessional education during training; L2-The ratio of hospitals performed the joint training programs. 4.Financial: F1-The ratio of preceptors obtained education grants from the subsidies; F2-The ratio of hospitals invested in teaching activities and equipment from the subsidies.

The teaching hospitals performed training programs supported by the MOHW should report the actual values of each quantitative indicator in the program management system every-year and the results will be feedback to them. We selected part of quantitative indicators (I1, I2, I3 and I4) to analyze the long-term trend of the performance of training programs, and compared by the different level of teaching hospitals.

Results: There were 137 teaching hospitals reported the values of quantitative indicators until 2015, including 21 medical centers, 87 regional hospitals and 29 district hospitals. The results showed that the values of each quantitative indicator were continuous increased during the period from 2011 to 2015. The increase rate of each indicator including I1, I2, I3 and I4 were 7.66%, 2.73%, 5.78% and 25.74% respectively. The increase rate of district hospital group has significant development in indicator I1(16.95%), I3(50.99%) and I4(45.28%). Among these indicators, I4 has the highest ratio, especially in the group of medical center. The value of indicator I4 of medical center group was 100%, the same results were appeared in indicator I3 in 2014. The highest ratio might be related to these teaching hospitals’ resources and manpower.

Conclusion: The values of quantitative indicators reported from teaching hospital are a continuous increase trend until 2015. In addition to improve the teaching quality of trainees, the results demonstrate that teaching hospitals are been focused progressively in the development of multiple assessments of preceptor. The present study indicates that quantitative indicators could monitor the teaching performance and guide teaching hospital to improve the teaching quality of training programs continuously.
OBJECTIVES: Taiwan implemented the National Health Insurance (NHI) in 1995. This policy improved medical accessibility for the public, however, this policy also seems to lead to an increase in medical abuse. Easy access to medical services, results in the medical services having increasingly high requirements. Therefore, unreasonable demands for medical services lead to the physician-patient relationship becoming strained. Violence in hospitals become frequent. Violence in hospitals are not only harmful for physicians, but also interferes with patient safety. Emergency department is a high risk place. Because of its 24 hour operation, it has a higher incidence rate than most other places in the hospital. Higher incidence rates will affect the quality of care, but also makes it more difficult to recruit nurses. The average incidence in August to December 2014 was 0.078%, even though the number of emergency visits decreased. The main objectives of this study are the following:
1. Analyze the violence cases to understand the frequency and type from a hospital that occurred over the past year.
2. This study combines external information, such as meteorological data, emergency cases visit and other factors that may affect the events through data analysis to identify the factors of violence.
3. Using TRM to organize a team to integrate resources and develop violence prevention strategies.

METHODS: The cases from a medical center in Taipei city were collected from August 2014 to November 2015. All the cases were compared with external data for understanding the reasons of violence. The external data includes meteorological data, outpatients visit etc. Foundational statistics is used to analysis the data. The team members include physicians, nurses, security guards, social workers, lawyers and pastors. Through data analysis, brainstorming and studying past experiences, the team developed strategies for violence prevention. We also use questionnaires to understand the awareness of strategies effectiveness by emergency staff.

RESULTS: We adopted 9 strategies include: environmental improvement, increase securities, education for nurses and physicians, process improvement, technique import (portable alarm, face recognition), etc. Before using these strategies, the emergency department has 59 cases in August to December 2014. About 49.6% of cases occur in the emergency. Per month has 11.8 cases occur in the emergency. From the cases, we found that midnight to early morning, winter and Wednesday was the peak times.
More than 78% perpetrators were patients. On the follow-up processing, about 13.41% cases were prosecuted. When the temperature were 10℃-15℃, the incident was 112%. The number of incidences decreased with increasing temperature. When the rainfall over 40mm, the incident rate was 75%. Therefore, we have to pay attention to changes in the weather. This study also compare with outpatient visits. There was positive correlation between violence cases and outpatient visit. After adopting prevention strategies, the Emergency Room had 101 cases in 2015. Per month had 9.18. It decreased 22.2%. Physical violence was 22 cases. Compare with 2014, it decreased 31%.
The questionnaire given to the Emergency Room staff, it show 57.14% staff strongly agree with violence decrease after import TRM. There are 66.07% strongly agree with hospital importance to this issue.

CONCLUSION: Setting up an early alarm system, entry access control, leadership, enough manpower etc. were very important. We also implemented weather prediction system. After strategies were implemented, we found the violence cases have significantly been reduced.
Promote Patient Engagement and Communication Between Clinician and Patient by Video in Taiwan

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Objectives: The public plays a crucial role in improving patient safety. This study aimed to improve health literacy of patient and implementing informed consent by video.

Methods: Joint Commission of Taiwan (JCT) conducted a project of improving communication between clinician and patient through video in 2015. The project has two key steps. First, all hospitals and related medical association were invited to provide existing videos and shared the videos to other hospitals. The project asked for 11 invasive medical procedures of video, included Colonoscopy, Cardiac Catheterization, Percutaneous Transluminal Coronary Angioplasty (PTCA), Percutaneous Coronary Intervention (PCI), Coronary Artery Bypass Graft (CABG), Amniocentesis, Degenerative Joint Disease, Skin Graft Surgery, Tonsillectomy, Appendectomy, and Discogenic Back Pain. Secondly, JCT recruited hospitals to join in this project and encouraged medical teams to provide the sitelinks of videos to patients and their families before signing forms with consent statements. Patients could watch the video to realize their medical procedures at any time and any place. To evaluate the effects of video, we developed two questionnaires of patients and physicians versions to collect opinions and suggestions.

Results: There were 19 hospitals provided 47 videos, and 34 hospitals participated in the project. The questionnaires were collected from 632 patients and 127 physicians. The results found: (1) 94.5% of physicians think that video can help patients and their families to understand the process of the disease or treatment, (2) 89.6% of patients and 87.4% of physicians think that hospitals provide video can help physicians or patients discuss the disease or treatment condition, (3) 91.8% of patients feel satisfied that patients use the treatment video can help them to understand the medical process and treatment-related side effects, (4) 81.7% of physicians think that the use of video can inspire patients and their families to involve in the medical process, (5) 90.8% of patients and 83.3% of physicians agree to use the auxiliary tools (e.g. video, photograph, media…) before performing surgery or treatment in the future.

Conclusion: According to the results of the survey, researchers found that over 80% of the physicians, patients, and their families acknowledge that using the media can indeed strengthen their understandings of the medical process. This will be continuously carried out in the future. It can also make the patients engage in their own medical procedures, enhance the interaction between the patients and physicians, and promote the communication between physicians and patients. During the experiment, we can also find that using the audio-visual platform can share the materials between institutions is feasible. We suggest to build up a shared platform that includes information related to invasive operations. We hope to use this method to increase patients’ health knowledge and improve the interactions between physicians and patients for achieving the goal of enhancing patient safety.
METHODS THAT IMPROVE PREVENTION OF MEDICATION ERRORS
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Objectives: The administration of medication by nurses is composed of a multi-stage process that includes preparation and administration of medicines and then putting them on the record. Any error in the medication process may result in patient fatality, and even economic burden. Therefore, this study aimed to find the problems encountered in the administration process by examining its overall system. And to prevent medications errors by solving these problems.

Methods: The process of medication administration was classified into 10 stages. Through the Failure Mode and Effect Analysis (FMEA), 67 items of potential failure mode in each stage and 354 potential causes were derived. The Risk Priority Number (RPN), dependent on the failure mode, was measured to be the highest at the stage of medication administration. This was followed by the stage of prescription verification, then the stage of medication preparation. To improve related methods, the activities were classified mainly into system, process, and human resource management; this classification was based on causes of failure mode and RPN. Regarding improvements in the system, the following methods were devised: matching product names with drug names at the stage of prescription and medication administration; enlarging the size of the medication card; changing the name band for patient identification; computerizing the prescription labels; supplementing the guidelines on medicine consignment; production of standard medical device manuals; and standardizing the storage place of medical products. In terms of process improvement, consignment of regular narcotics was standardized, the number of injection issues was increased, tasks were separated after job analysis by the Shipping Division, consignment method of medical supplies was standardized, and medication counseling services were provided. Lastly, from the perspective of human resource management, various approaches were made to prevent medication errors. These include sharing notification of medication among nurses for each quarter, as well as monitoring and observation of medication administration rules.

Results: After implementing the improved methods, the value of RPN at the stage of administration was remarkably reduced (total score: 6,934 points → 3,855 points). Particularly, the scores derived at the stage of medication administration decreased from 1,457 points to 984 points, whereas the scores at the stage of prescription verification decreased from 1,230 points to 834 points. Furthermore, the scores at the stage of medication preparation decreased from 1,164 points to 937 points. According to the monitoring conducted, the nurses’ strict adherence to medication administration rules improved notably (from 82.9 points to 96.6 points). The rate of adverse event report caused by medication errors was reduced by 75% after implementing the improved methods.

Conclusion: The implementation of methods or strategies to prevent medication errors contributed to the improvement of strict adherence to medication administration rules among the nurses and facilitated a safe hospital environment. It is recommended that further risk assessment and improvement in related activities should be implemented on a regular basis.

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IMPROVEMENTS OF PATIENT SAFETY CULTURE AND OUTCOMES IN THE INTENSIVE CARE UNIT USING TEAMWORK SKILLS

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Objectives: This study is to determine the impact on patient safety culture and outcomes in the intensive care unit (ICU) using teamwork skills.

Methods: A total of 121 physicians, nurses, nurse practitioners, and respiratory therapists in the ICU at a regional hospital participated in interprofessional Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) training. After the training, the teamwork skills were performed in patient care for two years. The teamwork skills including “brief, huddle, and debrief” and “SBAR (situation, background, assessment, and recommendation)” were started in the “shift of endotracheal tube intubated patient” and “information transfer”, respectively. A Chinese version of the Patient Safety Attitudes Questionnaire (41 items for a total nine dimensions including SAQ six dimensions and AHRQ three dimensions) developed by the Taiwan Joint Commission on Hospital Accreditation was conducted to measure the healthcare workers’ attitudes toward patient safety before (N=113) and after (N=116) a year of using teamwork skills. ICU mortality and length of stay (LOS) were detected as outcome measures.

Results: After one year, the average percent-positive scores (% respondents with mean score ≥ 75 on a 0-100 scale) increased 11.4%. The positive score increased significantly (p<0.01) in eight dimensions including “teamwork climate” (71.4 vs 66.4), “safety climate” (68.9 v.s. 61.7), “job satisfaction” (63.5 v.s. 52.8), “perception of management” (66.3 v.s. 58.1), “working condition” (68.6 v.s. 58.5), “hospital management support for patient safety” (63 v.s. 56.1), “teamwork across hospital units” (62.1 v.s. 55.7), and “hospital handoffs & transitions” (53.7 v.s. 45.6). ICU mortality and LOS decreased from 6.73% to 5.94% and from 6.4 days to 5.7 days, respectively. After two years, ICU mortality and LOS decreased from 6.73% to 5.37% (p<0.05) and from 6.4 days to 4.9 days (p<0.01), respectively.

Conclusion: The results supported that patient safety culture and outcomes in the intensive care unit can be improved significantly by using teamwork skills.
Objectives: Patient fall is one of the important factors causing harm to patients and increase medical burden. The purpose of the project was using fall-prevention strategies to reduce the incidence rate of patient falls in emergency room (ER).

Methods: This project was conducted in the ER of a regional teaching hospital. In 2014, there were totally 46964 visits to this unit. According to the data provided by Taiwan Healthcare Indicator Series (THIS), the incidence rate of patient falls in the ER was increasing from 0.008% in 2013 to 0.04% in 2014, higher than any other peer hospital. The analysis of patient fall suggested that the risk factors included patients’ unsteady gait, dizziness, weakness, cognitive impairment and lack of awareness of potential falls among patients and the caregivers. Moreover, 85% of falls occurred when patients used the toilet or ambulated. In order to solve these risk factors, fall prevention strategies must meet the characteristics of ER patients. The strategies included (1) quick identification of high-risk group according to the “Morse Fall Scale” for patients above 6 years old and the “Children Fall Scale” for patients under 6 (2) the installation of nurse call systems and pulling up bed rails of both sides for patients (3) putting warning signs of falls on hand rings, IV stands and medical records of high-risk groups to remind patients and the staff (4) giving fall prevention education to patients of high-risk for at least 10 minutes (5) asking patients if they want to use the toilet every 4 hours actively. This fall prevention strategies were implemented from March 1 to December 31, 2015. Also, to assess the practice of these strategies, we audited the staff with our own “Fall Prevention Measures Monitoring Checklist”.

Results: After implementing the fall prevention strategies, the result showed that the incidence rate of patient falls had been reduced from 0.04% (20 events) in 2014 to 0.02% (12 events) in 2015. We calculated that the expenditure of fall-related injuries had decreased from NT11,229 to NT700.

Conclusion: The result of the project has demonstrated the positive effects of the fall prevention strategies on the reduction of fall events in ER. In terms of caring and administration, the strategies of simple, effective implementation are suitable for the special need of ER patients. We suggest that these fall prevention strategies can be conducted for preventing patient falls in ER.
Objectives: The Committee for Quality in Healthcare and Medical Ethics at University Hospital A has closely reviewed all death cases since 2006. As a matter of course, all death cases in a hospital organization are reviewed to detect suspicious cases but are not always closely inspected. To prevent serious cases from being overlooked and to increase efficiency, we set four close inspection criteria: criterion A, death within 24 hours after hospitalization; criterion B, death within 30 days after surgery; criterion C, death within 3 days after invasive treatment; and criterion D, death within 14 days after discharge. The aim of this study was to examine the utility of these close inspection criteria for detecting suspicious cases.

Methods: We closely reviewed all death cases in A hospital from 2007 to 2015 and examined the relationship between the close inspection criteria and the detection of suspicious cases.

Results: In the 9 years (2007-2015), 2049 inpatients and 746 outpatients died in the hospital. Of the inpatients death cases, about 25% cases satisfied one of the close inspection criteria: criterion A, 367 cases; criterion B, 128 cases; criterion C, 9 cases; and criterion D, 3 cases. No cases met multiple criteria. There were 1542 cases that did not correspond to any criterion. In our review of all death cases, 146 of 2049 inpatient death cases were judged to be actually suspicious. However, 79 of these suspicious cases did not satisfy any of the close inspection criteria. Of these 79 cases, 29 were cases of death during hospitalization after surgery or treatment (hospital mortality) that did not meet criterion B (death within 30 days after surgery) or criterion C (death within 3 days after invasive treatment) and some cases involved serious issues related to healthcare quality. If we investigate only the cases that satisfy the close inspection criteria, we will overlook more than 50% suspicious cases including serious ones.

Conclusion: To detect suspicious cases reliably, analysis of all death cases is needed.
EFFICACY OF REDUCING THE INCIDENCE RATE OF BURNS FROM THE TRADITIONAL CHINESE MEDICINE THERAPY OF MOXIBUSTION

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Objectives: Moxibustion, one of the traditional Chinese medicine therapies, is carried out by burning moxa to drive coldness out of the body and alleviate pain. After Chinese medicine doctors identifying symptoms and disease, would move on with acupuncture treatment and moxibustion therapy by burning moxa on the handles of needles on patients. On average, it takes two to three pieces of moxa per patient, and the therapy can only go on for five minutes each time. From January to June of 2015, the incidence rate of burn injuries from the moxibustion therapy is 0.6%. And the reasons are concurrent use of infrared light, inappropriate positioning of disabled patients, dropping of moxa because of patient restlessness, and insensitivity to heat. Pains and skin defect can be caused by burns from the moxibustion therapy. After group discussions, we set a target number based on Quality Improvement and Patient Safety Monitoring, developed by our hospital with an aim to reduce the incidence rate of burns to 0% so as to ensure patient safety.

Methods: We drew up a standard operation procedure “Acupuncture operation procedure,” and provided personnel training with the content including healthcare education to patients and their families before undergoing therapy. When carrying out the therapy, clinicians need to make sure that the lower part of needle handles are 1.5 centimeters apart from the skin and a piece of Y-shaped cardboard should be placed in-between to protect the skin. Education was offered to clinicians as to how to help disabled patients position correctly when therapy was being delivered. When patients were moving restlessly, therapy should be replaced by infrared light therapy instead.

Results: After counter measures were introduced, the incidence rate was reduced to 0% between July and December of 2015.

Conclusion: The patient-centered moxibustion standard operation procedure was laid out and personnel training was offered. When the therapy was being delivered, a certain distance was maintained between moxa and the skin with a piece of cardboard placed in-between to prevent burns. Education was offered to clinicians as to how to ensure correct positioning of patients. In addition, the infrared light therapy would replace the moxibustion therapy when patients were moving restlessly. With counter measures in place, we witnessed a significant improvement in the incidence rate. We will continue to watch closely to guarantee patient safety and quality of care.
PREDICTION OF IN-HOSPITAL FALL VIA MACHINE LEARNING APPROACH – A PRELIMINARY STUDY

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Objectives: In-hospital fall are frequent-occurring adverse event in the hospital and may result in severe patient injury. Early and accurate identification of the high-risk population for fall is an important step before we can prevent the events from occurring effectively. However, prediction of in-hospital fall is a difficult task. In this study, we utilized the machine learning technique, which is often used for big data analysis, to create prediction model and compared the performance with the conventional scoring system used in our hospital.

Methods: We retrospectively analyzed the data of patients that admitted to our hospital between Jan. 1st, 2013 and Dec. 31th, 2015. The falling risk assessment data and basic demographic information, such as gender and age were used for data analysis. Patients that were less than 20 years old, recurrent falling within the study period and admitted to intensive care unit (ICU) or psychiatric ward were excluded from this study. Totally, there are 238,614 record of fall risk assessment with 336 record related to in-hospital fall episode. Twenty percent of the dataset were used as testing dataset and remaining were used for model training. We utilized various machine learning algorithms, such as decision tree, random forest, support vector machine (SVM) with various kernel and logistic regression. The model's performance was compared with the conventional scoring system used in our hospital. During the modeling process of random forest, 100 times of bootstrapping were used to generate different balance data for tree creation. Model performances were evaluated with accuracy, sensitivity, specificity and area under curve (AUC) of receiver operating characteristic (ROC) curve.

Results: The performance of the scoring system over the testing dataset (n=47,460) revealed accuracy 66.2%, sensitivity 61.8% and specificity 66.2% when using 3 point as the cutoff. When compare the performance of various machine learning algorithms, we found the random forest perform better than other algorithms. In order to figure out the difference between conventional scoring system and random forest, AUC of the ROC curve were calculated. The AUCs were 0.655 for the scoring system and 0.697 for our newly-developed model established with random forest.

Conclusion: In this preliminary study, we used the machine learning technique to establish a novel prediction model for in-hospital fall. We found the model established with random forest performed slightly better than our current scoring system. Whether adding more clinical information into the model would further improve the prediction power or not still need to be elucidated in future study.
THE USE OF RE-ENGINEERING OF OPERATING PROCEDURES TO ENHANCE COMPLETION RATE OF SHIFT CHANGE

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Objectives: For improving the effectiveness of nursing staff in communication, it is very important that nursing staff execute the standard operating procedures of shift change and transferring of patients which is one of the goals of maintaining patients’ safety. The purpose of this study is to explore whether re-engineering the operating procedures of shift change with ISBAR standard can improve job completion and satisfaction.

Methods: This study is divided into two parts, the first one is to observe the condition of shift change in sampling by questionnaire; the second one is to modify the standard procedures of shift change, including in-service education, formulation and implementation of supervising system, improvement of the environment and production demo film. Then we analyze the completion rate of carrying out the items in shift change in original standard procedure (n=168) and modified one (n=168), and also analyze the satisfaction conditions of shift change (n = 15).

Results: The result of this study showed that re-engineering of operating procedures of shift change can elevate the completion rate from 71.1% to 90.0%, indicating that modified procedures can raise the achievement rate of shift change among nursing staff, and their satisfaction rate of shift change increases from 59.9% to 92.0%.

Conclusion: This study shows that the re-engineering of operating procedures of shift change followed ISBAR standard indeed improve job completion rate and also the satisfaction rate among nursing staff. One of the most significant items is the accuracy of understanding the condition of patient, which increases from 33.3 % up to 95.0%. Therefore it is very important to improve the communication between nursing staff by re-engineering operating procedures of shift change.
PREVENTION OF CATHETER ASSOCIATED URINARY TRACT INFECTION (CAUTI) IN A SINGAPORE TERTIARY HOSPITAL
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Objectives: A summary of Device-associated (DA) Module data collected by hospitals participating in the National Healthcare Safety Network (NHSN) for events occurring from January through December 2012 showed that in inpatient neurosurgical ward of acute care hospitals, CAUTI rates (annualised data) for percentile 50% (median) and 90% are 2.3 and 5.3 respectively. In Tan Tock Seng Hospital (TTSH), a tertiary acute care hospital in Singapore, our baseline CAUTI rate at pilot ward 10D neurosurgical patients was 20.8%.
We aim to achieve a 50% reduction in Catheter-Associated Urinary Tract Infection (CAUTI) at our inpatient wards in TTSH within 2 years by redesigning care delivery by healthcare professionals.

Methods: The department of Neurosurgery (NS) was identified as the first department to test and implement these interventions and Ward 10D was identified as the pilot ward. Adopting the Institute for Healthcare Improvement (IHI) methodology, our root cause analysis revealed the top causes of CAUTI as: 1) Lack of catheter insertion training for doctors and nurses, 2) Inconsistent daily review for needs of indwelling catheters (IDC) and 3) Non adherence of 4-point care for all patients with IDC. Outcome measures were 1) CAUTI rate and 2) Days between CAUTI, which was found to range between 8 to 61 days. Process measures were 1) Compliance rate to daily review of IDC and 2) Compliance rate to daily 4-point catheter care review.

Results: Key interventions at Pilot Ward 10D includes: 1) Catheter simulation training and assessment for all batches of Neurosurgical Medical Officers. 2) Use of flag cards inserted in patient’s case sheets to remind nurses to review the need for IDC and reinforced nursing documentation for daily review of IDC by May 2015. Baseline compliance median (prior to May 2015) was 0%, post intervention median compliance was 100%. 3) Constant communication on the importance of 4 point catheter care to nurses. Audit on compliance to 4 point catheter care started in April 2015. Baseline compliance median (prior to May 2015) was 83.3%, post intervention median compliance May’15-Nov’15 was 100%. 4) Educating physiotherapists and occupational therapists in 4 point catheter care so IDC bags will not be laid on the ground or above patient’s perineum while undergoing therapy.

Conclusion: Through numerous testing and learnings from PDSA cycles, we innovated new ideas and introduced these methods of delivering care. We also roped in key leadership from Neurosurgery and Quality discipline to aid in training and transforming the healthcare team. These key implementation helped to improve outcomes. We are currently working on sustaining these intervention and spreading them to Neurology discipline in the same pilot ward. Simultaneously we are also engaging other acute wards in TTSH.
INTRODUCING SBAR INTO HOME VISIT REPORT WRITING IN COMMUNITY PSYCHIATRIC SERVICE

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Objectives: Effective Communication is paramount in avoiding incidents relating to patient safety. In Community Psychiatric Services (CPS), where case managers usually pay home visit to mentally ill patients, and then write a written report mentioning the overall concerns and conditions of patient to psychiatrist. Within the healthcare setting of CPS, there are some fundamental barriers to communication across different case managers and levels of staff, these include gender, professional training background and differences in communication styles of each case manager. CPS of PYNEH consisted of 41 case managers and was delivering more than 2000 copies of reports each month. Good quality of record and documentation could enhance communication efficiency and enhance patient safety. A structured method, SBAR (Situation-Background-Assessment-Recommendation) Model was firstly applied to standardize the CPS home visit report writing and to have consistent communication format among CPS staff.

To improve consistency of home visit report writing with < 3 Non-compliance (NC 2.9) by using newly developed SBAR standard in home visit report writing (with 14 items) by the end of February 2015.

Methods: DMAIC (an abbreviation for Define, Measure, Analyze, Improve and Control), a data driven improvement cycle, as a core tool, was used in our project.

Define Phase- The current practice is the inconsistency of making home visit report after home visit by case manager. The operational definition of home visit report defect means the non-consistency of using SBAR template with 14 items

Measure Phase- Attribute Gage R & R was measured by 3 operators with 80% of effectiveness on measuring 30 samples of home visit reports by newly developed SBAR standard on home visit report writing.

Analyze- Pre-test: 30 initial home visit reports, without using the SBAR template, were measured with Process capability report Cpk was -0.07. The consistency of home visit report writing is away from the target (< 3 Non-compliance).

Post-test: 25 home visit reports with using standardized SBAR template with Cpk was improved to 2.36. The home visit report writing could meet the target (< 3 Non-compliance) consistently.

Improve- SBAR template was introduced in writing the home visit report. The consistency of preparing home visit report by CPS was improved.

Control- Standardized Work for eliminating data entry error by consistently applying best practices was applied in my project. Visual indicator, SBAR template reference card displaying next to each desktop computer of hospital electronic record system- Clinical Management System (CMS) is applied. Every case manager should follow visual SBAR template to enter information in his/her home visit report via Pre-set SBAR template in CMS.

Results: Anderson Darling Normality test was used on pre-test with mean score of non-compliance on using SBAR as 3.2; SD 1.7695 (p< 0.005) while post-test with mean score of non-compliance as 0.28; SD 0.4583 (p< 0.005). There was a significant improvement on the consistency of writing home visit report.

Conclusion: Nurses should better use a formal structured handover or report on patient’s condition to enhance effective communication. In CPS, SBAR template could facilitate nurses’ consistency on home visit writing, which in turn to give an effective way to communicate and report patient’s information between nurses and multi-disciplinary members.

Special thanks to the support from Ms. Lo K C, Mr. Chan K M & Mr. Lai T K (Community Psychiatric Services, Department of Psychiatry).
Objectives: The objective of this study was to improve the culture of safety in an ambulatory oncology unit to create a safer environment with less care related errors.

Methods: Prior to implementation of the CUSP, a safety culture questionnaire prepared by the Agency for Healthcare Research and Quality (AHRQ) was conducted electronically to assess the safety culture of the team and define areas of interventions. The answers provided by the staff were analyzed under 14 categories. Information was gathered from RCAs of reported incidents from the unit. Chemotherapeutic medication errors were analyzed. Interviews with key staff and multidisciplinary focus groups were also conducted to define main problems leading to defects. Then a Comprehensive Unit Based Safety Program (CUSP) developed by Johns Hopkins Medicine as a tool to improve the culture of safety in a specific unit was launched. CUSP is a five-step program designed to change a unit’s workplace culture by empowering staff to assume responsibility for safety in their environment. The CUSP program was conducted in five steps: Training staff in the science of safety, just culture, transparency and reporting, engaging staff to identify defects, conducting safety rounds with executives, learning from defects and implementing improvement tools such as shadowing, observing rounds, learning from defects and problem specific work groups. One year after monthly CUSP meetings and using the tools mentioned above the safety Questionnaire was repeated to measure success of the intervention.

Results: Analysis of reported medication errors showed that human factors, communication and leadership problems were the major root causes. Personal interviews and focus groups revealed defects related to team work and suboptimal level of safety culture. The AHRQ safety culture questionnaire was repeated at the end of the first year of the program and compared to the baseline data. The percentages provided show the total number of staff who answered the questions as “agreed” or “strongly agreed” on the questionnaire. The results showed improvement in major categories of safety culture. The preCUSP and postCUSP results and the differences between them in each category were:

- Team work within units (84%, 83% and -1%)
- Management actions promoting safety (80%, 75%, -5%)
- Organizational learning (61%, 83%, 22%)
- Management support (76%, 84%, 8%)
- Openness about errors ;(79%,77%,3%)
- Overall perception of safety (68%, 84%, 16%)
- Frequency of events reported (70%,83%, 13%)
- Communication (61%,71%,10%)
- Team work across units (52%,67%,15%)
- Staffing (30%,42%,12%)
- Handoffs and transitions (50%,72%, 22%)
- Non-punitive approach (30%,40%, 10%)

Conclusion: Providing oncology treatment needs a multidisciplinary team work with good collaboration and high level of safety culture to minimize risks. Analysis of reported safety related events and medication errors in our outpatient chemotherapy unit identified human factors, communication and leadership related problems as the major root causes of defects. Implementing a CUSP program resulted in improvement in the overall perception of safety, handoffs, teamwork across units, communication and other safety categories as defined by the AHRQ. Sustaining the program would be essential to sustain and enhance improvement.

DETECTING ADVERSE EVENTS WITH A RETROSPECTIVE MEDICAL RECORD REVIEW USING THE GLOBAL TRIGGER TOOL: PRELIMINARY FINDINGS FROM TAICHUNG VETERANS GENERAL HOSPITAL, TAIWAN
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Objectives: This study aimed to examine the performance of the Global Trigger Tool and to investigate characteristics associated with the occurrence of adverse events (AEs). Patient safety is the key issue in patient centered health care in hospitals worldwide. Evidences show that the incidence of AEs from 7.79 to 25.1 events per 100 admissions. Comprehensive medical record reviews, voluntary reporting, patient safety indicators and trigger approaches have been utilized as methods to identify AEs. However, the incidence of AEs is usually underestimated based on voluntary reports. Taichung Veterans General Hospital has 1,514 beds. Around 3,500~4,000 voluntary reports related to patient safety are reported every year from 2011 to 2014. Most of them are related to errors but not harms. It seems under reported. Therefore, we extend our audit system to detect AEs, which really injury the patients.

Methods: Institute for Healthcare Improvement (IHI) has issued IHI Global Trigger Tool (GTT) for measuring AEs in 2009. IHI GTT is based on manual review of medical records by trained reviewer team. Our reviewer team includes two nurses as the primary reviewers and a physician to conclude the results. It is really a labor-intensive process. We conducted a retrospective study following IHI GTT. Eligible inpatients were≧20 years old with a length of hospital stay≧24 hours, exclude psychiatric and rehabilitation patients. Severity Ratings according National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) Index for Categorizing Errors was applied. A random sample of 20 records per month was selected from July 2014 to December 2014.

Results: Among the 869 patient days of 119 patients, a total of 120 triggers were identified. Twenty one AEs were detected from 17 cases. The incidence of AEs was 17.6 events per 100 admissions (21 AEs/119 admissions). The percentage of admission with at least one AE was 14.29% (17/119). Common triggers were E2–Time in ED greater than 6 Hours (n=20), M7–Diphenhydramine (Benadryl) Administration (n=15), C9–Readmission within 30 Days (n=12). Different triggers in 5 patients can indicate same AEs. The mean length of hospital stay in patients with and without AE was 14.65 days and 6.08 days respectively. There were 77.5% of the triggers without harm. The triggers with harm were 22.5% (categories E : 59.26%, F : 25.93%, G : 0.00%, H : 14.81%, and I : 0.00%). The inter-rater reliability about disagreement between nurses and physician reviewers on the presence of a trigger was found in 57 cases (47.90%), and that on the presence of an AE was found in 12 cases (70.59%).

Conclusion: The incidence of AEs is similar to the other institutes in our hospital. The trigger of E2–Time in ED greater than 6 hours was one of the major trigger factors and these triggers were not related to harm. It is necessary to investigate the causes of longer ED stay without harm. IHI GTT seems to be a useful alternative method to detect AE in our hospital but we have to do more exercise to decrease the inter-rater disagreement.
A LANDSCAPE SURVEY OF PATIENT SAFETY PROFESSIONALS IN CENTRAL TAIWAN

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1Jen Ai Foundation, Jen Ai Hospital, Taichung, 2Quality Management, Ditmanson Medical Foundation Chia Yi Christian Hospital, Chiayi, 3Quality Management Center, Taichung Veterans General Hospital, Taichung, 4Ditmanson Medical Foundation Chia-yi Christian Hospital, Chiayi, Taiwan

Objectives: Patient safety officers are new roles that offer a different career pathway for medical personnel, however their role remains poorly defined. In the absence of countrywide statistics on this workforce, our study purpose was to gather basic information about the current practices in the patient safety arena in order to better understand the landscape and trends. The secondary aim was to use this information to guide improvement efforts for raising the profile of this profession.

Methods: The study took place at 2 scientific meetings held in November, 2012 and April, 2015. On behalf of the Taiwan Patient Safety Culture Club, an unique group of advocates, we distributed similar questionnaires to all attendees and asked them to turn in at the end of the education sessions. The anonymous survey asked about the hospital type and size, job title, number of coworkers, training background, whether engaged in safety duties full-time or part-time, major functions and tasks, career tenure, committee(s) to which they belonged, professional skills good at, bottleneck at work and perception about the future of patient safety. Survey data were evaluated using descriptive and inferential analysis (Chi-square test and Fisher's exact test). A p value of 0.05 was used to determine statistical significance.

Results: We collected a total of 91 and 50 usable surveys in 2012 and 2015 respectively from the attendees. Respondents were mainly the key persons in charge of clinical safety management from 22 hospitals. In 2012, 77% of the respondents were nurses and 51% had no other coworkers assigned to the same unit. The top 3 skills they considered themselves to be good at were root cause analysis (49%), accreditation survey readiness (47%) and Quality Control Circles (33%). Notably 46% of the respondents were non-clinical managers in 2015. Many respondents were not taking on full-time roles in 2012, but in 2015 many (63%) were changed to a full-time job with expanded tasks and responsibilities. These responsibilities included safety education, planning activities for the Patient Safety Awareness Week, data collection for incident reports, medical team training, patient safety culture survey, integration and collaboration of all components of the patient safety program. However the tendency of serving as infection control officer or nursing quality manager at the same time had diminished, instead their duties became overseen by the administrative department or superintendent’s office. Surprisingly, most respondents highlighted a promising future of patient safety profession despite some existing problematic aspects (p<0.05).

Conclusion: Professionalization of patient safety managers in Taiwan is very young. This study provided useful data on certain areas in need of improvement and the clarity about important issues that are faced today. Typically only few hospitals have the resource and infrastructure to meet the need of emerging field. The fact that administrative personnel with non-clinical background comprises the major current workforce simply means governmental efforts to promote patient safety may not be enough. It is unlikely that these patient safety officers possess all the competencies needed to fulfill their role. It was obvious that training programs in the field remained scarce and there was lack of support for mentoring. So integration of quality and patient safety management as well as emphasizing on physician participation will lead to collaborative structure that benefits the organization.
AN ESTIMATION OF THE NUMBER OF PATIENT DEATHS CAUSED BY ADVERSE EVENTS IN HOSPITALS IN JAPAN
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Objectives: Little is known about the number of patient deaths caused by adverse events in hospitals. This study aimed to estimate the number of patient deaths caused by adverse events in hospitals in Japan.

Methods: A mail survey was conducted for 3,270 hospitals which were selected by stratified random sampling according to bed-size in 2015. The questionnaire included questions about the patient safety management system in each hospital and the number of patient deaths and disabilities caused by adverse events in 2014. The number of patient deaths caused by adverse events in Japan was estimated by multiplying the mean of patient deaths per one bed among the respondent hospitals and the total number of beds in hospitals in Japan. The estimation was adjusted by bed-size of the hospitals and function of the hospitals such as acute care hospitals, long-term care hospitals, psychiatric hospitals and the others.

Results: The response rate was 22.4% (731/3270). The respondents occupied 9% (731/8,595) of all hospitals in Japan. Among the respondents, the proportion of acute care hospitals, long-term care hospitals, psychiatric hospitals and the others were 78%, 11%, 8%, 4% respectively. The number of patient deaths caused by adverse events in a year was estimated as 1,329. It corresponded to 8.6 persons per 100,000 discharged patients or 0.8 persons per 1,000 beds in a year. Among patient deaths, 64% occurred in acute care hospitals, 3% in long-term care hospitals and 33% in psychiatric hospitals, respectively. As for the number of patient deaths per 1,000 beds, the highest was 1.5 persons in acute care hospitals with 500 beds or more, and the lowest was 0.1 persons in long-term care hospitals.

Conclusion: The number of patient deaths caused by adverse events in 2014 was estimated as 1,329. The mortality rate was estimated as 8.6 persons per 100,000 discharged patients and it was double the mortality rate of traffic accidents in Japan (4.6 persons per 100,000 persons in 2014). In this study, the relationship between patient death and adverse event was judged by each hospital, and consequently the number of patient deaths caused by adverse events may be influenced by patient safety management system of responding hospitals. For example, big acute care hospitals with more resources could detect unexpected patient deaths and clarify the cause of death more precisely. There would be under reporting in smaller hospitals with less resources. To clarify the mortality rate of adverse events in hospitals by hospital bed size and function, other methods such as chart review, occurrence review and prospective method should be considered in addition to the present study.
UNDERSTANDING AND OVERCOMING BARRIERS TO TIMELY MORNING DISCHARGE FROM PEDIATRIC UNITS
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Objectives: Background: Delay in hospital discharge of patients causes backlog for new admissions from the Emergency Departments (ED), outpatient clinics and transfers from the Intensive Care Units (ICU). Some initiatives have been reported previously that aim at tackling this problem with variable success. In this quality improvement project, we aimed at increasing the number of discharged patients who leave the units by 12:00 Noon from 7 to 30 % by May 2015.

Methods: A baseline discharge process map was studied and all possible causes were obtained. A survey was conducted to look for the most likely cause for the delay. A data collection tool was designed to record the various steps in the discharge process for the pre-and post-intervention phases. Using a series of PDSA cycles, interventions were introduced to the process.

Results: The average time for the discharge process was 2 hours and the baseline average percent of patients discharged by 12:00 Noon was 7% of all discharges. The leading cause for the delayed discharge was late orders by the physicians. Post-interventions, there was increase in the percentage of patients discharged by 12:00 Noon from 7 % to 34 %. In all discharged patients, 42% of them had appropriate reasons for afternoon discharge. By excluding those patients, the percentage of adjusted timely morning discharge has increased from 22% to 70 %.

Conclusion: Continuous monitoring and engagement of teams with regular feedback were the most important factors in achieving and sustaining improvement in the timely morning discharge in our pediatric units.
THE MEASURES FOR REDUCING EMERGENCY PATIENT’S CHEST DRAINAGE BOTTLE TUBING MISTAKES
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Objectives: Chest drainage is usually the first-line treatment for emergency patients with pneumothorax, especially for those who with tension pneumothorax which results in sweating, palpitations, or cardiac output decreasing and then leading to shock, have to promptly treat with an emergency chest tubing so that the lungs can immediately expand to rescue patients in time. Correctly chest tubing is a critical issue to avoid severer pneumothorax; otherwise, it might be fatal to patients.

Methods: This study investigates a chest drainage bottle tubing mistake, occurred in a medical center in July 2015, which led to patient with severe chest tightness and serious breathing difficulties. According to Severity Assessment Code (SAC) analysis, the severity of this abnormal event is degree 2. Hence, the Root Cause Analysis method was adopted to identify and analyze of causes of the problem, and to develop preventive measures to avoid such accidents. After root cause analyzing, the chest drainage bottle tubing mistake were rooted in the factors that nurses were not all proficient in chest tubing, new nursing members were not well-educated and well-trained, nurses did not actually check the site of tubing during task-shifting, and nurse incorrectly assessed the way of tubing. Based on the root cause analysis results, some interventions were implemented which are providing in-service education to strengthen the skills of tubing, developing the steps of fixation methods for tubing, and designating nurses to carefully inspect the site after tubing.

Results: The measures really enhanced the cognition for safety tubing and promoted the ability to execute tubing correctly. Moreover, no more mistakes happened on tubing causing pneumothorax after thoroughly putting the measures into practice.

Conclusion: By using root cause analysis, some proper measures were proposed for the chest tubing issues. After one year observation, the measures really worked and no more mistakes happened on tubing causing pneumothorax.

References:
QUALITY DATA AND CLINICAL DECISION
PROOF OF EFFECTIVENESS FOR BENCHMARKING THE QUALITY PERFORMANCE OF CLINICS
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1University of Applied Sciences Upper Austria, Linz, 2University of Applied Sciences Upper Austria, Steyr, 3Quality Management and Health Systems Research, Federal Ministry of Health, Vienna, Austria

Objectives: Introduction
Transparency in healthcare is essential for a mature and active patient and hence has a significant impact on the competitive position of clinics. Quality data publications from clinics are usually noticed by only a small part of the population. The Internet plays an increasingly important role as a source of information both in everyday life as well as in the Health Sector. Previous international studies have reported a generally positive assessment of quality reports by patients (64% would use it if necessary).

Research Approach
Our study aimed to evaluate a current potential value of a neutral Internet platform for hospital-quality data in Austria, and to illustrate possible effects on the quality management in hospitals. We wanted to investigate the hypothesis that a desire for a neutral Internet platform for hospital performance is correlated to the decision concerning which clinic a patient chooses to use.

Methods: Based on a representative stratification of the hospitalizations in 2011 in Austria, 339 people completed a standardized questionnaire and were interviewed face-to-face. The results were evaluated with LimeSurvey.

Results: Empirical Findings
General Results (N= 339)
General awareness and use of hospital-benchmarking: 41% of respondents are aware of hospital-benchmarking, 17% have already used them.
Desire for a neutral benchmarking system: 67% of respondents want a neutral benchmarking system for hospital quality data.
Future use of hospital-benchmarking: 57% of respondents plan to utilize hospital-benchmarks in the future.
Interest in the quality of hospital performance: 78% have a basic interest in the quality of hospital performance.
Decision for a specific clinic with the help of the proposed Internet platform: 33% of respondents would make their future hospital decision with the help of the proposed Internet platform.

Specific Results (N=339)
Context of perceived quality and clinical decision
The results indicate a significant correlation between the interest in the quality of hospital performance (defined as perceived quality) and the selected decision criteria for a clinic (p = <0.0001). This suggests that by publishing clinic quality data, the decision for - and therefore also the quality policy of - clinics can be influenced directly.

Conclusion: Our empirical findings show a real need for a neutral Internet presentation of hospital performance in Austria. We have also shown a significant relationship between the desire for clinical performance data and the selection criteria for attending a clinic, supporting our research hypothesis.
In general a new definition of the patient role and a changed doctor-patient relationship brought about by the Internet can be obtained from the results.
**FUTURE TREND IN UROLOGY; NURSE LED STONE SERVICE. IS IT EFFECTIVE & ECONOMICAL?**

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**Objectives:** The prevalence and incidence of nephrolithiasis is increasing. Conventionally patients with stones are seen either acutely or in Urology Outpatient Departments by Urologists where treatment is planned. There are however significant pressures on such clinics with increasing patient numbers and competing priorities from other patient groups. Nurse-led clinics have been proven in selected areas of healthcare with evidence that these clinics can provide vital support and continuity of care for patients if properly established and managed. Nurse-led Stone Clinics and service provision have however not been previously reported. We are presenting our experience of a nurse-led stone service in an acute general hospital setting.

**Aim:**
To evaluate the effectiveness of a Nurse-led service in the management of stone patients involving the running of Urology stone clinics, Extracorporeal Shock Wave Lithotripsy (ESWL) service, attendance at Stone X-ray meetings and establishing a Stent Register. We also looked into the cost as well as patient satisfaction.

**Methods:**

a) **Nurse led stone clinic:**
We established specialty Stone Clinics led by our Clinical Nurse specialist (CNS) occurring every 2 weeks. 160 patients were reviewed over the initial 8 months service. In the clinic the patients were assessed, images reviewed and an appropriate management plan arranged.

b) **ESWL and maintaining Data Base**
Our CNS supervised the running of all ESWL sessions. An ESWL database was established to ensure that treatment was utilised appropriately and to prevent unnecessary multiple treatments. In a 6 month period, 82 new patients had ESWL, 58 of which have passed stones while 24 patients underwent additional treatments. We excluded patients who were already having ESWL treatment.

c) **Stone X-ray meeting**
CNS also supervised and attended the stone X-ray meeting along with a Consultant Urologist and a Consultant Radiologist and reviewed complicated patients making appropriate management plans

d) **Stent Register**
CNS also updates the national ureteric stent register. This in turn will trigger the number of inputted days which in turn reduces the incidence of ‘forgotten stents’. By using this robust system we ensure that patient are appropriately followed up.

**Results:** **Patient satisfaction:** A patient satisfaction survey regarding the Stone Service was undertaken. It demonstrated that the majority of patients would recommend the service to their family and friends. Patients also commented on the continuity of care i.e. seen by the same person throughout their journey and the apparent seamless service.

**Conclusion:** Our results have shown that the CNS-led Stone Service is an effective and economical model. The CNS supervises a holistic stone service involving most aspects of the patient journey and guarantees continuity of patient care and has improved patient satisfaction. In addition we now have a significant increase in capacity in our other urology clinics reducing waiting times and breaches.
COST OF ILLNESS OF LIVER CIRRHOSIS IN JAPAN - A TIME TREND AND FUTURE PROJECTIONS -
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1 TOHO UNIVERSITY, Tokyo, 2 KAGAWA UNIVERSITY, Kagawa, Japan

Objectives: It is estimated that there are about 0.4 to 0.5 million patients with liver cirrhosis. The objectives of this study were to estimate and project the economic burden of liver cirrhosis in Japan.

Methods: We estimated the cost of illness (COI) of 1996, 1999, 2002, 2005, 2008, 2011, and 2014 by using government office statistics and the COI method developed by Rice, DP. to estimate economic burden of disease. We then projected the future COI for 2017, 2020, 2023, 2026 and 2029. The COI consists of three parts; direct cost, morbidity cost and mortality cost. Direct cost is a health care cost of liver cirrhosis. Morbidity cost is an opportunity cost for inpatient care and outpatient care. Mortality cost is measured as the loss of human capital (human capital method).

For future projections we adopted two types of method. One is a ‘fixed’ method, which fixes health related indicators (mortality rate, average number of outpatient visits, average number of hospitalizations, and average length of stay) of each age class at 2014 level, and only the changes of population and age structure was taken into account (using official population projection). The other is a ‘variable’ method, which uses health related indicators as variables in addition to population and age structure. We used three variable models according to the approximation: 1. Logarithm model; health related indicators were calculated using a logarithm approximation. 2. Linear model; health related indicators were calculated using a liner approximation. 3. Mixed model; an approximation with the higher coefficient of determination of the two approximations.

Results: The COI of liver cirrhosis was in downward trend from 443.8 billion JPY (1USD=112 JPY) in 1996 to 208.1 billion JPY in 2014. Future projection of the COI was 210.5 billion JPY and 214.3 billion JPY by fixed model (projection of 2017 and 2029, respectively, and so forth), 212.6 billion JPY and 150.5 billion JPY by logarithm model, 148.0 billion JPY and 68.7 billion JPY by linear model, and 200.9 billion JPY and 126.5 billion JPY by mixed model.

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<tbody>
<tr>
<td>Direct cost</td>
<td>67.7</td>
<td>65.9</td>
<td>75.0</td>
<td>43.9</td>
<td>44.9</td>
<td>26.7</td>
<td>29.0</td>
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<tr>
<td>Morbidity cost</td>
<td>55.4</td>
<td>49.7</td>
<td>30.2</td>
<td>21.7</td>
<td>16.2</td>
<td>14.8</td>
<td>13.8</td>
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<tr>
<td>Mortality cost</td>
<td>320.6</td>
<td>281.7</td>
<td>266.4</td>
<td>235.2</td>
<td>210.9</td>
<td>196.1</td>
<td>165.3</td>
</tr>
<tr>
<td>COI</td>
<td>443.7</td>
<td>397.3</td>
<td>371.6</td>
<td>300.8</td>
<td>272.1</td>
<td>237.5</td>
<td>208.1</td>
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</table>

Conclusion: The COI of liver cirrhosis decreased during study period. This trend was expected to continue in future. Decrease of number of deaths and increase of average age of death had led the decrease of mortality cost. Decrease of number of outpatient visits and total days of hospitalization had resulted in decrease of morbidity cost.

To estimate the COI of liver disease, costs related to treatment preceding to cirrhosis should be included. Hepatitis is the most common causes of liver cirrhosis in Japan, and new technologies including drugs with high virologic response rates are being introduced in clinical practice. They are effective but expensive, and future studies including the COI of hepatitis and the effects of new technologies should be considered.
USING HISTORICAL DATA TO IMPROVE EFFICIENCY OF SCHEDULING FOR OPERATING ROOMS.
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1Pingtung Christian Hospital, Pingtung City, 2Changhua Christian Hospital, Changhua City, Taiwan

Objectives: Pingtung Christian Hospital (PTCH) is a general hospital in Taiwan. The operating theater (OT) consists of eight rooms, with a usage rate of between 45%~65% (defined as total time all rooms are in use divided by total times rooms are available). Surgery lists for elective surgery are planned the day before surgery, with each surgeon deciding how many operations to schedule, and the sequence. Only the first operation has a fixed starting time. Later operations do not have designated starting times ("time follow") and are summoned by the OT staff when ready. The problems with this system were: fasting patients often waiting long times for surgery, uncertain surgery times, no prioritization of sequence, poor utilization of resources. The goal was to find solutions to the problems above, starting with (a) a trial period of using statistical analysis specific for surgeon and operating procedure to test if better scheduling could be achieved (b) prioritization to provide safer care for pediatric surgery and patients with special requirements such as diabetes (c) designated starting times for all operations to optimize ward preparation and patient/family instruction. The current phase of this project concentrated on involving surgeons in testing the feasibility of using statistics to allocate OT rooms.

Methods: A baseline was established for OT usage using the calendar year 2015 to calculate [1] overall usage, usage by room, and usage by work shift (scheduled versus out-of-hours); [2] statistics (average, range, standard deviation) for all surgeons for all operations; [3] the frequency of special patient groups (in this case, pediatric, diabetes, geriatric) and the sequence during the day for their operation. Using the Model for Improvement PDSA model, changes were tested with two surgeons (thoracic, plastic), with a one-month cycle for review and modifications. In the first phase, surgeons continued to use the system in place, but were exposed to the statistics on their screen when they were scheduling operations, with a suggested time to use (calculated from their historical average time for that type of procedure, added to the statistical averages for anesthesia time, and room disinfection and changeover by OT nurses). After a short trial, the statistic exposed to the surgeon was changed to average plus one standard deviation. At the same time, prioritization was implemented, with the three special groups given priority for the first operation in a daily schedule.

Results: (a) The two "champions" found the statistically suggested operation time of average plus one standard deviation fitted closely with their desired times and was acceptable. (b) In the second phase, we reversed the process so that the system made the schedule and the surgeon was asked to confirm it if it was acceptable. (c) We then tested scheduling all operations throughout the day for those two surgeons, removing the need for "time follow". Each stage was confirmed before moving to the next cycle.

Conclusion: District hospitals have minimal administration staff, and OT scheduling is often left to individual surgeons. This results in inefficiencies, poor coordination between OT and other departments, patient and family anxiety, patient safety issues, and high staff turnover because of dissatisfaction. We have made preliminary steps towards a management system for OT scheduling, based on statistics specific for surgeon and operation, progressively implemented by limited trials with champions from two surgical specialties. Their input has contributed to making the process acceptable to other surgeons. We are now involving other surgeons in an extended trial of scheduling for the whole OT.
HFMEA TO IMPROVE THE SAFE USE OF INTRAVENOUS INFUSION PUMP
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1Department of Nursing, 2Quality management center, Far-Eastern Memorial Hospital, New Taipei City, Taiwan

Objectives: Drug safety is the important objectives of patient safety, we want to improve the use of intravenous infusion pump dosing accuracy, and invite different team members to recheck processes to promote patient safety.

Methods: We use HFMEA to handle the potential risks in 2015, respectively by "matching doctor order", "prepare drugs" and "administration" draw nurses intravenous infusion pump administration process, perform analysis of hazard risk, failure modes found twenty hazards Risk Index, total scores for 223. Next, we use the decision tree analysis to determine what need to improve, and finally we listed aggregated nine improvement direction, including: (1) full implementation of the administration of information technology, administration and use of computer-aided calculation of the number of drops; (2) a large number of droplet planning nursing station placement and marking; (3) Pharmacy avoid the purchase of a similar packaging products; (4) an infusion pump instrument layout are clearly marked function in Chinese; (5) making triple infusion of the drug stickers; (6) the establishment of "safe infusion pump standard operating procedures"; (7) conduct educational training programs; (8) use Barcord System were administered in patients and drug identification; (9) the implementation of an infusion regular Pump quality control monitoring.

Results: After the intervention, the score for risk of harm from 223 reduce to 89, error rate of intravenous infusion pump administration from 15.4% to 7.3%.

Conclusion: By cross-team collaboration, we learn to HFMEA tool to grasp the potential risks, and promote safety of patient, enhance caregivers intravenous infusion pump dosing accuracy, maintaining patient safety, and more to enhance the quality of nursing care.
THE EFFECTIVENESS OF HOSPITAL MEDICAL ADVERSE EVENTS REPORTING AND RISK MANAGEMENT SYSTEM
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Objectives: Quality of care is the core value of medical care, and patient safety is the fundamental of quality of care. Hospitals need to take effective measures to prevent and reduce medical adverse events, and we introduced a medical adverse events reporting and risk management system to accomplish this aim.

Methods: We created the medical adverse event reporting and risk management system in the Chi Mei Medical Center, Liouying branch, an 880 bed hospital providing primary care in southern Taiwan since June 2004. The system consisted of four main parts: (1) Strategy: set principle of adverse events reporting and management, regularly held hospital-wide education and training programme of patient safety. Encouraged self-reporting and documenting process improvements by providing feedbacks on incident follow-up, incentives, and sentinel events notification, creating a culture of not penalties, privacy, confidentiality; (2) Structure: built multidisciplinary functional groups and regular meetings to ensure the sustainability and quality of the important issues of patient safety (including quality of healthcare group, patient safety group, falls prevention group, suicide prevention group, quality of cardiopulmonary resuscitation group). Assigned the unit patient safety managers responsible for reviewing unit adverse events reports and developing action plans; (3) Process: establishment of a uniform, Web-based, hospital adverse events reporting system. If serious adverse events (including severe, very severe, and death events) were reported, the system would automatically sent a message via cell phone to remind the management personnel, and the report content would also e-mail to the management at the same time. For serious events, root cause analysis would be performed via multidisciplinary team meetings, to propose solution and preventive strategy; (4) Infrastructure: we introduced case-based learning by documenting sentinel events with detailed process improvements arising from event analysis. Then we displayed these cases on official publications and E-learning systems, provided a variety of ways to enhance the concept of patient safety.

Results: The reporting events increased from average 1407 events/year (2009~2014) to 1708 events in 2015. The proportion of serious events significantly decreased from average 1.05% (2009~2014) to 0.82% (2015)(P<0.05). The 2015 National Patient Safety Culture Survey was performed in 65 hospitals. Compared with the peer hospitals, the positive attitude in our hospital were above the 75th percentile in seven dimensions, including: teamwork climate (62%), safety climate (60%), job satisfaction (57.7%), perception of unit management (59.2%), working conditions (62.8%), resilience (16%), and work-life balance (69.8%).

Table 1. The 2015 National Patient Safety Culture Survey Results

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Our hospital (1,402 respondents)</th>
<th>Nationwide (63,124 respondents)</th>
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<tbody>
<tr>
<td></td>
<td>Positive attitude (%)</td>
<td>Minimum</td>
</tr>
<tr>
<td>Teamwork climate</td>
<td>62.0</td>
<td>35.5</td>
</tr>
<tr>
<td>Safety climate</td>
<td>60.0</td>
<td>31.0</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>57.7</td>
<td>35.6</td>
</tr>
<tr>
<td>Stress recognition</td>
<td>50.2</td>
<td>29.9</td>
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<tr>
<td>Perception of unit</td>
<td>59.2</td>
<td>31.3</td>
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<tr>
<td>management</td>
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<tr>
<td>Working conditions</td>
<td>62.8</td>
<td>33.7</td>
</tr>
<tr>
<td>Resilience</td>
<td>16.0</td>
<td>3.4</td>
</tr>
<tr>
<td>Work-life balance</td>
<td>69.8</td>
<td>6.5</td>
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Conclusion: Implementation of medical adverse event reporting and risk management system could effectively create a safety culture and reduce serious medical adverse events. Encourage reporting is the foundation of medical risk management and enhance patient safety.
REDUCE INCIDENCE OF PATIENT FALLS AT MEDICAL CENTER IN NORTH TAIWAN
C. K. Li 1,*, S. Y. Cheng 1, Y. S. Chen 1, H. W. Yeh 1
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Objectives: Fall is always accidents at inpatient and elderly, incidence of falls for 0.09% and rate of fall injury for 26.7% in 2014, and contrast Taiwan Clinical Performance Indicator (TCPI) peer 75th percentile hospital incidence of falls for 0.08%, but rate of fall injury was lower than peer average. The study was appear experience to reduce incidence of falls at medical center in Taiwan.

Methods: This study was conducted with Taiwan Clinical Performance Indicator (TCPI) definition to collect. Review reasons of falls in 2014 was health (82.6%), environment (7.7%) and other factors (9.7%), the wards was in the Neurology and tumor wards. We to prevention of falls to perform three countermeasure. First, we invite Neurology doctor, nurse, and other staff for team members to system review the effective prevention method of fall. Second, initiative to provide aids to high risk patients of fall. Third, enhance high risk patients of fall the sense of knowledge and the severity, especially to avoid leaving bed by himself. Finally, use control chart to monitor incidence of fall in the wards, and thus improve immediately. We used descriptive statistics to analysis incidence of patient falls, rate of fall injury before and after implementation.

Results: After the implementation, number of falls for 195 to 176 in 2014 to 2015, and incidence of falls for 0.09% to 0.07%, incidence of falls reduced by 22%. Rate of injury of falls for 26.7% to 28.4%, and mild injuries. Although the number and incidence of falls was reduced, but incidence of falls among the elderly over the age of 65 for 0.06% risen to 0.08%, and the number of fall among the elderly for increased by 19.2%.

Conclusion: Although the incidence of fall already down to peer hospital averages, and we continued efforts to reduce fall among elderly, we evaluated the feasibility of pressure-sensitive mattress, we hope initiative to remind nurses when time patient leaving the bed. The future can be combined with information technology and facilitate further the prevention of falls.
THE EXPERIENCE FOR REDUCE PHYSICAL RESTRAINT RATE IN THE MEDICAL CENTER
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Objectives: Physical restraint use to protect patient safety, but in the modern society, not only protect patient safety, but also need to humane or individual of medical care, and thus need to reduce physical restraint to protect the autonomy of the patient for medical treatment. Physical restraint rate was 1.23% in 2013 to 2014, contrast Taiwan Clinical Performance Indicator (TCPI) peer 75th percentile hospital for 0.84%, and prepare to improve it.

Methods: This study was conducted with Taiwan Clinical Performance Indicator (TCPI) definition to collect. In January 2015, we set up the improve team, and analysis reason of physical restraint. In March 2015, we used method of quality improvement, and implementation three items. First, we review literature to look for way to reduce physical restrain. Second, implementation constraints alternatives of restrain, include gloves to avoid removal of tube. Third, leader check correctness for physical restraint. Finally, use control chart monitor wards to if indicator abnormal of ward immediate improvement. We used descriptive statistics to analysis incidence of physical restraint before and after implementation.

Results: Number per month of physical restraint for 223 reduce to 177, and the number per month of restraint reduce by 26%. Physical restraint rate for 1.23% reduce to 0.90%, but physical restraint rate still high than peer 75th percentile hospital. We also found rate of physical restraint longer than 24 hours for 68.6% reduced to 56.59%, and lower than peer 75th percentile hospital (70.31%).

Conclusion: Although restraint rate is still higher than peers hospitals, but more than 24 hours in restraint time rate is lower than peer hospitals, and therefore we will continue to improvement to protect patient’s autonomy, and enhance a more humane medical environment.
IMPLEMENTATION OF PATIENT-CENTERED PHARMA CLOUD SYSTEM TO REDUCE MEDICATION DUPLICATION
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¹Department of Pharmacy, Shuang Ho Hospital, Taipei Medical University, New Taipei City, ²College of Pharmacy, Taipei Medical University, Taipei, Taiwan

Objectives: According to the survey of Taiwan Healthcare Reform Foundation, the cost of medication duplication was about 82 million US dollars in 2006-2008. We analyzed the data of medication duplication in a teaching hospital and had several findings. First, patients went to different hospitals for the same disease at the same time. Second, different doctors prescribed medications in the same pharmacological class. Third, medication adherence and compliance in these patients needed to be improved. This study aimed to evaluate the PharmaCloud system implanted to reduce the patient receiving duplicated medications.

Methods: Taiwan launched a single-payer National Health Insurance (NHI) program in 1995. The NHI applied cloud technology to build a patient-centered “PharmaCloud System” in 2013. Healthcare provider could review all of prescription records of the patient in the preceding 3 months when giving prescription or consultation. With patient consent, the medication claims data from PharmaCloud would be integrated into computerized physician order entry (CPOE) system. If duplicated therapeutic class medications were prescribing by different healthcare facilities, the alerting module would be generated. Furthermore, if the duplications were happened within the same hospital, the prescribing process would be blocked.

Results: After implantation of PharmaCloud system into hospital electronic health record in November 2014, the incorporation of PharmaCloud and CPOE system were up to 194,101 patients in December 2015 (187.35% growth compared with 2014). The medication duplication rate between different healthcare facilities was 0.52% in October 2015 (43.00% reduction compared with 2014). The medication duplication rate within the same hospital was 0.13% in October 2015 (48.83% reduction compared with 2014). Meanwhile, the reduction of medication consumption was about 20 thousand US dollars per year.

Conclusion: Potential duplicated medications are detected efficiently by incorporating PharmaCloud claims data into hospital electronic health record. Implantation of the integrated system resulted in reducing medication duplication and saving medical resources.
THE COMPREHENSIVE COST OF ILLNESS FOR THREE MAJOR DISEASES IN JAPAN
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Social Medicine, TOHO UNIVERSITY, Tokyo, Japan

Objectives: Cancer, cerebrovascular disease (CVD) and heart disease had been leading causes of death in Japan from 1958 to 2010. These diseases still continue to be serious social burdens. But the structures of the social burdens can be different among these diseases. The purpose of this study is to measure the burden of these diseases using cost of illness method.

Methods: Modifying the COI method developed by Rice D, we newly defined and estimated comprehensive cost of illness (C-COI) of cancer (ICD10 code: C00-D09), CVD (I60-I69) and heart disease (I01-I02.0, I05-I09, I20-I25, I27, I30-I52). C-COI consists of five parts; direct cost (medical), morbidity cost, mortality cost, direct cost (long term care (LTC)) and family’s burden. Direct cost (medical) is health care cost of each disease. Morbidity cost is opportunity cost for inpatient and outpatient care. Mortality cost is measured as the loss of human capital (human capital method). These three costs are known as components of original cost of illness by Rice D. Direct cost (LTC) is long term care insurance benefits. And family’s burden is “unpaid care cost” by family, relatives and friends in-home and in-community (opportunity cost). We calculated such costs at 2013-2014 using Japanese official statistics.

Results: C-COI of cancer, CVD and heart disease amount to 9.8 trillion JPY, 6.5 trillion JPY, and 4.5 trillion JPY, respectively. As for composition of C-COI, the mortality cost occupied the largest part for cancer (63.5%) and heart disease (50.6%), but the direct cost (LTC) occupied the largest part for CVD (26.7%). Cost of LTC for CVD was 11.1 times of that of cancer and 6.2 times of that of heart disease. Estimation result is shown in the following Table.

Table: C-COI for three major diseases in Japan (billion JPY)

<table>
<thead>
<tr>
<th></th>
<th>original cost of illness developed by Rice D</th>
<th>newly added cost component</th>
<th>C-COI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct cost (medical)#</td>
<td>Morbidity cost#</td>
<td>Mortality cost#</td>
</tr>
<tr>
<td>Cancer</td>
<td>2,816</td>
<td>463</td>
<td>6,231</td>
</tr>
<tr>
<td>CVD</td>
<td>1,444</td>
<td>322</td>
<td>1,352</td>
</tr>
<tr>
<td>Heart disease</td>
<td>1,514</td>
<td>141</td>
<td>2,257</td>
</tr>
</tbody>
</table>

# data from year 2014
* data from year 2013

Conclusion: With governmental statistics, the study demonstrated that the family’s burden could be estimated and it could be a major cost component in CVD, where long term disability is a salient feature of the disease. When policies to decrease direct cost; that is the expenditure from medical and LTC insurance, are taken, they may mean just cost-transfer from direct cost to family’s burden. Family’s burden is unpaid burden, but by including family’s burden when estimating the COI (C-COI), we can estimate the COI correctly, and measure the impact of health policy.
REDUCING INCIDENCE OF CONJUNCTIVITIS OF NEONATES USING RESPIRATORY THERAPY DEVICES IN NEONATAL INTENSIVE CARE UNIT

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Objectives: Conjunctivitis is one of the most frequently occurring health care-acquired (HA) infections in the neonatal intensive care unit (NICU). Few recent reports described health care-associated conjunctivitis among neonatal patients using respiratory therapy devices. We conducted this quality improvement project to reduce the incidence of conjunctivitis in a level III NICU.

Methods: We retrospectively reviewed hospital record of 153 patients admitted to a NICU with respiratory therapy devices usage in northern Taiwan from November 2013 to April 2014. Patients’ demographic, clinical, device usage and conjunctivitis data were collected. We developed hand-washing facilities maintenance practices, regularly checked hospital water quality, monitored hand hygiene compliance and educated staff how to prevent eye contamination during respiratory therapy device care and suction process. Then, we collected 189 patients prospectively from November 2014 through June 2015. The factors related to HA conjunctivitis were collected and the incidences of conjunctivitis were compared between these 2 groups of patients.

Results: Patients’ demographics were not significantly different between these two periods. After implementing the quality improvement project, the faucet contaminated rate was decreased from 50% to 0%; hospital water gram negative culture positive rate was reduced from 38% to 0%; hand hygiene compliance rate improved from 65.9% to 90.5%; respiratory therapy devices care correct rate improved from 96.2% to 100% and suction technique correct rate improved from 91.4% to 98.4%. Not only the incidence of conjunctivitis was reduced from 5.2% (8/153) to 1% (2/189), but also sputum culture positive rate was reduced from 9.8% (15/153) to 2% (4/189).

Conclusion: HA conjunctivitis was closely related to respiratory therapy devices usage. Delicate care of respiratory therapy devices, proper suction technique, reducing water-borne contamination and good hand hygiene compliance may prevent its occurrence. Although this nosocomial infection could be caused by numerous hospital sources, hospital water may be the most important and controllable cause.

References:
HELPING HOSPITAL STAFF IN DEALING WITH ABUSIVE PATIENTS
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Objectives: National University Hospital (NUH) is an academic medical centre with 1200 beds & a wide range of services with around 8000 staff. Abuse by patients/families is on the rise in NUH resulting in stress, decreased morale & job satisfaction. Potentially, 70% of Singapore’s hospital staff have experienced physical abuse, given significant underreporting. The increasing demand on healthcare services, & changing public perceptions, recognition & management of this problem was essential.

Methods: Despite recognizing the growing problem since 2007 & by placing measures in the form of a policy & process to ward off & manage abusive patients/families, the efforts did not bring about the results as expected. Staff continued to feel vulnerable. Re-strategizing of efforts was launched in 2014 by setting up a workgroup to review all aspects to adopt a multipronged approach to prevent & mitigate abuse. Measures included strengthening the process by: 1) identification of abusive patients early & marking them in the system, 2) escalation process to seek help, 3) issuing patients with a Code of Conduct (COC) undertaking, 4) security presence via alarm system 5) buddy system & counselling for victims of abuse, 6) support when reporting to police & dealing with legal matters. Help came from another avenue in terms Protection From Harassment Act (PFHA) 2014, that extended the support to workers in healthcare institutions to make it an offense to harass healthcare staff. The process was further refined to include the necessary steps from the Act. Other measures include: a) encouraging staff to report freely all abusive behaviour to maintain a register of cases for surveillance, b) analysis of cases to identify categories of hazards for coming up with plausible solutions, c) education & training via roadshows, orientation etc for staff: i) to understand risk factors & acceptable behaviour, ii) safety tips & skills in defusing/de-escalating situations, iii) creating awareness of existing avenues/support systems to surface issues & seek help, iv) self-protection program (KAPAP self-defense). In addition, posters on stopping staff abuse are displayed at all vantage points and staff are issued with a pocket size booklet with relevant information, including the process flow in dealing with abusive patients & escalation.

Results: 2010 to 2015 data (table below) shows a rise in number of abuse cases of all categories, likely due to staff reporting more cases voluntarily through the hospital’s online system, probably as a result of encouragement from the management’s “zero tolerance policy” & the trust in the systematic process that was implemented. Molest & harassment cases show a rise in 2015, probably due to the strong support of PFH Act.

<table>
<thead>
<tr>
<th>Type of Abuse Cases</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Aggression/ Abuse</td>
<td>45</td>
<td>45</td>
<td>53</td>
<td>77</td>
<td>96</td>
<td>78</td>
</tr>
<tr>
<td>Physical Assault/ Aggression</td>
<td>35</td>
<td>37</td>
<td>39</td>
<td>46</td>
<td>63</td>
<td>56</td>
</tr>
<tr>
<td>Inconsiderate/ Rude/ Hostile/ Inappropriate Behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncompliant/ Uncooperative/ Obstructive Behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molest/ Harassment incident</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>9</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Discrimination/ Prejudice</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem with Substance Use/ Abuse</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Intended Self Harm/ Suicide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>85</td>
<td>86</td>
<td>94</td>
<td>206</td>
<td>244</td>
<td>209</td>
</tr>
</tbody>
</table>

The Employee Climate Survey (ESS) results in 2 areas, “Valuing our staff” & “Protection of harm” showed statistical difference between 2011 & 2015 results, which is an evidence that staff do believe in the “zero tolerance” intent of the management and their support.

Conclusion: It is inevitable that we will encounter difficult patients/families who may already be reeling under the stress of illness, but much needs to be done to alter their behaviour, including public education & making hospital systems as smooth as possible but at the same time must provide protective policies & processes for those at risk.
FEASIBILITY OF USABILITY TEST IN HUMAN ERROR PRONE INFUSION DEVICE – A PILOT STUDY
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1Quality and Safety Division, NTE Cluster, Hospital Authority, 2Department of Industrial and Manufacturing Systems Engineering, THE UNIVERSITY OF HONG KONG , Hong Kong, Hong Kong

Objectives: Infusion devices are in widespread use in clinical settings. They offer more precise and accurate delivery of drugs and fluids over manual administration. Different models of infusion pump equip with different safety features to alert users and to prevent errors. Medication incidents associated with the use of infusion devices can produce more serious adverse effect because they are frequently used to administer high risk medications. In recent local medication incidents, the features and interface of the infusion devices were identified to be the root cause. FDA in 2010 had identified that inadequate user interface design of infusion pumps created problems or contributed to user error in many reported adverse events. Improvement initiatives in term of human factor on the pumps design and pre-market test were carried out.

The objectives of our pilot are:
- To identify main usability issues in the interface design and operations of infusion devices through simulated use
- To assess the feasibility of usability test in identifying error-prone infusion devices to help making evidence-based decisions about selection of safe infusion devices

Methods: Four models of volumatic infusion pumps either which were most frequently in use or the latest models in our cluster were tested. One of which was associated with a number of medication incidents. Scenarios that required pump programming on drug administration process were developed based on the actual clinical practice. 60 female nurses from 5 clinical units including ICU, operation theatre, medical and paediatrics units in 3 acute hospitals were recruited.

Before the test, each participant was briefed on operation features of each pump. A questionnaire was used to collect perception about the interface and operations of the infusion pumps including perceived usefulness, perceived ease of use, perceived mental effort and likelihood of programming error at the end of each infusion testing.

Each participant was required to put on a video frame glasses to record how the pumps were programmed the pumps during task performance. Participants were encouraged to verbalize how they operated the pumps and how they thought (a think-aloud method). Each nurse was asked to complete the task by programming all of the 4 pumps according to the scenarios. Participant's task and performance and interaction with the infusion pumps were extracted from video records.

The completion time and accuracy of pump programming were analyzed in order to identify design problems of the pumps

Results: The extracted data was under analyzing. Preliminary pilot result showed that the mean task completion time of two latest models were longer than two “older” models. The most frequently used model was observed to have few deviations of pump programming. The main usability issues associated with system status feedback, information presentation, ease of use, and error prevention would be discussed.

Conclusion: The conjunction of human factor evaluation and simulated use could help to evaluate infusion devices in a quick and effective way. Conducting evaluation and usability test to identify usability problems are helpful and important to the design and selection of error prone medical devices which help to reduce operation error and to improve patient safety.
ASSESSMENT OF THE QUALITY AND CONTENTS OF “UNDESIRABLE OUTCOMES” IN CLINICAL PRACTICE GUIDELINES DEVELOPED BY USING THE GRADE APPROACH.

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Objectives: Recently high quality evidence-based clinical practice guidelines are increasing. The Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach offers systematic and transparent methods from conducting systematic review's evidence to making recommendations. The GRADE strategy concentrates on the balance between desirable and undesirable outcomes. Although evidence synthesis regarding the benefit of an intervention has been established, the method on harms has not been sufficiently studied. Especially adverse events in a systematic review of randomized controlled trials were heterogeneous and insufficiently reported. The purpose of this study is to evaluate the quality and contents of “Undesirable outcomes” in clinical practice guidelines developed by using the GRADE approach.

Methods: The study plan is as follows, the MEDLINE, Guidelines International Network web site, the National Guideline Clearinghouse and several international databases search are conducted to identify appropriate guidelines from April 2011 up to December 2015. We investigate all clinical questions and recommendations in selected guidelines. We explore the process of making recommendations and assess how to summarize and synthesis undesirable outcomes. All calculations will be carried out including all studies and be stratified for study type (RCT, Non-RCT) and publication year, respectively.

Results: We are currently conducting the analysis.

Conclusion: We will present the results and conclusions at the conference.
THE EFFECT OF BUNDLE CARE ON CATHETER-ASSOCIATED URINARY TRACT INFECTION
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Objectives: The catheter-associated urinary tract infection (CAUTI) is the common issue in health care. The density of infection will be daily increased 3 to 8% for the most of the patients in intensive care unit which using the foley catheter. Then the higher infection rate will increase the cost and the hospitalization days. The density of CAUTI were 5.38~6.76‰ from 2013 to 2014 than the National Medical Center ICU (4.6‰). Therefore, the objectives of this project were to evaluate the effects of the bundle care on CAUTI in Traumatic and Neurological Critical Unit in Taichang. The project is to build up the bundle care of CAUTI for clinical nursing staffs applying, e.g. replace the antiseptic from 10% Betadine to 2% CHG, bedside dashboard, checklist and education. And finally make the reduction in infection density.

Methods: From January 2013 to December 2015, we retrospectively collect the CAUTI of the patients who received an indwelling foley catheter. The infection rate of CAUTI was 5.38-6.76% from 2013 to 2014 in Traumatic and Neurological Critical Unit of medical center hospital in Taichung. We apply the eighty-twenty rule to search for the origins of the causes based on the clinical experiences and the results from evidence-base medicine. After the integration of reference and Team members discussion, Build up the bundle care of CAUTI were to replace the antiseptic from 10% Betadine to 2% CHG during foley insertion, using checklist on foley insertion and care, designed practical education and applied bedside electronic dashboard. The aim of the project is to reduce 80% of the previous incidence of CAUTI which the means is 5.4%.

Results: The project were implemented since January to December in 2015, the result of the CAUTI was decreased from 6.76% to 2.65 %, achieving the target (5.4%). Furthermore, applying the bundle care of CAUTI also provide the complementary benefits such as less nursing time, lower hospital costs and hospitalization days.

Conclusion: The bundle care of CAUTI indeed reduce the infection rate and provided other complementary benefits. It really increases the QOL of the patients and less nursing time about 90-100 seconds.

REDUCING THE TIME FROM REFERRAL TO TREATMENT FOR LUNG CANCER

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1Quality, Research, Innovation and education, 2Executive Board, OUH Odense University Hospital, Odense, Denmark

Objectives: The objective is to demonstrate that the time from referral to treatment for lung cancer can be reduced through increased leadership and by the use of lean tools.

Methods: Odense University Hospital has for years had great success in using clinical program management for a number of different areas, including lung cancer. The main purpose for the clinical program management is to ensure the necessary focus in relation to the development, and maintain the quality within each area.

Lack of performance in relation to the time from referral and initiation of treatment for lung cancer resulted in the Executive Board, in collaboration with the clinical program management for lung cancer, initiated a project between the involved clinical departments, the clinical program management and the department for LEAN and Innovation.

The aim of the initiative is to optimize the coordination between all departments involved in the treatment of lung cancer, and to highlight potential stumbling blocks or other challenges locally in the departments involved within the process. The initiative was done in close collaboration with relevant staff functions in order to provide relevant data from the different clinically systems used in the hospital. An essential element of a successful clinical care pathway is involvement and ownership from both the management and from the employees. Therefore it was decided that the clinical program management had to function as a steering committee where priorities were discussed and decided. Coordinators in the respective clinical and para clinical departments coordinated the work and the LEAN consultants facilitated and drove the process in close coordination with relevant staff employees.

Based on semi-structured interviews of key personnel, the overall clinical pathway was mapped, analysed and prioritized using value stream mapping (Lean tool) with the involvement of representatives from all the involved departments and functions.

From the value stream mapping, the clinical program management selected four specific initiatives which then were converted into initiatives in and across the different departments.

Through observations, the patient perspective was mapped from referral to treatment. Data was collected through time studies and by using various key figures for the patient pathway.

Results: The Radiological Department has developed schedules to ensure that the patient gets a fast clinical pathway without unnecessary delays. The capacity of the lung biopsy area is aligned with demand, resulting in minimized latency. The work of the different project groups caused a greater understanding of each other's work and the collaboration between the different departments was substantially improved.

The overall performance (average time from referral to treatment) went from 34 days to 23 days. After the initiative, all patients were treated within the timeframe set by the National Board of Health. Before the initiative, only 80 percent of the patients were treated within the timeframe.

Conclusion: The initiative regarding the clinical pathway for lung cancer have shown that increased leadership combined with the use of LEAN tools can reduce the time from referral to treatment with almost 30 percent. This saves not alone resources (time and money) for the hospital, it also increases the satisfaction of the patient.
REDUCING UNSCHEDULED RETURN (UR) TO EMERGENCY DEPARTMENT (ED) WITHIN 72 HOURS BY IMPLEMENTING ‘PAIN MANAGEMENT PROTOCOL’

1Surgery, 2centre for quality management, 3Buddhist Dalin Tzuchi Hospital, Chiayi, Taiwan

Objectives: Unscheduled return to ER after discharge is an indicator of quality of medical care. Among the various reasons for revisits, ‘pain’ is the most frequent complaint in our hospital. The assessment and management of a patient’s pain prior to discharge could eliminate the immediate need for return to ED.

Methods: In March 2015, pain management protocol specific for medical patients, surgical patients, intensive care patients, and hospice patients was formulated by a task force comprised of surgeons, family physicians, anesthesiologist, nurses, and quality managers. The protocol was incorporated into the HIS (hospital information system) for instantaneous alarm and monthly audit. Once pain medications like morphine, meperidine, codeine, tramadol, or fentanyl were prescribed, an alarm window would pop-out. The prescribing physicians or physician assistants were required to assess the pain severity by Visual Analog Scale (0-10) or Verbal Rating Scale (mild, moderate, severe, very severe). Prior to discharge, the pain scale was assessed again and adequate pain medications were given accordingly. The response rate and the completeness of pain evaluation/management were audited monthly.

Results: Since the implementation of this pain protocol in September 2015, the response rate has risen from 96.34% to 100% in Jan 2016. More importantly, the rate of unscheduled return due to pain after discharge was reduced from 1.44% (Jan-Aug, 2015) to 0.15% (Sep-Dec 2015).

Conclusion: By means of implementing ‘pain management protocol’ in the above-mentioned patient groups, we have successfully reduced 72-hour UR to ED due to post-discharge pain within short period of time. The HIS-incorporated protocol (alarm and audit) helped physicians and nurses provide comprehensive pain evaluation and management during hospitalization. The cost and overcrowding of ED was thus effectively reduced, and higher quality patient care and outcome was achieved.
CONSTRUCTION OF SAFE COMMUNICATION CHANNEL FROM PRESCRIPTION TO MEDICATION FOR ANTICANCER

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Objectives: The purpose of this study is to examine the problems raised in the course of communication and process of anticancer drug prescription and medication between medical workers. It also intends to increase medication safety of anticancer drugs and reduce loss caused by disposal of anticancer drugs by reinforcing activity that improves accurate communication.

Methods: The problems that were raised throughout the course of prescription and medication of anticancer drugs between medical department – nursing – pharmacy were derived. It revealed that insufficient information sharing on anticancer regimens between medical workers as well as oral and phone communication on inquires related to anticancer prescription and progress/suspension of anticancer drug preparation in the hospital pharmacy caused confusion and errors; therefore, such required to be improved. As for the system improvement, it promoted accurate understanding on the prescription by sharing anticancer regimens with the ward in charge. Also for prescription, preparation, and preparation suspension of anticancer drugs, the information system was supplemented for communication improvement. Moreover, the computer program for blood laboratory data, solution that was disqualified for dilution, inhibited administration, drug interactions, and duplicate prescriptions was developed and applied in order for the prescription stability of anticancer drugs while sharing the screen of pharmacy’s Body Surface Area. All anticancer drugs as well as drug medication process were checked by two medical workers. Meanwhile, the safety of the anticancer drug that was prepared through special management due to short valid period after dilution was reinforced.

Results: Throughout the prescription and administration of anticancer drugs, the communication and process were improved and as a result, the oral and phone communication was reduced by 86.4% compared to be time before promoting the improvement activity due to accurate communication using the anticancer drug information program (From 294 cases to 40 cases). Among these, matters related to preparations and suspensions of anticancer drug preparation were remarkably reduced by 70.8%. Also, the loss caused by anticancer drug disposal was decreased by 45.6% compared to the amount occurred previous year without improvement activity. The safety was reinforced through accurate communication through computer information system and the loss raised by anticancer drug disposal was reduced.

Conclusion: Through improved communication method in the course of anticancer drug medication, reinforced review of anticancer drug preparation, and surveillance of anticancer drugs with two medical workers, the safety of anticancer drug medication was improved. In future, other issues related to communication as well as reviewing function of anticancer drug preparation will be consistently improved in order to promote safety of anticancer drug medication.
EXPLORE THE FACTORS AFFECTING PRIVACY PROTECTIVE BEHAVIOR INTENTION OF THE ELECTRONIC MEDICAL RECORD: A COMMUNITY HOSPITAL STUDY
S.-H. Chuang 1*, C.-J. Wu 1
1Department of Healthcare Administration, Asia University, Taichung, Taiwan

Objectives: The aims of this study were to explore the factors that influenced hospital staff in the privacy protective behavior intention of the Electronic Medical Record (EMR) and to conduct a multi-group analysis comparing behavior intention about EMR privacy protection by participants’ characteristics.

Methods: The cross-sectional survey was carried out with questionnaires among one community hospital in central Taiwan. The questionnaire designed was based on the Theory of Planned Behavior (TPB). The internal consistency cronbach’s α coefficient is 0.9576. Questionnaires were distributed in hospital to all staff (n = 91) via convenience sampling. A total of 44 (48.4%) questionnaires were recovered, and among them 42 (95.5%) were valid, with a final completion rate of 46.2%. Descriptive analysis was used to characterize the study population. In questions, a seven-point Likert scale was used. Multiple regression model was used to predict relevant factors of ERM privacy protective behavior intention. SPSS 22.0 Software was used for data analyses.

Results: The characteristics of the participants showed 42 staffs in this sample, 19 (45.2%) were nurses, and 4 (9.5%) were physicians. Thirty-three (78.6%) were female; 19(45.2%) were 31-40 years old, secondly 9 (21.4%) were 21-30 and 41-50 years old. Fifteen (35.7%) were seniority below five years; 37 (88.1%) were degree of education above university. Average score among each dimension of TPB was attitude (AT) 5.78, subjective norm (SN) 5.19, perceived behavioral control (PBC) 5.57, and ERM privacy protective behavior intention (BI) 5.63. AT and PBC were positively related to hospital staffs’ behavior intention (BI) (P<0.001), but no statistically significant by SN. After adjust by participants’ characteristics, the results were same. Compared with other group, administration except for medical record staffs and seniority between 10~15 years were negative related to hospital staffs’ behavior intention (BI) (P=0.029, 0.040, respectively).

Conclusion: Our study suggested that the community hospital should elevate hospital staffs’ perceptions about AT and PBC of the EMR privacy protection. Administration except for medical record staffs and seniority between 10~15 years especially should be reminded to engage in these programs. These measures could decrease patients’ concerns about the EMR privacy and be beneficial to the promotion of the EMR even smart hospital in the future.
IMPROVEMENT ACTIVITY TO PREVENT FALLS IN THE HOSPITAL
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Objectives: The purpose of this activity was to reduce falls by changing fall prevention activities to a more patient-centric and effective way, and by improving safety in the hospital environment and in equipment use.

Methods: We utilized the FMEA (Failure mode and effect analysis) method to analyze contributing factors for falls and came up with 4 root causes of falls. These are
- ineffective patient education
- ineffective information sharing of patients with high risk of falling
- lack of knowledge of adequate nursing intervention in regard to risk factors
- deficiencies in environmental safety management
Thus the following improvements were implemented.
First, for the individualized fall prevention patient education, we distinguished 6 subjects based on the patient’s risk factors of falls. These are 1) general precautions, 2) impaired cognition, 3) dysuria, 4) dizziness, 5) impaired mobility and 6) patient after surgery. We’ve created educational material for each of these subjects which was made with pictures and 6 or less precautions for each subject. After nurses assessed the fall risk factors of patients, they taught each patient and care-giver using the educational material at the bed side.
Second, to enhance information sharing about patients with high-risk of fall, we’ve hung fall-danger signs at the bed or IV stand pole, and shared summarized patient information through the Electronic Medical Record (EMR) system. In cases when the signs couldn’t be hung due to patients moving to the laboratory or going under therapy and also in cases when the EMR system wasn’t accessible, we’ve attached stickers to the patient’s identification wrist band with warnings about high risk of fall.
Third, to practice adequate nursing intervention in regard to risk factors, we’ve added pre-defined nursing record sets of the recommended fall prevention interventions to the EMR so that the nurses can notice and apply.
Fourth, as an environmental safety management system, we’ve created the patient safety rounding: a patient safety corporation between the nursing department and the department in charge of the facilities and equipment to eliminate hazards and improve environmental safety.

Results: We used the number of falls per 1,000 patient bed days to check the improvement. The fall rate reduced from 1.23 during July through September of 2014, which was before the improvement activities, to 1.09 during January 2015 after the activities. This is an 11% reduction.
Nurses answered that by using the newly created educational material it was easier for them to teach the patients about fall prevention because the materials were more appropriate. Also they answered that because the materials were at bedside it was more utilizable. Patients and care-givers answered that because the material was in sight and because it had pictures, they were able to understand better about falls and be more cautious. Also they said that even if the care-giver was changed, they were able to keep in mind about the precautions. 3 months after starting to attach the ‘high risk of falls’ stickers, the staff answered that the sticker was indeed helpful and kept them more cautious about falls.

Conclusion: Through this activity we learned that to execute effective fall prevention activities the following has to be done. 1) Continued invention of effective fall prevention activity, 2) encouragement of patients and their care-givers to participate, 3) sharing of information between staff members about fall high-risk patients to be aware and 4) to improve hospital environment and equipment safety. We will go on with these activities to minimize falls.
IMPROVEMENT OF WORK EFFICIENCY THROUGH TRANSFERRING PROCESS REFORMATION

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**Objectives:** Inter-hospital patient transfers are performed when hospitals terminate a patient’s advanced treatment, transport a patient to a specialty department, or a patient requests to be moved. Inter-hospital patient transfers consist of bed assignments, handovers, phone calls between departments, and transfers of patients. Inter-hospital patient transfers take a lot of time and effort for the nursing staff, often causing conflict between the departments. These problems can be solved by identifying the causes of transfers and by improving the transfer process, thus reducing unnecessary inter-hospital patient transfers and processing time.

**Methods:** The Key indicator of inter-hospital patient transferring system process, the number of inter hospital patient transfers and transfer-in ratio. The goal of this project is to decrease the number of inter hospital patient transfers and increase the transfer-in ratio before 2:00 pm both by 10%. We applied the method of PDCA. The main strategies for this approach are as follows: In the first step, we checked the current status of transfer tasks. We had all of the departments record all of the occurrences of inter-hospital patient transfers for 5 days. Types of transfers, transportation duration, number of phone calls, and the most difficult task were identified by analyzing the records of 199 inter-hospital patient transfers. 28.2% of cases made phone calls more than 3 times for handover and 42.9% of the total time consumed for the transportation was more than 30 minutes. In particular, the most difficult parts of the inter-hospital patient transfers were the conflicting transportation schedule between departments (35.7%), the transportation tasks (25.2) and bed assignments (14.8%).

In the second step, we supplemented the transfer request system on OCS (Order communication system) and standardized the system to reduce the inter-hospital patient transfers. We utilized patient handover sheets and electronic medical records instead of phone calls for handovers. Each department standardized the transfer schedule to complete transfer process by 2 pm, and shared transportation staff between departments to increase efficiency of inter-hospital patient transfers. Non-ambulatory patients were transported in beds to reduce the waste of linens and to increase patient safety.

**Results:** In the third step, the number of inter-hospital patient transfers and the transferring system process before 2:00 pm were analyzed using the DW (data warehouse). The inter-hospital patient transfers were recorded in all departments for 5 days from 8/24/2015 to 8/28/2015. The number of inter-hospital patient transfers was reduced from 113 to 97 (14.2% reduction). The transfer-in ratio before 2:00 pm was increased from 26.5% to 53.6% (27.1% improvement). The perceived duration of the hours for transfers was reduced from 26.5% to 10% (16.5% reduction). Nurse satisfaction from this activity was 94% for nurses transferring out patients and 91% for nurses transferring in patients

**Conclusion:** We performed QI activities such as standardizing transfer requests, improving handover process, reducing transportation duration, and increasing efficiency of transfers to improve the process of inter-hospital patient transfers. Reduced number of inter-hospital patient transfers, increased transfer-in ratio before 2:00 pm, reduction of time for transportation, and nurse satisfaction were demonstrated in this activity.

We suggest that hospitals continue QI activities to reduce inter-hospital transfers to improve efficiency. The efforts of effective communication between the departments should follow to accomplish this goal.
A NEW APPROACH FOR NEGATIVE SYMPTOMS OF SCHIZOPHRENIA: NURSE LED MUSIC GROUP WITH THE CONCEPT OF RECOVERY MODEL

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Objectives: Schizophrenia is a severe form of mental illness with chronicity affecting about 7 per thousand of the adult population, mostly in the age group 15-35 years. The mainstay of the schizophrenia treatment is medication, however first- and second- generation antipsychotics may cause side effects that affect the daily functioning of people with schizophrenia. Upon non-medication-based interventions for schizophrenia, music intervention was one of the four interventions with strong evidence support and merits application. Music intervention can be defined as the controlled use of the influence of music to bring about favourable effects in physiology, psychology, and emotion of humans. The combination of music and recovery model was a new concept on the music intervention for recovery of schizophrenia. The effect was in a knowledge gap. Therefore, the objective of the study is to explore the effectiveness of group music intervention with concept of recovery model on general mental state, negative symptoms and empowerment among people with schizophrenia in community.

Methods: This was a prospective study with music intervention group and control group. Pre and post-test of the Brief Psychiatric Rating Scales (BPRS), Scale for Assessment of Negative Symptoms (SANS) and Patient Perception of Empowerment Scale (PPES) were performed before and after intervention. Comparison of the differences between the pre and post of each assessment was conducted. The study was conducted in the Community Psychiatric Service (CPS) of PYNEH and the Wanchai Integrated Community Centre for Mental Wellness (ICCMW).

Results: The sample size was 15 participants in each of the music intervention group and control group. There were totally 2 groups involved in the study, with a total of 30 participants. The result indicated that the total score of SANS of music intervention group was significantly lower than that of control group (p<0.01). The score of affective flattening or blunting subscale (p<0.01) and alogia subscale of SANS (p<0.01) of the music intervention group were significantly lowered. The total score of PPES was significantly increased.

Conclusion: Music intervention group with the combination of music and recovery model held by nurse had significant effect on the reducing negative symptoms and increasing self-perception of empowerment of the schizophrenic people in community.
QUALITY OF CARE IN PATIENTS WITH HYPOPHARYNGEAL CANCER AND THE RELATIONSHIPS WITH VOLUME AND LONG-TERM OUTCOME IN TAIWAN

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Objectives: Although performance measurement for assessing care quality is an emerging area, a system for measuring the quality of hypopharyngeal cancer (HPC) care has not been well developed. Besides, the research to examine the relationship among volume-process-outcome in HPC was scarce. As the incidence of HPC in Taiwan is higher than in Western countries, the purposes of this study are to develop a set of HPC core measures, and to apply these measures to explore the relationships among service volumes, process quality, and patient survival.

Methods: A set of HPC-specific core performance measures was developed by using modified Delphi technology, RAND appropriateness method, and stakeholder feedback. A population-based observational study using nationalized databases was conducted. Primary HPC patients diagnosed in 2004-2010 and reported in Taiwan’s National Cancer Registry Database were identified, and the list was then linked to the Taiwan’s National Health Insurance Database and Death Registry Database. Patient-level composite performance score (CPS) was assessed to represent the quality of care by computing the percentage of recommended indicators that were obtained for each patient. Hospitals were categorized into quartiles based on the number of average annual HPC outpatient and inpatient case volume. Outcome measures were two-year and five-year survival status. Information including patient’s socioeconomic, medical data and hospital’s characteristics was also collected. Multilevel regression and multilevel logistic regression modeling, to diminish the bias due to clustered or nested effect, were performed for hypothesis testing.

Results: The final organization-based core performance measure set included 19 indicators (two pre-treatment, five treatment-related and nine monitoring-related). There were data available for six indicators including two pre-treatment, three treatment-related, and one monitoring-related indicator. A total of 4,991 HPC patients from 58 hospitals were enrolled in this study. The mean diagnosed age was 56.6 years, and stage IVA was the most common stage at the time HPC was discovered (53.54%). Average CPS of total patients was 71% (SD=24%). Multivariate analysis showed that after controlling for patient and hospital characteristics, no volume effect was found in patient’s CPS. However, patients treated in higher volume hospitals and with higher CPS had lower two-year and five-year mortality.

Conclusion: This nationwide study indicated that the quality of HPC care was no difference among hospitals with different service volume. However, hospital volume and adherence to recommended care were associated with better outcome for HPC patients. Furthermore, the HPC core measure set may be applied for internal quality improvement and external surveillance, and be adapted to link with pay for performance or certification program in cancer care.
POSITIVE OUTCOME FROM IMPLEMENTATION OF PATIENT SAFETY ROUND BY FRONTLINE STAFF IN SURGICAL DEPARTMENT – A FIVE YEARS’ EXPERIENCE
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Objectives: Introduction
It is understandable that a patient’s perception of quality of healthcare mainly depends on the carer’s ability to meet the patient’s needs. Regular ward round is believed to have positive impact on patient care. It is important to develop and implement a nursing round protocol in Department of Surgery to promote patient safety and satisfaction in ward.

Objectives
(1) To develop and standardise a ward round protocol as a route of practice in the Surgical Department; (2) to enhance patient safety in terms of fall rate; (3) to enhance quality of patient care as reflected by number of appreciation received from patients or their relatives; and (4) to promote clinical learning and communications among colleagues.

Methods: Between duty shifts, night shift (05:00), am shift (09:00 and 14:00) or pm shift (22:00), trained care-related supporting staff will perform patient safety round at least once with respect to designed “patient safety round protocol” which contains 11 items. They will then sign on the nursing prescription sheet after completing the safety round. Team nurse, shift in-charge and ward manager continue to monitor their compliance and ensure quality outcome. This ongoing programme has been started since October 2010 in a pilot ward then rolled out to all inpatients within four acute surgical wards in year 2011. The parameters of outcome measurement are yearly fall rate and number of appreciation received.

Results: As recorded, the yearly fall rate of these four surgical wards decreased by 21% in both 2011 and 2012 and remains steady afterwards. Number of appreciation increased by 29% in 2011, 26% in 2012, 30% in 2013, 25% in 2014 and 28% in 2015 when compared to 2010.

Conclusion: A regularly conducted protocol incorporating specific actions into ward rounds can reduce the frequency of use of patient call bell, increase their satisfaction with healthcare, and reduce falls. Based on the results, the ward round protocol has good sustainability and can serve the above purposes effectively.

PATIENT SAFETY CULTURE SURVEY IN A LOCAL COMMUNITY HOSPITAL IN SOUTHERN TAIWAN
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Objectives: We try to investigate and understand the factors of patient safety culture and attitude of medical personnel in a local community hospital in order to provide a guide for the hospital leader in promoting patient safety. Besides, through the investigation, we may enhance the attention of the personnel, and refine the patient safety culture in the hospital.

Methods: For understanding the patient safety culture of employees in the study hospital, we participated in national Patient Safety Culture Survey held by Taiwan Joint Commission on Hospital Accreditation in 2015. The colleagues in the study hospital answered the cross-sectional questionnaires online to express the level of satisfaction for 41 items of patient safety questions in six constructs from Safety Attitudes Questionnaire (SAQ) developed by the University of Texas and three constructs from Agency for Healthcare Research and Quality, USA (AHRQ). Before executing this investigation, it was approved by the hospital ethics committee. During May 1, 2015 and May 25, 2015, 127 valid questionnaires were collected, with recovery rate of 45.35%. The data were analyzed by independent sample t test and ANOVA method. For statistical significant results of ANOVA, we used the Tukey HSD or Games-Howell post hoc test between the groups.

Results: Overall questionnaire results showed the construct of teamwork had highest average score at 6 variables, while the construct of management experience had 7 variables having lowest score. There were three variables having statistically significant difference in the construct of shift change. Male personnel showed more attention to patient safety than female at variable of shift change (p <0.05). Person in charge showed more attention to patient safety than person not in charge (p <0.05) at variables of working conditions, safety culture, management support for patient safety activities, and shift change. In the group aged 41 years or over, the attention was significantly higher than other groups at the variable of shift change (p <0.05). The group of post-graduates had a significantly lower score in cognition in construct of cross-unit team cooperation than the graduates of college/university (p <0.05).

Conclusion: SAQ and AHRQ are useful tools to clarify the fundamental problems of the hospital patient safety culture. The study results may serve to improve patient safety attitudes of hospital staff, provide the hospital guide for implementation of patient safety work, and reveal the missing items of indicators for improvement for future monitoring. According to the findings, we recommend regular safety culture surveys to understand the attitude of the members of the organization to explore undesirable patient safety problems in the hospital.
NEVER EVENTS IN GENERAL PRACTICE: A FOCUS GROUP STUDY EXPLORING THE CONCEPT OF NEVER EVENTS AND ENABLERS AND BARRIERS TO THE IMPLEMENTATION OF PREVENTATIVE INITIATIVES

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Objectives: Patient safety in health care is now a global concern because of mounting evidence that patients unintentionally but frequently suffer preventable harm. In response, many countries have implemented national improvement strategies, which include policies to help prevent Never Events from occurring. Never Events are defined as patient safety incidents which are potentially serious and avoidable if suitable procedures were implemented by healthcare professionals. Systematic approaches to reduce their occurrence must therefore be identified and implemented. However, Primary Care clinicians’ understanding of the concept and use of the term of 'Never Events', the acceptability of implementing them in General Practice and the work that this will entail to embed them into routine practice are currently unknown.

Methods: Five focus groups with General Practitioners (n=25) from the North West of England and West of Scotland explored: (i) understanding and perceptions of the concept of Never Events in General Practice; (ii) what influenced individuals’ capacity to deal with Never Events; and (iii) the required processes to embed and monitor the implementation of approaches to prevent Never Events within routine practice. Analysis was thematic and underpinned by Normalization Process Theory.

Results: While the Never Events approach was considered to be complex, participants identified a range of initiatives that aligned with approaches to improving the safety and quality of care. Implementation of preventative Never Event initiatives will need to consider the implications for consultations, embedding the approach within a learning system, adequate resource allocation and organisational support. Embedding Never Events into routine practice will require responsiveness to the range of potential patient safety indicators, the roles of different health care professionals and the logistical implications for the co-ordination of care. A whole systems approach to implementation within a practice was considered key to successful implementation of patient safety initiatives.

Conclusion: The Never Event concept is relatively new but was considered overall an important approach to help address key primary care patient safety issues. Implementation will require interventions that are responsive to the complexity of the General Practice setting. A whole systems approach may provide an optimal context for understanding the complexities of everyday practice and the implementation of interventions to address patient safety issues in Primary Care and has implications for the commissioning of services.
INCORPORATED A CLINICAL ALERT SYSTEM INTO DEPARTMENT-SPECIFIC INFORMATION SYSTEM: A PRELIMINARY RESULT FROM QUALITY CONTROL CYCLE

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Objectives: Cancer patients are vulnerable for cancer-induced or treatment-associated comorbidities. Thus, in our department, we established more than 20 key-risk checkpoint for protecting patients' safety. However, in our clinical practice, we encountered two near-missing cases who suffered from subclinical fever and septic shock, respectively. Thus, by applying a quality control cycle, the present study established a clinical alert system to further guide patient safety. During RT, the clinical alert system monitored patient's vital signs daily and their body weight weekly.

Methods: Condition analysis:
First, we analyzed condition in a one-year period. And, we observed: (1). a daily vital-sign check rate during RT was 9% (977 / 10,449 daily patient times; vital signs included body temperature, heart rate, and blood pressure); and (2). a weekly body-weight check rate during RT was 11% (227 / 2,090 weekly patient times). Both the two rates were too low to be satisfied for protecting patient safety.

Quality improvement:
Thus, we conducted a quality control cycle and used plan-do-check-action (PDCA) methods for improving the two check rates and their associated management. Multimodality combined meetings and patient stratification scores were also conducted. Most improving methods were incorporated into our RT-specific information system for systemically monitoring, such as Eastern cooperative oncology group (ECOG) performance status, patient-stratification risk scores, and other alert data.

Results: At the preliminary reported time, the daily vital-sign (all items) check rates were increased gradually as time elapsed, i.e., 31%, 44%, and 60% (P<0.05). Similarly, the weekly body-weight check rates were also improved – as 47%, 55%, and 83% (P<0.05). More importantly, all patients who had abnormal data were early managed by our team members, including an oncology-specific registered dietitian (early intervention rate for real abnormal data, 100%).

Conclusion: Based on our preliminary data, incorporating a clinical alert system into a department-specific information system is useful for early intervention in vulnerable cancer patients. However, re-PDCAs are required for further improving in the present project, mainly focusing on patient risk stratification, team management resources, and staff training.
OBJECTIVES: Hospital Fire prevention is one of the most important issues for patient safety in modern countries. According to patient safety reporting system in Taiwan, there were 98 public accidents relate to fire, in which 83 events occurred in hospital (84.7%) in 2011. For avoiding the impact of hospital fire disasters to patient safety, Joint commission of Taiwan enrolled fire prevent policy as one of the important healthcare quality index in hospital accreditation. Our current research is focusing on kitchen fire prevention at a single regional hospital in southern Taiwan. Since this hospital began providing care for patients in 2004, it suffered the only one time fire in 2014. And the fire was caused by kitchen accident due to a chef’s personal negligence. Overview for environmental safety needs in current hospital, we formed a root cause analysis (Root Cause Analysis; RCA) team, whereby to find out the incidents causes and the system flow problems, then prevent similar incidents from happening again.

METHODS: This event by the " severity assessment criteria" determination SAC 2 and use the event tree (IDT) determine system problems, so that the RCA investigation. Information collected through surveys and interviews with the obligations of supervisors by the Nutrition Services Department consisting of Team Explorer, confirm that the root causes: 1, not actually specified, do not leave the cooking area when cooking. 2. not actually specified, when the sense of smell burning smell, should review the cooking fire source with immediate effect. 3 When the fire drill, the staff did not implement other projects.4. Staff not familiar with firefighting equipment.

Action plan: 1. Amendment kitchen Specifications: Specifications: When cooking, do not leave the cooking area. - [Regularly inspection objects: in cooking food, whether the person in the cooking area. 2. Remind slogans posted in the cooking zone: " When cooking food, prohibition to leave. Sources of ignition," 3 for education and training, related to the shooting of education and training videos. 4. Adjustment emergency fire drill mode: front emergency drills and fire drills required rehearsal.

RESULTS: Dietitians duty cycle must be checked three times a day to check if the chef cooking food, whether to leave the cooking fire, and the line rate of 100%. Since April 2014 to date, the hospital's kitchen fire is not Ø occurred once.

CONCLUSION: Consider the characteristics of the hospital, and difficult relief, as well as expert advice, ^ hospitals must implement fire management system of emergency, Including prevention, mitigation, emergency response, recovery and learning, In fact, according to the implementation of fire management and operation of certification standards specified in the hospital, it is possible to reduce the risk of fire, then reduce injuries and loss of property of staff and patients.

REFERENCES: 1. U.S. Fire Administration
Establish a Systematic Model of Quality and Safety Management in Medical Disputes

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Objectives: Medical disputes often happen when the patient or family members raise suspicions and put questions upon the quality of care. At this point, we should take the initiative to affirm the quality of care as well as patient safety. Therefore, in this study, we established a systematic model in response to medical disputes, in order to ensure the timely start of patient safety management as well as offering cares.

Methods:
1. Establish a systematic model: An evidence-based systemic model in medical disputes was established so that more safety care can be provided. To set up an ideal model, we need to consider the convenience and make it easily approachable. Also, the procedure must be taken with rapidity. For that, an electronic informed and communication system was established.
2. Responsible units and Leaders: Center of Quality Management was appointed as the responsible unit, with a director well-trained in medical and legal affairs. He is also president of the competent chamber. When patients or their families raise question about the quality of care, Center of Quality Management would response instantly and review the quality of treatment thoroughly, thereby care provided can be enhanced and patient safety can be strengthened simultaneously.
3. We set up a patient care team which members include director of Center of Quality Management, skill-training social workers, volunteers, lawyers, medical director and the communications staff. The team offers caring action towards family members. In Taiwan, oftentimes, some hospitals express care to the family members via holding a formal meeting. However, we do not agree with this approach, as this way look somewhat official and is not the best way to offer care and support. For that reason, we place emphasis on listening and talking on an individual basis. We even pay home visit if necessary. We want to express our concern and care with such pluralistic way. We believe that, by this way, family members can be, at length, understandable. Also, Family members can see thing in a positive view towards the disputes through this kind of emotional interaction, that would be certainly less confrontational and would ultimately lead to the enhancement of the quality of medical care.

Results: This study found that there are 46 medical disputes occurring over the last one year, of which 39 medical disputes (85%) were informed by the employees (Nurses was the major Informer [78%]) who took the initiative, and the rest was informed by the patient or the family (15%). 23% of the medical disputes were being coordinated and assisted by the Center of Quality Management and had finally approached conciliation. Overall, the satisfaction rate of systematic model was 89.3%.

Conclusion: We should ameliorate the approaching method in a preemptive way instead of a responsive way, in order to get improvement in terms of quality and safety. To establish a more active management model can efficiently help our team members in tackling medical controversies.
THE CASE MANAGEMENT NEEDS IN PATIENT WITH CARDIAC SURGERY A STUDY FROM A NORTHERN MEDICAL CENTER IN TAIWAN

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Objectives: This study is aimed to investigate and analyze patients before, after and post surgery home care of a cardiovascular disease surgery in order to optimize special care needs, and health management.

Methods: A longitudinal, correlational study was conducted at a medical center located in northern Taiwan. The sample data were collected from 70 patients who underwent cardiac surgery. The sample data was further analyzed by descriptive statistics, t-test, one-way ANOVA, Pearson correlation and multiple regression analysis.

Results: There are are major findings from this study:
(1) The findings suggested that patients required special attentive needs before surgery (listed in descending order of priority): physiological care, information regarding the surgery and psychosocial needs; in addition, the findings indicated the importance post-surgery care (listed in descending order of priority): information on post-surgery, psychosocial needs, and physical recovery help. (2) The satisfaction of care needed before the surgery (listed in descending order of priority): psychosocial needs, information regarding the surgery and physiological needs; the satisfaction of post-surgery care (listed in descending order of priority): Information on post-surgery, psychosocial needs and physiological care. (3) Factors which impacts the level of care need before surgery (listed in descending order of priority): age, education, occupation, income and family caregiver; factors which impacts the level of care need post surgery (listed in descending order of priority): age and chronic diseases; factors which impacts the level of care after returning home from surgery (listed in descending order of priority): age, education and income. (4) Factors that influences the level of care met before surgery (listed in descending order of priority): occupation, income and family caregiver; factors that influence the level of care met post surgery: occupation; factors that influence the level of care met after returning home from surgery (listed in descending order of priority): occupation, marriage and income. (5) The overall factors that influences a patient’s need before surgery (listed in descending order of priority): gender, age and chronic diseases. (6) The overall factors that influences satisfaction post surgery: length of hospital stay after surgery and chronic diseases.

Conclusion: In this study we use case management to investigate and analyze patients’ needs with cardiac surgery. The results from this study can serve as a source to develop a health management program for cardiac surgery patients and others of related research.
PREDICTORS FOR EXPERIENCING MORE ADVERSE EVENTS AFTER TREATMENT OF ACUTE MYOCARDIAL INFARCTION.

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Objectives: Adverse events (AEs) as a result of hospital care occur frequently. However, data on the actual occurrence and preventability of adverse events in acute cardiac care are scarce.

Methods: Patients presenting with acute myocardial infarction warranting coronary angiography in 2012 and 2013 in a tertiary care center were included. Trained physicians performed a structured medical record review based on the Harvard Medical Practice study to screen for occurrence of (preventable) adverse events during admission. An adverse event was defined as an unintended injury resulting in disability at time of discharge, prolonged hospital stay or death and is caused by health care management rather than a patient's underlying disease. An adverse event was classified as preventable, when professional medical care deviated from a predefined protocol or was insufficient according to the professional standards.

Results: In total, 879 patients (age 63 ± 12 years, 71% male) were reviewed, including 274 patients transferred to affiliated hospitals after a cardiac procedure in a tertiary care center. During admission, 110 patients (13%; 95% CI 10% – 15%) experienced 137 adverse events. Among these 137 AE’s, 68 (50%) AE’s were related to the coronary angiography procedure and 17 (12%) AE’s were related to medication. Five (4%) patients experienced a fatal AE, of whom three were related to the catheterisation room-procedure. Female patients (OR 2.0 (95%CI 1.1 – 3.8)), patients older than 70 years (OR 2.1 (95%CI 1.3 – 3.3)) and patients with known pulmonary diseases (OR 2.5 (95%CI 1.6 – 3.8)) were at higher risk for experiencing an adverse event. In 33 patients (4%; 95% CI 3% – 5%), one or more preventable adverse events were found.

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<th>p-value</th>
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<td>Age (yrs) (mean ± SD)</td>
<td>69.0±12.0</td>
<td>62.2±11.8</td>
<td>2.8(1.9-4.2)</td>
<td>&lt;0.01</td>
<td>2.1(1.3 - 3.3)</td>
<td>0.002</td>
</tr>
<tr>
<td>Male gender (n, %)</td>
<td>59(54%)</td>
<td>567(74%)</td>
<td>2.4(1.6-3.6)</td>
<td>&lt;0.01</td>
<td>0.4(0.3 - 0.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Family history of cardiovascular disease (n, %)</td>
<td>30(27%)</td>
<td>279(36%)</td>
<td>0.7(0.4-1.1)</td>
<td>0.081</td>
<td>0.8(0.5-1.3)</td>
<td>0.451</td>
</tr>
<tr>
<td>Medical history of diabetes (n, %)</td>
<td>20(19%)</td>
<td>95(13%)</td>
<td>1.6(0.9-2.7)</td>
<td>0.094</td>
<td>1.2(0.7-2.2)</td>
<td>0.357</td>
</tr>
<tr>
<td>Medical history of pulmonary disease (n, %)</td>
<td>20(18%)</td>
<td>68(9%)</td>
<td>2.3(1.3-3.9)</td>
<td>0.003</td>
<td>1.9(1.1-3.3)</td>
<td>0.007</td>
</tr>
<tr>
<td>Medical history of renal disease (n, %)</td>
<td>12(11%)</td>
<td>31(4%)</td>
<td>2.9(1.4-5.8)</td>
<td>0.003</td>
<td>1.8(0.8-3.9)</td>
<td>0.138</td>
</tr>
</tbody>
</table>

*Adjusted for age(>70 years), male gender, positive family history, medical history of diabetes, pulmonary disease and renal disease.

Conclusion: During admission for an acute myocardial infarction, 13% of all patients experienced an adverse event of which 30% was preventable. Female, elderly and patients with known pulmonary disease experience more adverse events after treatment of acute myocardial infarction.
A LONGITUDINAL STUDY USING QUALITY IMPROVEMENT METHODS TO IMPROVE EARLY INITIATION OF BREASTFEEDING AMONG FOUR HEALTHCARE FACILITIES IN IMO STATE, NIGERIA

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1Quality Improvement Collaboratives, Health Strategy and Delivery Foundation, Owerri, Nigeria

Objectives: To ascertain the effectiveness of Quality Improvement (QI) methodologies in improving early initiation of breastfeeding.

Methods: The breastfeeding project is being conducted in 4 hospitals enrolled in the ongoing NHQI project in Imo state. They are 1 faith-based and 3 private hospitals. The Quality Improvement (QI) teams of these hospitals identified early initiation of breastfeeding as a key area needing improvement after analysis of deliveries done 6 months prior to intervention (intervention was in the month of October, 2015). The Model for Improvement framework was then used to drive change ideas suggested by the hospital QI teams under guidance by QI mentors. Some of the change ideas that were generated by the QI teams included;

- Creation of awareness among nurses and midwives on the importance of early initiation of breastfeeding
- Including ‘early initiation of breastfeeding’ into health talks for pregnant women during Antenatal Care visits
- Demonstrating breast attachment by putting the baby to mother’s breast, usually done by the midwife on duty
- Auditing the number of times that the above activities were carried out

The outcome was measured as a percentage of newborns initiated on breastfeeding within 1 hour of delivery. The processes carried out to ensure change ideas were implemented were also measured as percentages. QI team members of these hospitals collected data weekly and analyzed them using Microsoft Excel.

Results: All four hospitals showed improvement in early initiation of breast feeding using QI methodologies. Overall 67.9% of live births in the four hospitals were breast fed within one hour of delivery. There was an increase in the percentages of those who initiated breastfeeding in the three months post intervention, from 60.2% in November to 64.9% in December and 81.6% in January as shown in the table below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Total live births</th>
<th>Number of women who Initiated Early Breastfeeding</th>
<th>Percentage of women who initiated early breastfeeding (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun-15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jul-15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Aug-15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sep-15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Oct-15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nov-15</td>
<td>98</td>
<td>59</td>
<td>60.2</td>
</tr>
<tr>
<td>Dec-15</td>
<td>97</td>
<td>63</td>
<td>64.9</td>
</tr>
<tr>
<td>Jan-16</td>
<td>76</td>
<td>62</td>
<td>81.6</td>
</tr>
<tr>
<td>Total</td>
<td>271</td>
<td>184</td>
<td>67.9</td>
</tr>
</tbody>
</table>

Conclusion: Based on our preliminary results, it appears evident that QI methods prove effective in improving early initiation of breastfeeding among mothers and health workers. It is important to note that these results have been collected over a short period of time and so it may be difficult to attribute breastfeeding results to the implementation of our change ideas alone. However as some of the change ideas and QI methods are similar to previous work done in existing literature, we believe and look forward to better and sustainable results going forward.
SHORTEN TURN-AROUND TIME BY IMPROVE CYTOLOGY TEST DIAGNOSTIC INPUT PROCESS
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Objectives: Cytology is classified as an overall test cells and uterine cells and body fluid cytology test to examine the cells obtained from various parts of the body and these are used to elucidate the cause of the disease or the grounds. Monthly average of about 1,000 cases of gynecologic cytology occurred in SNUBH. Usually the test takes one week from scan to read, it makes patient dissatisfied and drops the rate of retest. Thus, on the basis of gynecological cytology TAT delay analysis, we selected this theme to improve services in progress of TAT suitable rate of QI activities.

Methods: Simplify the pathology work flow and developed input data program were used to get pathology result faster. Current level were measured by comparing and analyzing 2,180 gynecologic cases occurring in each laboratory from May to June, 2014 with Electronic Medical Record (EMR). We found that the TAT suitable rate is different from our objective (90%), which showed lower rate (40% and 45%). According to these results, we found the root cause from analysis and make improvement plans on the basis of brain writing, and also failure mode and effects analysis performed through the participation of doctors, nurses and laboratory staffs.

Results: Analyzing the problem, we obtained two solutions: simplified the pathology work flow and developed pathology input program. Before we established these solutions, we have much time to derive the results. When specimens are received, laboratory staffs manufacture cell slide and select pathology results and input the data. Then pathologists read the cell slide’s information with microscope. After reading, it sends to medical recorder and they input the pathology results. Finally, pathologist screen them and confirm. However, after the improvement, we removed the step of input by medical recorder and made pathologist do both input and confirm. Therefore we can construct new state of pathology input program and establish work dispersed. Also we display select pathology results data on the certification screen and by using One-click system to work input and confirm at the same time. Thereby, the turn-around time is shorten and medical recorder can cover large range of their work.

Conclusion: Since developed the program, the result of the collection from November to December, 2014 we found monthly average was increased by 1,200 cases. And turn-around time is shortened from 10 days to 3 days. Also, patients’ satisfaction is improved. Further, we will implement training for medical recorder regularly to monitor the program and advance work service.
THE EFFECTS OF THE NUMBER OF AMBULANCE REQUEST CALLS TO HOSPITALS ON AMBULANCE TRANSPORTATION TIMES
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Objectives: A major concern of Japan’s emergency medical services is the steadily increasing number of ambulance dispatches due to an aging population, with over 5.9 million dispatches in 2013. The time interval between callings for an ambulance to hospital arrival is a known predictor of outcomes in acute heart failure and head trauma patients. The national average for this time interval in Japan was 39.3 minutes in 2013, and has since continued to increase. In addition, hospitals vary in their capabilities to treat different conditions and levels of severity, and ambulance staff must make request calls to find hospitals that can accept the patients. The relationship between the number of request calls and the ambulance transportation times remains unclear. The aim of this study was to quantify the effect of the number of request calls to the time interval between an emergency call and hospital arrival.

Methods: We conducted a cross-sectional study using an ambulance records database from Nara prefecture, Japan. This database includes information on patient characteristics, time and date of each call, and hospital arrival times. We analyzed patients who 1) had been transported to hospital by ambulance between 1 April 2013 and 31 March 2014, 2) were aged 15 years and older, and 3) were suspected of having a major disease. Our outcome measure was the time interval from receipt of an emergency call to ambulance arrival at a hospital. Multiple linear regression analysis was used to evaluate the effect of the number of request calls on ambulance transportation times. Covariates were selected from those reported in previous studies.

Results: During the study period, there were 43,663 ambulance transportations with 80,666 request calls. Approximately half of the patients were female, and 31.2% were aged 80 years and over. The mean time interval from emergency call to hospital arrival was 44.5 minutes, and the mean number of request calls was 1.8. The multiple linear regression analysis showed that 35.3% of variations in transportation times were explained by patient age, sex, season, day of the week, time, category of suspected illness, patient’s relationship to person calling for ambulance, emergency status at request call, and the number of request calls. A higher number of request calls was significantly associated with longer time intervals to hospital arrival (addition of 6.4 minutes per request call; p<0.001).

Conclusion: The study indicated that each refusal of a request call extended the time to hospital arrival by 6.4 minutes. An effective system should be collaboratively established by policymakers and physicians to ensure the rapid sharing of information about hospitals and emergency patients in order to reduce the time from the initial emergency call to hospital arrival.
ARE FRENCH PRIMARY CARE PRACTITIONERS AWARE OF PATIENT SAFETY?
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1Public Health, University Hospital of Nantes (France), 2Primary care department, University of Nantes, 3GP, GP, 4URPS-ml, URPS-ml, Nantes, France

Objectives: Each general practitioner (GP) is confronted on average every 2 days with an adverse event (AE), whose most of them can be avoided. However, the safety culture is not well developed among GPs. The objective of the present study was to assess the safety culture perception of a panel of French GPs, to describe their difficulties with medical errors and their expectations to improve patients’ safety.

Methods: All the GPs (n=1,664) working in the Pays de la Loire region (western France) received in May 2015 an e-questionnaire exploring several dimensions of their safety culture (identification and analysis of AEs, implementation of corrective actions), as well as their way of disclosure (assessed through clinical vignettes).

Results: 175 GPs (10.2%) participated in this study. The safety at their office was perceived to be good by 78.3% of the GPs, and significantly better among the youngest (p<0.05). 89.1% declared having already been confronted with an AE, of whom 15.4% confronted with a severe one. Academic internship supervisors were significantly more aware of AE. Reasons for insufficient AE analysis were: i/ the difficulty in identifying an AE without any consequence for the patient (73.1%), ii/ the lack of time (58.1%), iii/ the absence of dedicated professional organisations (26.3%). AEs without any consequence for the patient and severe AEs were disclosed by respectively 97.1% and 72% of GPs (p<0.001). The disclosure of severe AE aimed at not altering the trusting relationship with patients (p<0.01), the non-disclosure at avoiding complaint (p<0.001).

Conclusion: The GPs expected the development of training and coaching. Based on these findings, the implementation of an action plan is under progress, as well as a reflection on how to spread the safety culture since the initial training of students.
ENHANCE PROCEDURE RATE WITHIN 65 YEAR-OLD PATIENTS WITH HIP (FEMORAL NECK) FRACTURE IN 48 HOURS AFTER ADMISSION
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1Center for Quality Management, KAOHSIUNG CHANG GUNG MEMORIAL HOSPITAL, 2I-SHOU UNIVERSITY, Department of Healthcare Administration, 3Medical Affairs Department, KAOHSIUNG CHANG GUNG MEMORIAL HOSPITAL, Kaohsiung, Taiwan

Objectives: Surgery for hip (femoral neck) fractures in patients older than 65 years within 48 hours effectively reduce patients’ pain and the days of hospitalization, increase the effectiveness of rehabilitation. There is a positive correlation in delaying surgery, complications and mortality, the rate was 55.8% in recent five years (2010-2014), and there is a decreasing trend year by year, the lowest was 40.7% in 2014. It is necessary to redesign the clinical treatment plan to shorten the time patients wait for surgery, wish to enhance patients’ safety.

Methods: Retrospective January to June in 2015, there are 168 patients aged ≥ 65 years old with hip (femoral neck) fracture accepted hip fracture surgery. The rate of surgery in 48 hours was 52.4% and the length of stay was 10.63 days. Patients wait for surgery over than 48 hours because of cardiology and anesthesiology consultation was 30.6%, wait because of cardiac and nuclear medicine examination was 29.6%, wait for the operating room was 12.2%, delay surgery due to unstable condition was 10.2%. Include the hip fracture surgery into the emergency consultation projects within 30 minutes, priority scheduling examination, monitoring efficiency of the operating room, and revised clinical treatment plan.

Results: The surgery rate in 48 hours after admission for the patients aged ≥ 65 years old with hip (femoral neck) fracture from 52.4% (Q1 to Q2, 2015) increased to 71.6%, 64.6%(Q3 to Q4, 2015). Length of stay from 10.63 days (Q1 to Q2, 2015) decreased to 10.09 days and 8.47 days(Q3 to Q4, 2015). Unexpected re-hospitalization rate in 14 days after discharge from 0.595%(Q1 to Q2, 2015) improving to no cases occur (Q3 to Q4, 2015).

Conclusion: Through improving the process of consultation, increasing the efficiency of utilization of the surgery room and the surgery rate in 48 hours for patients aged ≥ 65 years old with hip (femoral neck) fracture, not only reduced the risks of complications and death due to delay surgery, but also can provide group decision making to enhance patient safety.
MEASURING ADVERSE EVENTS IN PORTUGUESE HOSPITALS: A CONTRIBUTION TO IMPROVING QUALITY AND PATIENT SAFETY

P. J. Sousa 1,*, A. S. Uva 1, F. Serranheira 1, N. Carla 1
1National School of Public Health, Lisbon, Portugal

Objectives: The main purpose of this study is to estimate the incidence, impact and preventability of adverse events in Portuguese hospitals. It is also our aim to examine the feasibility of applying to Portuguese acute hospitals the methodology of detecting AEs through clinical record review, previously used in other countries.

Methods: This work is based on a retrospective cohort study and was carried out at twelve acute care hospitals/Trusts in the Portugal. The identification of AEs and their impact was done using a two-stage structured retrospective medical records review based on the use of 18 screening criteria. A random sample of 4,225 medical records (representative of 176,461 hospital admissions) for the year 2012 was analyzed.

Results: The main results found in this study were an incidence rate of 12.5% AEs, of which around 39.5% were considered preventable. AEs that in their majority were related with hospital acquired infections (HAI) (39.7%); surgical procedures (26.7%), drug errors (9.8%). Most part of the patient that has HAI have had an invasive device (catheter or ventilator). From the total of AEs, 7.5% were falls. Those falls happened more on week day's (66%) and in morning shift (51%).
Most of AEs (67.4%) resulted in minimal or no physical impairment or disability, and 12.5% were associated to death. In 60.8% of the AEs’ cases, the length of stay was prolonged on average 9 days. Additional direct costs amounted to €1.4M.

Conclusion: This study suggests that AEs in twelve Portuguese hospitals/Trusts affect more than one in ten patients and results in considerable avoidable suffering and economic costs. With local evidence of the size of the problem, staff is more motivated to act, especially if effective interventions to reduce adverse events can be selected and implemented to target those AEs that are prioritized, namely those resulting from surgical procedures, drug errors and health-acquired infections. The knowledge of the incidence and nature of AEs that occur in hospitals should be seen as a first step towards the improvement of quality and safety in health care.
VALIDATING LACE INDEX OF PREDICTING 30-DAYS READMISSION AND DEATH RISKS, AND PRELIMINARY RESULTS OF COMBINING 8P SCREENING TOOL AMONG A TERTIARY HOSPITAL IN TAIWAN.

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¹Healthcare Integration and Promotion Center, ²Medical Affairs Department, Changhua Christian Hospital, Changhua city, Taiwan

Objectives: 30-day readmission is a common indicator used worldwide to measure the quality of care. Many hospitals in the open physician-hospital organization healthcare system (e.g. the hospital located in US, Canada, and etc.) use the LACE index to predict the risk of readmission. Yet, whether the LACE index is suitable for closed or semi-closed physician-hospital organizations healthcare system still needs to be verified. Furthermore, although these hospitals use the LACE index to detect the risk of readmission, early intervention of integrated care is not currently offered to patients. Therefore, the sample hospital integrated the LACE index and The 8Ps Risk Assessment Tool to investigate whether the strategy would improve the healthcare quality of inpatient. This study validated the suitability of using the LACE index to predict the risks of 30-day readmission and death, and explored whether the introduction of the LACE index and the 8Ps risk assessment tool could further improve the healthcare quality to reduce the 30-day readmission risk of inpatients in closed or semi-closed physician-hospital organizations healthcare system.

Methods: This study employed claims data from January to November 2015 for the sample hospital patients filed with the Taiwan National Health Insurance (NHI). C-statistic was used to analyze the suitability of the LACE score in predicting the risks of 30-day readmission and death among subjects. Logistic regression was used to assess suitability and calculate equations. Chi-square test was used to determine whether the integrated LACE index and the 8Ps risk assessment tool can reduce the 30-day readmission risk of inpatients.

Results: 2,150 patients were included in this study. The C-statistic predicted a 30-day readmission based on the LACE index of 0.607 ($p < 0.001$), and logistic regression exhibited an explanatory power of 82.3. The C-statistic predicted the risk of death to be 0.745 ($p < 0.001$), and logistic regression exhibited an explanatory power of 97.7. The results indicated that the LACE index had a good predictive power for the prediction of risks of 30-day readmission and death. In comparison with the conventional care model, the use of integrated LACE index and the 8Ps risk assessment tools significantly reduced the risk of 30-day readmission ($p = 0.049$).

Conclusion: Although there are many different methods used to assess the risk of readmission, LACE index has the benefits of using relatively simple and objective scoring system to evaluate the risk. The LACE system could be combined with a computer-aided information system to calculate real-time scores of patients during their hospital stay in a fast and accurate manner. Once the LACE index of the patient reaches the trigger, physicians can use the 8Ps risk screening tool to analyze patients’ specific issues and arrange suitable interventions in advance. This can significantly reduce readmission and effectively improve the quality of healthcare in closed or semi-closed physician-hospital organizations healthcare system.
THE COMPREHENSIVE COST OF ILLNESS OF THE DEMENTIA IN JAPAN – A TIME TREND ANALYSIS BASED ON JAPANESE GOVERNMENTAL STATISTICS.
S. HANAOKA 1,*, K. MATSUMOTO 1, T. HASEGAWA 1
1Department of Social Medicine, Toho University School of Medicine, Tokyo, Japan

Objectives: With rapid aging in Japanese society, the increasing number of the elderly with dementia has become a serious issue over the years. In our study, the comprehensive cost of illness (C-COI) of dementia is estimated based on Japanese governmental statistics.

Methods: Modifying the cost of illness (COI) methodology developed by Rice DP1-3, we newly defined and estimated the C-COI of dementia (ICD10 code: F01, F03, G30) at 2002, 2005, 2008 and 2011. The C-COI consists of five parts; direct cost (medical), morbidity cost, mortality cost, direct cost (long term care (LTC)), and family’s burden. Direct cost (medical) is health care cost of each disease. Morbidity cost is opportunity cost for in-patient and out-patient care. Mortality cost is measured as the loss of human capital (human capital method). These three costs are known as components of original COI by Rice DP. Direct cost (LTC) is long term care insurance benefits. Family’s burden is "unpaid care cost" by family, relatives and friends in-home and in-community (opportunity cost). We calculated the C-COI with these five cost components during 2002-2011 using Japanese governmental statistics.

Results: The total C-COI increased by 1.8 times to 3,368 billion JPY in 2011 from 1,860 billion JPY in 2002. In 2011, direct cost occupied 57.2% (medical care; 8.7%, LTC; 48.5%) and family’s burden occupied 36.8%. The contribution ratio (increase or decrease of each component / increase or decrease of the total × 100%) of each cost component was 7.7% in direct cost (medical), 46.4% in direct cost (LTC), 3.6% in morbidity cost, 4.1% in mortality cost, and 38.2% in family’s burden. Our estimation results are shown in the following table.

Table: C-COI of the Dementia in Japan billion JPY

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Direct cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in-patient</td>
<td>141</td>
<td>153</td>
<td>270</td>
<td>228</td>
</tr>
<tr>
<td>out-patient</td>
<td>34</td>
<td>31</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>LTC cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in-facility</td>
<td>745</td>
<td>849</td>
<td>889</td>
<td>1,008</td>
</tr>
<tr>
<td>in-home and in-community</td>
<td>189</td>
<td>316</td>
<td>452</td>
<td>626</td>
</tr>
<tr>
<td>Morbidity cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7,8)</td>
<td>63</td>
<td>77</td>
<td>82</td>
<td>117</td>
</tr>
<tr>
<td>Mortality cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8,9)</td>
<td>24</td>
<td>44</td>
<td>45</td>
<td>86</td>
</tr>
<tr>
<td>Informal care cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6,8)</td>
<td>664</td>
<td>884</td>
<td>1,070</td>
<td>1,240</td>
</tr>
<tr>
<td>Total C-COI</td>
<td>1,870</td>
<td>2,364</td>
<td>2,842</td>
<td>3,368</td>
</tr>
</tbody>
</table>

Conclusion: The subjects of our study were limited to the beneficiaries of Japan's public insurance systems, and when there were more than one diseases, those whose main cause of disability was dementia were included. It remains a matter of debate how to deal with the elderly with multiple morbidities in allocating costs for each of morbidities. This study showed most of the increase of the C-COI was accounted for by direct cost (LTC) and family’s burden. Currently, the "Deinstitutionalization" policy is in progress to support the elderly with dementia to live in-home and in-community. The sum of direct cost (medical) in out-patient, direct cost (LTC) in-home and in-community and family’s burden had risen to 56 percent in 2011 from 48 percent in 2002 in the C-COI. In order to keep the family’s burden acceptable for their family caregivers, it is considered to be important to expand the LTC services into the setting of family’s burden. Since direct cost (LTC) and family’s burden are exchangeable, how to balance appropriately these two alternatives seems to be a matter of concern.

A NATIONWIDE SURVEY ON CLINICAL PHARMACIST ACTIVITY IN INFECTION CONTROL TEAM AT HOSPITALS ALLOWED IMPLEMENT PREFERENTIAL MEDICAL FEE FOR INFECTION PREVENTION IN JAPAN

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Objectives: The revised preferential Infection prevention countermeasure fee (PIPCF) 2012 in Japan requires the exclusive duty to pharmacists in the infection control team at the hospitals with implementing PIPCF 1. Therefore, the role of pharmacists in the infection control activity, especially management for the appropriate use of antibiotics is getting increasingly important. Just as this time the survey was carried out to measure the actual situation of the infection control activity in hospitals with implementing PIPCF.

Methods: We nationwide surveyed the situation of infection control activities in hospitals allowed to calculate the PIPCF under the social medical fee schedule between February and May, 2015, by using an anonymous and self-administered questionnaire to evaluate the infection control status of target hospitals. In this study, we focused on pharmacists and evaluated the infection control status of 304 and 404 hospitals with implementing PIPCF 1 and 2, respectively. Briefly, 708 medical institutions which participated to our questionnaire survey were analyzed to determine the activity and performance of pharmacists contributing to the infection control team.

Results: Of 3,680 target hospitals (all domestic hospitals: 8,484 as of May, 2015) in Japan, 718 hospitals responded (response rate: 19.5%), and the statistical analysis was performed for 708 eligible hospitals. Pharmacists were assigned in partial-time to the infection control team in 173 hospitals (56.9%) of 304 hospitals with PIPCF1 and 141 hospitals (34.9%) of 404 hospitals with PIPCF2. Which were the similar ratios to physicians and medical technologists. The full-time assignment of pharmacists was observed only at 3 (1.0%) and 12 hospitals (3.0%) in hospitals with implementing PIPCF 1 and 2, respectively, these results were the lowest in the health care professionals including nurses, physicians and medical technologists.

With regard to actual participation of pharmacists in infection control, pharmacists in hospitals with implementing PIPCF 1 were participating at 13.7 (hour·person), and in PIPCF 2 were 8.8 (hour·person). These results suggest that the amount of participation to infection control of pharmacists were less than the other professionals, especially in hospitals with implementing PIPCF 1.

Although the participating rates of pharmacists in in-hospital walk rounds for infection control were 94.4% in PIPCF 1 and 84.2% in PIPCF 2, the numbers of participating pharmacists were 1.2 and 0.3 per round. Moreover, pharmacists were involved in permission and registration for antimicrobial orders in 30% of hospitals introducing permission system of the antimicrobials and 85% of hospitals introducing registration system. From these data, it was indicated that pharmacists might take part mainly in monitoring appropriate use of antimicrobials.

Conclusion: Although the participation time of pharmacists for the infection control task was limiting in the hospitals, pharmacists mainly contribute in the hospital-round and the permission and registration system for the prescription of antimicrobials, suggesting that hospital pharmacists play an important role in the appropriate use of antimicrobials.

A DECADE’S EXPERIENCE IN IMPLEMENTING PATIENT SAFETY IN TAIWAN
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Objectives: Due to major public health incidents such as the SARS outbreak in 2003, Taiwan has realized the importance of healthcare quality and patient safety. Active efforts have been placed on the promotion of patient safety since 2004. The objective of this report is primarily to share Taiwan’s experience in the promotion of patient safety in the past decade.

Methods: The focus plan during 2003 to 2007 was the construction of a safe environment, and promotional tasks included: 1. Requesting hospitals to set up Patient Safety Committees, create in-hospital patient safety plans, and discuss patient safety issues regularly; 2. The formulation of the Patient Safety Operation Guidelines to guide hospitals and clinics in setting up internal operation procedures; 3. The determination of the top five critical medical adverse events in Taiwan by means of questionnaire survey, and the identification of annual patient safety goals; 4. Hold patient safety training courses for all kinds of healthcare providers (physicians, nurses, pharmacists) and managers; 5. Build the national Taiwan Patient Safety Reporting System (TPR), and encourage hospitals to participate in the reporting system; 6. Include patient safety in the provisions of the new hospital evaluation system; 7. Specify a Patient Safety Week in October every year, and encourage hospitals to organize activities that engage citizens to participate; 8. Annually conduct telephone surveys to understand the people’s awareness and attitudes towards medical safety.

Key tasks between 2008 to 2012 focused on guiding institutions to put the patient safety system into practice, and work on patient safety promotion through campaigns, thus creating a positive patient safety culture. By provided experts to help institutions to build an internal reporting procedure. National patient safety culture surveys were conducted from 2007-2008. TeamSTEPPS teaching material was introduced in 2008 to train seed teachers, and team resources management training was offered the next year. From 2010-2012, the “Surgical Checklist Campaign” was held to provide a free toolkit, and an award system was designed to encourage participation from institutions.

Results: Over 90% of the hospitals have instituted the creation of a Patient Safety Committee, with highly ranked supervisors (deputy superintendent or above) functioning as the chairman and regularly held quarterly meetings to discuss the in-hospital patient safety plan. Statistics on medical quality improvement competitions have shown that themes concerning patient safety increased from 30% (2005) to 80% (2015).

Since the launch of the TPR system in 2005, medical care institutions may report abnormal cases in 3 ways: web-based reporting, installation of TPR software, and data mapping. An analysis of the changes in reporting methods showed that 86.4% of the hospitals reported by paper in 2004, while cases reported via software represented the largest percentage recently (40.7%). In 2015, 70% hospitals used web-base reporting, and the number of reporting over 100 cases annually increased to 18.4%. By 2014, 6,204 institutions participating, with a cumulative number of 374,652 cases reported. Thereof have served as 127 learning cases and warning alerts.

Conclusion: This past decade of experiences in promoting patient safety shows that the government may enhance medical care institutions’ willingness to participate in patient safety promotion by actively formulating patient safety policies and providing free tools (e.g., reporting software, surgical checklist toolkit). By analyzing the reported data, annual goals may be established for major patient safety incidents. Through campaigns, in particular those with an award system, medical care institutions can be incentivized to contribute their resources and unite in the promotion of improving patient safety.
HOW TO USE KNOWLEDGE FROM REPORTED ADVERSE EVENTS TO MAKE IMPROVEMENTS IN CLINICAL PRACTICE - A STUDY FROM DENMARK
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Objectives: The objective of this study was to establish a method to facilitate improvements in clinical practice based on knowledge from reported adverse events at Zealand University Hospital to improve patient safety.

Methods: Riskmanagers at Zealand University Hospital established three workshops during the fall of 2015. The aim was to create ideas and possible improvement projects in a small scale by using the PDSA-cycle at hospital departments at Zealand University Hospital. Participants were from the network of local caseworkers. In total 65 caseworkers were invited to participate at one or several workshops. Model for Improvement was used as a framework to provide evidence based knowledge about practical improvement science to all participants at the workshop. At each workshop the caseworkers was invited to participate in group work dealing with commonly reported adverse events. Riskmanagers identified three main themes with a high need for initiatives to improve patient safety. These three themes were:
- Falls
- Marking/ identification of blood samples and pathology samples
- Patient discharges
At all workshops a facilitator from the Unit of Quality and Patients Safety at Zealand University Hospital were represented at each theme to assure and facilitate participants to make small scale improvement projects at the represented departments based on Model for Improvement and PDSA circles. The method was evaluated with direct feedback from participants. Questionnaires were sent to all participants after each workshop to evaluate the method and gain knowledge about which improvements the method led to.

Results: 15 caseworkers participated in one or several workshops. All participants worked with change-projects in their own department with the potential to make improvements. One participant carried out several PDSA-cycles within the field of marking of pathology samples which resulted in improvements over a period of 12 weeks. Caseworkers expressed a motivation and need to gain further knowledge about the Model for Improvement, very satisfied with the workshop-based method and felt inspired to make improvements. Caseworkers felt inspired and motivated to make improvements by the knowledge and ideas gained from colleagues in different hospital departments.

Conclusion: The method may contribute to make improvements in clinical practice from reported adverse events. More results will be available and can be presented in the autumn of 2016.

A SYSTEMATIC REVIEW AND META-ANALYSIS OF COMMUNITY PHARMACY ERROR RATES IN THE UNITED STATES: 1993 TO 2015

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Objectives: While much is known about hospital pharmacy error rates in the United States (US), comparatively little is known about community pharmacy dispensing error rates and near misses. A thorough understanding of community pharmacy dispensing error rates is important as it will help to identify systems problems and improve patient care. The aim of this study was to determine the prevalence of community pharmacy dispensing errors in the US.

Methods: Eligibility Criteria: English language, peer-reviewed observational and interventional studies that reported community pharmacy dispensing error rates in the US from January 1993 to December 2015 were included.

Information Sources and Search: Ten bibliographic databases were searched using the following key words: dispensing error, community, ambulatory, pharmacy, and medication error. Synonyms and other search terms were used to ensure the search was as comprehensive as possible. In addition, citation searches and relevant websites were searched to identify articles for possible inclusion.

Study Selection: Title screening was performed on all identified studies. An abstract screening tool was developed for this study to assess inclusion criteria. Each abstract was screened by two independent reviewers and consensus was reached before articles were included.

Data Extraction: A data extraction tool was created for this study. Data collected included, but was not limited to: study design; error types and rates; error identification method; and denominator data.

Risk of Bias Assessment: Each article was assessed for bias using a tool developed for this study.

Data Synthesis: A random effects meta-analysis was conducted. Heterogeneity was assessed using the I2 statistic prior to analysis.

Results: The search yielded a total of 8,490 records, of which 780 abstracts were reviewed. The most common reasons for exclusion were: study conducted outside the US; publication type; and lack of community pharmacy dispensing error rates. A total of 12 articles were included in the systematic review and data were extracted. Two articles did not have adequate data components to be included in the meta-analysis. Of the ten studies included in the meta-analysis, the majority were published before 2010 (n=7) and were descriptive (n=6). Six studies reported retail pharmacy errors, two reported outpatient pharmacy errors, one reported error rates for both settings, and one study setting was unable to be determined. Dispensing error rates ranged from 0.00003% (43/1420091) to 55% (55/100). Results of the meta-analysis will be presented at the conference.

Conclusion: Preliminary results indicate there are few published articles that describe community pharmacy dispensing error rates in the US. There is limited information to report the current prevalence of community pharmacy dispensing errors. It is important to evaluate the nature and magnitude of the problem to establish successful prevention strategies thus; a robust investigation is needed to assess dispensing error rates in the US.
QUALITY AND SAFETY: AN EVALUATION STUDY ON THE RESULT OF INFECTION PREVENTION PROTOCOLS APPLICATION.
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Objectives: The study aims to evaluate the result of pneumonia prevention protocols applied associated to Mechanical Ventilation (VAP), Primary Blood Stream Infection associated to Central Catheter Venous Infection (PBSI) and Urinary Tract Infection associated to the Probe Bladder Delay (UTI) in order to provide improvements to the quality of health care, minimizing the risk of harming to patients.

Methods: Collection of instruments with markers defined by clinical protocols for the prevention of infection and eligibility criteria and infection of the Brazilian Patient Safety Program of the Qualisa Management Institute (IQG) were used for data gathering. The Program recommends a rate of 98% effectiveness in 12 months. Thus, in the period from January to December 2015, patients using invasive devices from 07 intensive care units of a philanthropic hospital in the city of Salvador were evaluated.

Results: To evaluate the results we calculated the rate of effectiveness of each protocol to prevent VAP, CLABSI and CAUTI, from 7 ICUs, considering the number of patients at risk and elected to the protocols that were not infected, by the number of patients at risk and elected to the protocol in general.

Conclusion: Although the CAUTI prevention protocol has achieved a higher percentage than the other two protocols, none of the three sites achieved the percentage envisaged by IQG for effective rate for the year 2015. This highlights the need for the ongoing management of these protocols, related to strengthening actions raising awareness of all the professionals involved, so that the interventional strategic plans are effective.

CREATING A STRONG PATIENT SAFETY-NET SYSTEM – KEEPING OUR PATIENTS SAFE

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Objectives: To introduce a safety-net system to monitor, recognise and respond appropriately to any deteriorating adult, child (paediatric), pregnant woman or newborn patient in a New South Wales (NSW) public hospital in close partnership with clinicians, Ministry of Health, hospital executives and consumer groups.

In January 2010, the NSW Clinical Excellence Commission (CEC) introduced a large scale patient safety net system across all public health facilities to improve the early recognition and response to all deteriorating patients. This system is called Between the Flags (BTF). The program provides the foundations for a patient safety net systems, catching the patients that need rescuing and identifying patients at ‘end of life’ to allow them to die according to their wishes. The CEC has built on this foundation through creating links with existing and new programs that make the system stronger and facilitate a positive patient-centred culture.

Methods: BTF, the foundational deteriorating patient system in NSW was implemented using five key elements. 1. Governance at all levels of the health system to drive implementation and promote local ownership by clinicians, underpinned by policy. 2. Minimum standards for Clinical Emergency Response Systems (CERS) which provides flexibility at the hospital level to ensure that the right person/team responds within an appropriate time. 3. Standard clinical tools, (such as observation charts with standard calling criteria) specifically designed by clinical experts for adults, paediatric, maternal and newborn patients. 4. A tiered education program for all clinicians providing direct patient care that is targeted to their role and patient cohort, and 5. Evaluation, providing feedback on the program to promote local successes and areas of future focus to drive sustainability. These elements have provided a framework to create a stronger system through initiatives such as early recognition and treatment of sepsis; patient and family activated response; and early recognition of dying and end of life planning.

Results: Following the implementation of the BTF program in 2010 there has been an expected rise in Rapid Response calls (a process measure) from 18.36 to 43.3 per 1000 separations in June 2015. With the rise in Rapid Response call there has been a corresponding decrease in the unexpected cardiac arrest rate (outcome measure) from 1.04 to 0.69 per 1000 separations in June 2015 (p < 0.05). Based on these figures it is predicted that over 2000 lives have been saved.

The NSW SEPSIS KILLS program extends on the principles of BTF and has reduced the median time to the first dose of IV antibiotics from 104 to 57 minutes for adult patients presenting to emergency departments with sepsis resulting in a decrease in mortality from 19.3% in 2009-2011 to 14.1% in 20132.

Conclusion: The deteriorating patient safety net system in NSW public health continues to improve the early recognition and response to deteriorating patients, saving lives and improving patient outcomes. Across the state in each facility the system is maturing, strengthening the foundational safety net and allowing a focus on newly identified areas for improvement.

PROGRESS OF USING HFMEA TO IMPROVE NURSES NEEDLESTICK INCIDENCE

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Objectives: Analyzing the total number of nurses needlestick events in total of thirty-eight from 2011 to 2013, we have found that most of the incidents are related to the categories of ward(23) and emergency department (7) for years of work, most of them distribute from one to three years. For types of needles, the incidents occur when using " disposable pinhead "When putting needles improperly during the process, it is easier to occur needlestick incidents. In order to reduce injuries after needlestick, improrable intervention is hoped to reduce needlestick events.

Methods: 1. Planing period:
This study adopted the process of HFMEA improvement method and selected high-risk health caring processes. After composing the team, we analyze the main flow and secondary flow to improve measures and performing assessment.

2. implementing period:
(1) Improved needles recoverying tools: The needles would be fixed to the disc treatment for fear that the needles would be moved to the collecting boxes for the second time.
(2) Complete use safe needles: Arranging operating skill education and training. Overseen the usage and bulletin it every month.
(3) Receive education and training of needlestick prevention: Compulsory education and training would be included to the educational system and would overall audit the practice.
(4) Build page zone of usage of safe needles: The page zone includes Ministry of Health and Welfare Policy, plan of promoting safe needle, codes and items of safe needle, practice of using safe needle, product descriptions and operating statistics.

Results: Evaluation result:
(1) The usage of safe intravenous catheter in hospital > 70% (more than 50% of original objectives)
(2) The usage of high-risk units of safe intravenous catheter > 93%.
(3) The average of the nursing audited results is 97%.

Conclusion: Safe needles can effectively improve needlestick of intravenous catheter, but it still needs to strengthen the prevention of all kinds of sharp objects and change working habits (for example: do not return sets, dispose the used needle immediately, throw into a specific tube, etc.) and deal with the used sharp object immediately. The number of needlestick of intravenous catheter has dropped from four cases in 2013 to zero cases in 2014 and 2015. It can effectively reduce the occurrence of needlestick in wards and the emergency department. It is suggested that the hospitals establish the sound needlestick communicative system in order to reduce the chances of being stabbled by needles and diseases due to infection. It can also provide analyzing management of the main reasons of pricking. Nurses would use needles more frequently than other people, so the opportunity of being needlestick is relatively larger. These people would be high-risk group of occupational needle. They should be included in the pre-vocational education.
THE EFFECTIVENESS OF THE APPLICATION OF BARCODE LABORATORY SYSTEM FOR PATIENT SAFETY AND QUALITY
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Objectives: Collecting and delivering the specimens are important issues in patient safety. In laboratory-related errors, the frequencies occurred during collection and delivering specimens more than during specimen analysis. So it is an important issue to improve patient identification safety in collecting specimens. In order to improve the safety of patient identification and simplify the procedure for the collecting the specimens, we implemented the barcode laboratory system comprehensively with the blood collecting in a 1,300-bed medical center in Southern Taiwan.

Methods: We design and implemented the barcode informatics laboratory system from the stage of nurses preparing specimen labeling, patient identification when drawing blood, specimen delivering to analyzing in the clinical laboratory department in 2014 until now. The barcode labels were used in order that nurses retrench time for writing, avoid mislabeling, record flow of specimens during delivery, analyze and write the data into the system by scanning the barcode labels, moreover, nurses can use the barcode equipment on the mobile e-nursing cart to confirm patient identification by scanning the barcode on patient name band. In order to avoid collecting the wrong specimen, we design the medical informatics system with the function of showing kinds and numbers of the specimens, the information of collecting sequence and announcements automatically. In order to track the status of the specimens, we designed the on-line the barcode tracking system to recode the information and time of the staff in drawing blood, delivering and analyzing in order to provide the real-time information of the status for collecting, delivering or analyzing for physicians, nurses, deliverymen and laboratory technicians. And finally we used the barcode on the specimen to track the progress of the analysis and record the turn around time in the analyzing period.

Results: By the implementation of the barcode laboratory system, the numbers of the laboratory test-related errors reduce from 18, 10 and 12 in 2013, 2014 and 2015 separately. The rate of laboratory errors are decreasing from 0.055‰, 0.030% to 0.033‰. Further analyzing the effectiveness of the program, the rejection rate of specimens are 0.37% and 0.15%, the numbers of abnormal inspection sheet decrease from 863 to 314 events and the declining rate of data revise with memo drop down 89.2% (from 37 decreasing to 4 events) for six months in 2013 and 2014 respectively. For the benefit for tracking the specimens, the mean time from collecting to delivering to the clinical laboratory department can come down to 44.5 minutes to maintain the quality of specimens. On the other side, although the laboratory test-related errors don’t increase anymore, but the numbers of the events in 2015 still more than in 2014 slightly. With further analyzing, the reason of the 12 events in 2015 is that the new personnel don’t follow the standard operation procedures and complain of the sensitivity of the scanner in the satisfaction survey. So we increase the frequencies for auditing the compliance rate of the barcode standard operation procedures, add the education of standard operation procedure for the new staffs and upgrade 300 the barcode scanners to increase the sensitivity for scanning.

Conclusion: This result came to the conclusion that the application of the barcode technology not only improve the workflow for the healthcare personnel related the laboratory procedures, but also reduce the laboratory test-related errors in order to promote the patient safety.
NATIONAL TARGET LEVELS AS A COMPLEMENT METHOD IN KNOWLEDGE MANAGEMENT IN ORDER TO INCREASE ADHERENCE TO NATIONAL GUIDELINES RECOMMENDATIONS.
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Objectives: Knowledge management is conventionally associated with guidelines recommendations. Swedish national guidelines consist of guidelines recommendations and guidelines indicators with target levels. The aim for the guidelines indicators is to measure adherence to the key recommendations in the guidelines. För det most important guidelines indicators, national target levels are developed in order to clarify the need of improvement by the care givers.

Methods: National target levels describe the desirable level that the health care should strive for and specify how great a proportion of a patient group should receive a certain intervention, treatment or examination, all according to guidelines recommendations. The national target levels are used to support monitoring of the results on a local, regional and national level. They are mainly aimed at increasing the adherence to national guidelines recommendations over a certain period time. The pathway for developing national target levels combines the existing best knowledge with proven clinical practice, by involving both the foremost clinical and academic expertises as well as the decision makers. Atrial fibrillation is the main known risk factor for ischemic stroke. According to Swedish national guidelines recommendations, patients with atrial fibrillation and other co-existing risk factors for ischemic stroke, should receive therapy with anticoagulant agents. Historically, the only anticoagulant agent available in Sweden has been warfarin. However, since a few years ago, New Oral Anticoagulant Drugs (NOAC) have also become available on the Swedish market. According to the guideline indicator; in the denominator includes patients with a history of hospitalisation for atrial fibrillation as first or second diagnosis within a time period of five years. In the numerator includes patients, as identified in the denominator who also have picked up prescribed anticoagulation agent from the pharmacy during the follow up period (6 months).

Results: After introduction (2014) of the national target level, the amount patients receiving anticoagulantia therapy has increased in a higher rate as compared to only having the national guidelines recommendations (2011) without national target levels.

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<th>Year</th>
<th>Total</th>
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Conclusion: Introducing national target levels to national guidelines recommendation is an effective method of increasing adherence to national guidelines.
Objectives: Introduction:
The methodology was created in the early 1950s by Dr. Kaoru Ishikawa. According to Silva, 1994, the 5S program was introduced in Brazil starting in May 1991. The letter S is the initial to five Japanese words: Seire (selection), Seiton (organization), Seisou (cleaning), Seiketsu (standardization) and Shitsuke (auto-discipline), which describe methods that allow the collaborator to better plan their time and fulfill their activities efficiently.

Our institution realized the need to organize environments in order to provide a cozier place, which can also improve creativity. Therefore, we suggested implanting the 5S program. It optimizes space and input control, as well as allowing the team to work focused in the reduction of costs.

Goal: The aim was to implant the 5S project at Regina Hospital, promoting the culture of teamwork by stimulating both Management and employees to constantly make the processes better, thus creating a system that can be assessed and perpetuated. That should improve both the well-being of collaborators and the company’s results.

Methods: Methodology:
We made use of assessments, training of involved staff and developing of the work teams.

Results: Development:
In October 2014 the Quality Committee was created, with 20 members responsible for evaluation by a checklist. The quality evaluation is done every two months to assess the development in each section. Trainings are done periodically involving all collaborators and the committee.

The evaluation process counts with a grading system, where each item corresponds to a determined amount of points. After the results, a report is generated for the section with suggestions for improvement. The section is informed of its points in percentage, where the maximum amount of points would correspond to 100%.

Each hospital section has a facilitator of the 5S project, chosen to go along with, assist and motivate the team in meeting the targets and maintaining them.

There is an award ceremony, which happens every 12 months for the first 3 sections.

Results obtained:
The goal is to seek for improvements in the working area with quality and safety, not stimulating competition among coworkers.

According to the first assessment, done in December 2014, sections averaged to 82% of maximum points in Selection, 84% in Organization, 86% in Cleaning, 89% in Standardization and 87% in Auto-discipline. In October 2015 (10 months after the fist assessment), it was observed an average of 89% in Selection (a 7% increase if compared to the previous review), 85% in Organization (1% increase), 91% in Cleaning (5% more), 92% in Standardization (3% more) and 94% in Auto-discipline (7% more). All of these values result from the average of all sections, calculated by the assessment checklist.

Conclusion: We were able to level organization in all 64 departments. With persistency, focus and initiative from each collaborator, many sections gained cleaner and more organized environments, avoiding unnecessary expenses.

We thank the support of the institution and of all participants of the Quality Committee.

References:
IMPACT OF HAEMOLYSIS ON REPEAT PATHOLOGY TESTING AND PATIENTS’ LENGTH OF STAYS IN EMERGENCY DEPARTMENTS
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Objectives: Haemolysis refers to the breakdown of Red Blood Cells and the release of haemoglobin into the surrounding fluid. Haemolysis is one of the most common causes of preanalytical laboratory errors. Rates of haemolysis are often higher in busy emergency department (ED) settings. This study aimed to examine the impact of haemolysis on repeat pathology testing and ED patient length of stay (LOS).

Methods: We conducted a retrospective, multisite cohort longitudinal study of patients who presented to EDs at five metropolitan hospitals from Oct 2009 to Sep 2013 in Sydney, Australia. The five EDs were serviced by a single pathology service provider. The Haemolysis Index was used to determine if a specimen was haemolysed. Blood specimen data extracted from laboratory information systems were linked with ED patient data to include patient characteristics and demographics. We examined the impact of haemolysis on repeat testing of Potassium and Troponin. A test was considered as a repeat test if the same test had been collected during the same ED presentation. To estimate the impact of a haemolysed specimen on the duration of a patient’s ED LOS, we used Generalised Estimating Equation (GEE) Modelling to take into account the correlation of multiple presentations by the same patients with a log-link function and gamma distribution to fit skewed ED LOS data.

Results: Of a total of 220,390 blood specimens collected from the study EDs, 5.0% were haemolysed. Of 165,397 specimens collected for Potassium testing at EDs, 6.6% were haemolysed. Nearly 40% of repeat Potassium tests (n=2,962) were requested after the preceding Potassium test was haemolysed. The time interval between a repeat Potassium test and the previous test was shorter for those repeat tests where the previous specimen was haemolysed (median 2.2 hours with interquartile range (IQR): 1.4-3.8 hours) compared to those where the original specimen was not haemolysed (median 6.3 hours with IQR: 3.3-10.6 hours; p<0.0001 from the Wilcoxon Rank Sum test).

Of 60,832 specimens collected for Troponin testing at EDs, 5.3% were haemolysed. About 10.8% of repeat Troponin tests (n=1296) were requested after the preceding Troponin test was haemolysed. In these cases, there was a shorter time interval between repeat Troponin test and the previous test was shorter for those repeat tests where the previous specimens were haemolysed (median 2.5 hours with IQR: 1.5-6.5 hours) compared to those which were not (median 5.1 hours with IQR: 3.7-6.4 hours; p<0.0001 from the Wilcoxon Rank Sum test).

Overall, 10,904 (6.9%) of ED presentations had at least one haemolysed specimen and the median ED LOS for these patients was 6.2 hours. In contrast, 148,030 ED presentations did not have any haemolysed specimens and had a shorter median ED LOS of 5.5 hours. After adjusting for baseline characteristics, including patient age, triage category, ED arrival time, year and hospital, the ED LOS was on average 18 minutes longer for patients with one or more haemolysed blood specimens compared to patients whose blood specimens were not haemolysed.

Conclusion: The occurrence of haemolysed specimens may have both quality and safety implications for patients. Haemolysed specimens may result in invalid or delayed test results, and require additional phlebotomies which can be unpleasant and increase the risk of iatrogenic injuries. There can be delays in diagnosis and treatment caused by repeat phlebotomies and lead to longer stay in the ED. These outcomes also result in additional unnecessary costs.
THE EFFECTIVENESS OF USING TEAM RESOURCE MANAGEMENT SKILL TO IMPROVE MEDICAL RADIATION WASTE FROM NUCLEAR MEDICINE PATIENT

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Objectives: From January to November 2013, there are 34 events of radiation alert result from medical wastes of our hospital informed by the incineration plant (average 3.09 events per month). This article is our experience utilizing the skill of team resource management (TRM) to improve this issue.

Methods: The potential causes of radioactive waste including waste related to radiiodine therapy inpatient, diapers of nuclear medicine examinees, intravenous set, etc. We focus radioactive diapers on the issue of medical radiation alert. The contents of skill of TRM as following:

(a) Brief: Before the daily scanning, the leader will inform the members (nurse, radiologist, radiation protect personnel, and administrative staff) examinations on schedule on that day. The patients who probably use of diapers, such as patients of intensive unit care or old age, should also be informed to all staffs.

(b) Huddle: The isotope is administrated by the nurses. At that time, weather wearing diapers or not is inquired. If diapers are used, the nurses will inform other staffs. The radiologists will prepare garbage bags with radiation warning symbol tags. After scanning, the radiologists will collect the diapers in the bags. Radiation protect personnel will detect the radiation dose at that day and several days later, and deposit the diapers in shielded waste container. The associated data will also be recorded (including chart number, date, nuclide, and radiation dose). If the radiation dose is approximate to background level, the diapers will be disposed as nonradioactive trash.

(c) Debrief: Every day ten minutes before get off work, the numbers of collected diapers will be told to members. If diapers are not collected exactly, the reasons should be clarified in terms of practice. The exhaustive reviews and effects will be presented in weekly meeting and discussed with physicians.

Results: There are 7632 examinees from December 2013 to January 2016, including 144 people with diapers. Excluding no voiding contamination, there are 144 events need to be taken back, and we get diapers back in 133 events practically. Since practicing this team work, the numbers of radiation alert in incineration plant are 8 events (average 0.31 events per month).

Conclusion: The medical waste with radiation alert will be rejected by the incineration plant. Utilization of TRM can assist to the nuclear medicine teams to handle the radioactive wastes effectively and reduce unnecessary waste costs.
CONSIDERATIONS AND SATISFACTION AFFECT PEOPLE TOWARDS HOSPITAL OR COMMUNITY PHARMACY IN TAIWAN
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Objectives: In Taiwan, we experienced the changes of the policy toward the separation of drug dispensing from medical practice and had important impacts on the pharmaceutical profession. To enhance the overall quality of medical services and processes, hospital pharmacies (HPs) and community pharmacies (CPs) needed to know each other’s individual superiority and work together, promote a patient-centered environment.

Methods: For screening those might both have the experience to get there medications from HPs and CPs, the cross-sectional survey of patients with refill prescriptions was conducted at a medical-center pharmacy on June 4, 2015. A total of 277 valid questionnaires were collected from patients or their escort who had prescriptions refilled for them. This Questionnaire showed good construct validity and internal consistency reliability (Cronbach’s alpha > 0.8). Factors affected with our study population decision making in choosing pharmacy and pharmacy satisfaction were asked in the questionnaire, and all information were collected without intentionally guidance. The background of the population were also analyzed.

Results: The results demonstrated that participation prefer CPs (N=135, 59.5%) than HPs (N=92, 40.5%). Those participation who had received refill services from HPs and CPs (N=135) resulted in significant differently (p<0.05) in all items except from pharmacies surrounding. HPs obtained higher scores on reputation, pharmaceutical products quality, pharmacist professional image and service attitude, yet CPs were acknowledged for their better accessibility.

Conclusion: In our study, drug quality (ex. drugs storage conditions, the frequency of drug shortage) was a critical concern in CPs. Even HPs provided the better pharmaceutical service, people tended to go to CPs because of the accessibility. We recommended that HPs should improve outpatient drug dispensing (ex. use information technology to build system) and enhance app function bring people more convenient and closer so that HPs have more opportunity to provide our pharmaceutical service. CPs should promote their professional competencies to improve the image of the profession.
IMPROVING THE REPORTING RATE OF INCIDENTS
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Objectives: Despite the fact that most hospitals have established an incidents reporting system, the reported numbers are still low. It is therefore important to encourage any medical personnel to report any incidents in daily practice. Our aim was to increase the report rate by Key Performance Indicators (KPI) with an expected increase in the rate of reporting from 25.9% to 40.0%.

Methods: We conducted interviews, questionnaires and group discussions, to confirm the most frequent obstacles. We build up four action plans by strategic analysis, including reminder mechanisms, education and training, broadened reporting platform and rewording mechanism. We installed reminding slogan on every computer desktop, cultivate qualified professional teaching resources in every unit, held monthly quality control meetings and issued reward on every report. Furthermore, we have persistent follow-up and on-going modification and perfection of the existing system.

Results: We found that the main obstacles were: Failure to recognized an event as “ought-to-be-reported”, lack of feedback, lack of familiarity with the reporting system, and inconveniency. After implementing our interventions, our task force achieved an increase in the report rate from 25.9% to 61.5% and the high rate was sustained and further improved to 62.3% in 2014. The overall success rate was 137.5% with 153.7% of goal achievement.

Conclusion: The incidents reporting system has the ability of real-time investigation and analysis and to collect more system failure factors, thereby preventing future or potential mistakes. Our program increased the report rate dramatically by establishing professional teaching resources and reward policy. We hope that our experience would help build a safer medical environment for everyone.

IMPLEMENTING "STOP THE LINE" TO REACH SUPERIOR QUALITY AND REDUCE PATIENT RISK IN ZEALAND UNIVERSITY HOSPITAL

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Objectives: I wish to analyze the experiences from the pilot testing in Department of surgical Pathology, and investigate the use of "stop the line" policy 1) in the department by now. This data will be used in the future implementation, in order to make sure, that the implementation of "stop the line" will be done in a manner, where the staff will go "all in" for the concept, and to get the policy anchored in the department.

Methods: "Stop the line" is the policy to empower all healthcare workers to stop a procedure or function if they see a patient risk or an issue that could lead to inferior quality.

All staff were introduced to the policy and how to use it in practice. In the test period everyone using "stop the line" was to fill in a form explaining:
- The situation
- Who stopped the situation (themselves, a colleague, a manager)

To get more data from the staff, an anonymous questionnaire was distributed and answers collected. The purpose of the questionnaire was to answer following questions:
- Do we use the policy already?
- Is there openness or resistance to a concept like this?
- Do we see barriers we need to consider when implementing the new policy to the department?

Results: From the pilot testing we received 7 filled forms. These were generally regarding lack of staff, breakdown of equipment or interruptions during procedures. Five out of 7 times the procedure was stopped in first line (the person involved or direct colleague).

The questionnaire was answered by 49 people (62% of the staff).

Most questionnaires have very similar answers:
- 98% new the policy "stop the line".
- 72,3% answered yes, the policy makes sense. 29,8% No, it does not make sense. Out of the 29,8% No, it doesn’t make sense, 86% says that they are using it already. Some says, that they don’t need a fancy phrase to execute the policy.
- 45,8% experienced a situation were they stopped the procedure. And in 85% of these situations it was stopped by themselves or nearest colleague.
- 88,6% intend to use "stop the line" in the future.
- 45,5% see challenges by using "stop the line" in the department.

Many describes it as time consuming. And there are resistance regarding more registration in a busy workday. Some of the answers also point out, that there can be a barrier for technical staff to ask a Pathologist to "stop the line".

Conclusion: From the pilot testing we got 7 examples of “stop the line” situations, which is not representative to make a general conclusion. Registration is considered a barrier for the staff, because the workday is very hectic and we have a lot of registration already, the Adverse event being one of them.

The output from the questionnaire was satisfying with answers from 62% of the staff. The answers were very alike. It is obvious, that the department already uses the concept “stop the line” to a great extent, but without “saying the words”. For all of the staff it is a sense of course to have the patient safety in mind in everything they do. It is more a question about attitude, than following a specific policy.

Most of the staff is open to new concepts to focus upon patient safety. However there is some resistance towards more registration, more “policies for the sake of the policy”.

In the re-introduction to the Department we are going to focus on the responsible attitude and the fact, that this is something we already do. There will be no registration, but a follow up after 3 months, and again after 6 months.

LOWERING THE RATE OF NON-ORDER FOR SPECIFIED TYPES OF INPATIENT DIET
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Objectives: In addition to receiving medical treatment during hospitalization, inpatient meal service and clinical nutrition care are also the important aspects in total integrated patient care. Accurate meal orders allow patients to receive appropriate and sufficient nutrition, improve patients’ nutritional status, enhance recovery, and may shorten the length of hospitalization.

The Department of Dietetics of NTUH Hsin-Chu Branch offers full diet and other specified types of inpatient diet. In the month of April, 2015, the overall meal order rate was 45.3%, with the rate of non-order for specified types of inpatient diet being as high as 63.8%. In order to lower the rate of non-order for specified types of inpatient diet, a team consisted of members from the Department of Dietetics, the Secretary Office, and the Center of Quality Management used quality control methods to identify causes of the high non-order rate. The goal was to lower the non-order rate to 40.6%.

Methods: The team planned the activity schedule using Gantt chart. Through data collection of present ordering status by nutritionists, the following three issues were identified: 1) No diet prescription were written by the physician. 2) Inaccurate diet prescription written by the physician. 3) The patient prepares diet for him/herself. Reasons to the occurrence of the three abovementioned issues were identified by the team through brainstorming and using a fishbone diagram; they are as follows: a) Doctors are not familiar with the diet prescription format. b) Diet prescription has not been sufficiently promoted. c) The general population is not aware of the importance of types of inpatient diet.

Through making recordings of TMS online courses, producing operation manual, promotions in hospital-level meetings, organizing regular health education activities, publicizing news statements, etc., and adopting PDCA for the performance evaluation and the review of countermeasures, the team composed a set of standards for the countermeasures after their effects have been confirmed. The countermeasures have been planned as a compulsory course in education training for the current and newly recruited staff.

Results: By August 2015, the rate of non-order for specified types of inpatient diet lowered from 63.8% down to 39.5%, with a success rate of 106% and an improvement rate of 38%. The overall hospital meal order rate increased from 45.3% to 50.7%.

Conclusion: Through the data collection of present ordering status and together examining relevant issues, the team members drafted and planned the countermeasures for ameliorate the issues and achieved the improvement by having education training of medical teams as well as introducing nutrition basics to patients and their family members. However, patients’ willingness to order hospital meals more or less depends on their dietary routines and tastes that improvement shall continue to be worked on and outcomes followed up.

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Objectives: This study examines changes in employee outcomes – specifically, teamwork and work environment – that follow on implementation of lean management in healthcare. This study may advance our knowledge about the use of lean intervention in healthcare setting and also inform future applications of improvement methodologies, harnessing successful aspects and reducing unsuccessful, or even harmful, aspects of them.

Methods: A case study approach with Pettigrew and Whipp’s model as a conceptual framework of change was used. Two validated questionnaires, Group Development Questionnaire (GDQ) for teamwork and Copenhagen Psychosocial Questionnaire (COPSOQ) for occupational stress, were used. The study design was to perform the questionnaire survey twice, one and a half year apart, during the lean implementation process as well as interviews and observations during the same period. The data was collected from the emergency department and two inpatient cardiac wards at a Swedish hospital. A manifest content analysis was performed for interview and observation data to describe the intervention in depth. The responses from the questionnaires were statistically analyzed with standard parametric and non-parametric methods for paired and repeated observations. The differences in responses between two times during lean implementation were used to generate the results of the study.

Results: The analysis of interview and observation data revealed that lean implementation met with varying success due to differences in intervention implementation and contextual factors. Contextual factors seemed to influence both Lean implementation and its sustainability. For example, adoption of Lean varied with the degree to which staff saw a need for change. Work redesign and teamwork was found helpful to improve patient care while problem solving was found helpful in keeping the staff engaged and sustaining the results over time. Quantitative data analysis showed a significant relation between the expected and actual results regarding changes in the psychosocial work environment. Quantitative data analysis showed a significant relation between the level of Lean implementation and simultaneous change in teamwork and work environment. Lean methods, if applied systematically, improve different aspects of teamwork and minimize occupational stress levels.

Conclusion: The success of Lean implementation depends on its adaptation to contextual factors. In addition to the traditional focus of Lean on operational performance, the employee perspective is also important in designing, implementing and sustaining Lean. An initial Lean success may be sustained by engaging the staff in the change process through maintaining a good teamwork and work environment. Employee involvement may minimize the intervention’s harmful effects on psychosocial work factors. Employee involvement may minimize the intervention’s harmful effects on work environment. Practitioners should note that, with groups struggling at initial stages of group functioning, the introduction of Lean may pose a significant challenge.
PATIENT SAFETY CULTURE IN NURSING HOMES IN SOUTH KOREA
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Objectives: The purpose of the study is to explore applicability of Agency for Healthcare Research and Quality (AHRQ)’s the Nursing Home Survey of Patient Safety Culture (NHSPSC) in assessing patient safety culture of nursing homes in Korea. The specific aims of the study are to assess how nursing home staffs perceive patient safety culture of their nursing homes and whether their perceptions were different by nursing home and staff characteristics.

Methods: This is a cross-sectional study and a convenience sampling method was used. The data were collected from 306 nursing home staffs of seven nursing homes in Seoul, the capital city Gyeonggi Province, South Korea. For the study, AHRQ’s Nursing Home Survey on Patient Safety Culture (NHSPSC) was translated to Korean and adapted culturally for Korean nursing homes. Content expert team verified whether the questionnaire was appropriate to assess patient safety culture in the context of Korean nursing home and health care system. The questionnaire was finalized based on their feedback. The content validity index was .90.
The NHSPSC consists of 51 items in 6 sections and 1 open-ended question for comments. From A to D sections (42 items) include 5 point Likert scales of agreement (“Strongly disagree” to “Strongly agree”) or frequency (“Never” to “Always”). Survey data were collected from June 2014 from February 2015.

Results: The questionnaires were distributed to all of the nursing home staffs (n = 311) in the selected nursing homes, and 306 (98.4%) of them returned the questionnaires.
The dimension of ‘Overall perceptions of resident safety’ had the highest average percent of positive responses (PPR) (95.1%) and mean (4.33). The dimension of ‘Non-punitive response to mistakes’ had the lowest PPR (51.0%) and mean (3.32). Sixty five percent respondents (n=193) gave their nursing home a rating of ‘Excellent’ (16.5 %) and ‘Very Good’ (48.5 %) on patient safety.
The perception of patient safety culture was varied by ownership, evaluation grades, and bed size of nursing home. There were differences in level of patient safety culture by job titles in all dimensions except two dimensions (‘Non-punitive response to error’ and ‘Management support for patient safety’). Generally, administers/managers had higher perception of patient safety culture than others.

Conclusion: We confirmed that the dimensions of patient safety culture, reported lower on previous studies, turned up equally vulnerable dimensions in Korea as well. Moreover, it is found that we need to make continuous efforts in order to overcome the perception gap between managers and frontline workers. The findings will raise awareness of strength and weakness areas of patient safety culture in Korean nursing homes, so that it will be used to improve patient safety culture in Korean nursing homes and be the basis for further research on patient safety.

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PATIENT SAFETY SITUATIONAL ANALYSIS IN GHANA
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Objectives: The objective of the study was to assess the patient safety situation in Ghana. Specifically, the study aimed
at assessing the 12 action areas of patient safety as part of the process in developing a National Policy for Patient Safety
in Ghana.

Methods: This was a descriptive cross-sectional survey involving 16 hospitals (including two teaching hospitals) in
Ghana. Data collection methods included, interviews and observation using WHO adapted questionnaire. Respondents
were purposively selected based on their position in the facility and type of information required.

Results: The median bed capacity of the hospitals assessed was 93 (min=60, max=1812). The country’s highest score
(94%) was in the action area of knowledge and learning in patient safety where all (16, 100%) the sampled facilities had
systems in place for recording adverse events; specific protocols on patient care etc. The action area with the least score
(41%) was Patient Safety Surveillance & Research. The country scored variedly between 61% (in national PS policy and
Patient Safety funding) to 85% (in basic facility infrastructure-hospital general information) on all the other action areas.
The country had no national policy on patient safety; neither did any of the facilities assessed had budget item labelled
“patient safety funding.” But it was mentioned that, provisions were made for hand hygiene and waste disposal among
others in their annual budgets.

Conclusion: It can be concluded that, Ghana’s patient safety situational analysis can be described as strong with an
average cumulative score of 66%.

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COOPERATION BETWEEN HEALTH PROFESSIONALS - 5 YEARS OF DELEGATION OF CARE ACTIVITIES IN FRANCE
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Objectives: Like every western countries, France is facing multiple challenges: the rise of chronic diseases, an aging population, an increased amount of medical care needed per patient,...To respond to these new health issues, the establishment of a system with the delegation of care activities between healthcare professionals is an innovative lever action that challenges the “classic” care management modes.

Methods: Healthcare professionals’ activities and responsibilities are tightly regulated. A 2009 law introduced the possibility for healthcare professionals to be exempted from established rules and redefine their relationships. This can be achieved by designing and implementing at the local level schemes or « protocols » delegating responsibilities for certain clinical activities (for example transferring the monitoring of diabetic patients from physicians to nurses). Healthcare professionals who sponsor (support) those protocols at the local level are legally required to seek the approval of both, the regional health authority (ARS) and the National Authority for Health (HAS, Haute Autorité de Santé). Professionals interesting, must submit a document explaining the conditions under which they want to work. The HAS is responsible for issuing a recommendation on this “cooperation protocol”, based on an assessment of the level of quality and safety of care that this organization can guarantee.
Since 2010, the HAS has developed quality and safety criteria to help professionals reorganize their collaboration while giving safe timely, and appropriate care to their patients.
To offer a recommendation on a local protocol, the HAS considers several factors, including:
- Identification of risks related to the practice, and the risk management processes role of the “delegating” physician,
- Content of training: theory, practical exercises, evaluation of competences, professional expertise of the “delegates” (to whom responsibilities are transferred) and any additional training necessary to acquire these new skills
- Effectiveness of the new care organization: the satisfaction of the patients and professionals, computerized data transmission system,…
- List of monitoring indicators for this new organization: quality, utilization, patient safety, and satisfaction level

Results: Results of the assessment of implemented protocols
After five years of national deployment, a first assessment has been conducted for the protocols implemented over a one year period.
Over five years, the HAS has received 106 different protocols. Between 2011 and 2014, 38 positive recommendations were delivered by the board of the HAS.
The assessment of the protocols implemented over a one-year period, covered 13 different protocols. Five of them are deployed in multiple regions (rather than only at the local level) and involve many French health care professionals. The protocols cover: chronic diseases (nurses’ consultations that can include advice, prescriptions, and care), ophthalmology (visual assessment and eyeglasses prescription by orthoptist (2 protocols)) and echography (2 protocols). The researchers observed that these five experiences have characteristics that may facilitate the successful adoption of the protocols by the healthcare professionals in different contexts: Identifying the needs of the patients requiring a new organizational (competences and training of professionals involved and effectively disseminating information between professionals.

Conclusion: The 2009 law provides a framework allowing the development of new schemes of coordination between healthcare professionals while guaranteeing quality of care and patient -safety. The recent health law introducing advanced practice for nurses in France will complement the existing regulation and may give further opportunities to respond to the challenges posed by the rise of new health needs.
EVALUATION OF TRIGUER TOOL’S METHOD FOR MEASURING ADVERSE EVENTS IN A SOUTH AMERICAN NEONATAL INTENSIVE CARE UNIT.
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Objectives: To prove the applicability of Trigger tool as a method for identifying adverse events in a South American Neonatal Intensive Care Unit. (NICU)

Methods: Retrospective Transversal Study. The NICU focused Trigger Tool developed by the Institute of Healthcare Improvement (IHI), was translated and adapted by a group of Neonatologist with expertise in patient Safety. We performed a retrospective review of patient records looking for triggers to identify possible adverse events.

Results: Review of 40 charts from our NICU, revealed 63 triggers, 3.15 per patient, and only 6 adverse events (0.15 per patient). The 6 adverse events identified by this tool were nosocomial infections. During the review we could also notice the occurrence of adverse events such as pneumothorax following a central catheter insertion, or cholestasis following parenteral nutrition that weren’t consider as a trigger in the tool. The use of the IHI Triguer’s Tool method as a way to identify events that do cause harm to patients was tested during two months.

Conclusion: Trigger tool may contribute with adverse events detection. However, this tool should be complemented by other methods, such as voluntary reporting, in an environment like ours that is still not as prone to recognizing errors in care, and afraid of the risk of legal claims.
DESIGNS BY MEDICAL PROFESSIONALS IN CREATING A HUMANIZED INTENSIVE CARE UNIT

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Objectives: If you could design the perfect intensive care unit (ICU), what would it look like? However, according to the common experiences, the hospital setting design is required most complex, comprehensive, and thorough input by architects. Taipei Medical University – Shuang Ho Hospital is a teaching hospital with 1580 beds. It is the largest hospital in New Taipei City. The concept of “Mockup” has been utilized to construct the second medical intensive care unit. There are more than 4 groups were involved, that’s including: nursing dept., the members of infection control, dept. of public works, the members of intensive care units, doctors, etc…during 2013 to 2014.

Methods: Shuang Ho Hospital utilized the concept of “Mockup” to construct the second medical intensive care unit. Step 1. Scenario-oriented Co-innovation for medical space from 2D, 3D to 4D; Step 2. 2D Mockup communication; Step 3. 3D full-size Mockup stimulation; Step 4. 4D Scenario walkthrough.

It is the latest and the first ICU in Taiwan to utilize this concept in the construction of the ICU. The interdepartmental collaboration during the design of the ICU allowed for an ICU that was built for the healthcare members, patients and family members that visited. In total, 26 ICU beds were placed in a space of 10,600 square feet, allowing for a very spacious and friendly environment for patients and healthcare workers.

Results: Better facility design leads to better health care outcomes: (1) Evidence-based design includes building 100% private rooms, thereby decreasing nosocomial infections (BSI: 0‰, VAP: 0‰, CA-UTI: 0.7‰); (2) New designs are improving patient and family satisfaction (95.6%) that is higher than other ICU’s in Taiwan. (3) The rate of family understand more about the patient’s condition (93.6%). (4) Another advantage of our ICU policy is to establish an open dialogue with patient’s family members to discuss the current health condition of the patient and allowing them to be a part of the decision-making process.

Conclusion: Taiwan is known for its famous top notch health insurance system and patient quality of care. We are continuously refining our software and hardware in order to provide the highest level of care to our patients. Our hospital’s mission is to provide the highest level of care for our patients; we were awarded the Symbol of National Quality by the Taiwanese Government. At Shuang Ho Hospital we hope that we can share our invaluable information to the world’s health community as well as learn from our fellow healthcare colleagues.

THE HEALTHCARE IS IMPORTANT IN NURSING TEAM. THIS MAY BE ACHIEVED BY CHANGING AND RE-DESIGNING OF HEALTHCARE SUPPORT SERVICES WORKFLOW WITH INNOVATIVE IT INTEGRATED SYSTEMS.

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Objectives: Due to labor shortages, most local hospitals are facing increasing difficulty in using manual way to manage bed turnaround process. With phone calls and handwritten paper forms, it has always been a hassle for nurses to locate housekeepers to conduct bed cleaning duties. The Bed Management Unit is unable to accurately and efficiently identify availability of clean beds. Miscommunications often lead to inefficient management of beds, resulting in long waiting times for beds.

In 2012, CCH hospital initiated an Integrated IT Solutions project to achieve seamless flow of information, better resource management, real-time data collection and feedback and close-loop action. The Integrated system involves BMU, HIS, NIS, Infection Control and Environment Services Systems. The system allows each department’s users and heads to have real-time ground information and immediate action taken. The benefits of implementing Integrated IT Systems are improvement of patient care service experience and significant reduction of nursing workload. To top it all, infection control and patient safety have vastly improved.

Methods: When a patient is discharged, the integrated system of HIS and Bed Cleaning System will automatically trigger a cleaning request to the Housekeeper’s smartphone. If the outgoing patient has been infected with any viruses or illnesses such as MRSA, an icon of Infection Control Precaution will be shown on the Housekeeper’s smartphone. This pre-empting alert is key not only to the protection of both patient and Housekeeper’s health but also helps to speed up the bed cleaning process and thus increasing efficiency.

1. Priority beds may be triggered from Nurse module and automatically updated to Housekeeper’s smartphone. This helps to speed up bed turnaround time.
2. Provide real-time bed statuses to all users; improve communication, accountability and transparency. Reduce miscommunications and manual communications like phone calls.
3. To speed up bed turnaround time, escalation process may be triggered during peak hours. Environment Service department would be able to better manage resources and planning.

Results: Impact after System Implementation

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Patient check-in</td>
<td>60 mins</td>
</tr>
<tr>
<td>Check bed available</td>
<td>20 mins</td>
</tr>
<tr>
<td>Update Status</td>
<td>5 mins</td>
</tr>
<tr>
<td>Bed Cleaning Per Task</td>
<td>14 mins</td>
</tr>
<tr>
<td>Bed Cleaning</td>
<td>30 mins</td>
</tr>
</tbody>
</table>

Conclusion: With CCH Hospital’s adoption of the integrated system of HIS, NIS, Infection Control with Bed Cleaning System, the hospital has capitalized on its full benefits. The reduction of bed turnaround time to 30 minutes is attributed to automated bed cleaning request assignment and real-time bed status information. Maximum use of resources, reduction in miscommunications and improvement of patient care service will bring a truly positive experience enjoyed all staff at the hospital.

ESTABLISHING A “CLINICAL ALARM SYSTEM” TO DECREASE SUDDEN CARDIOPULMONARY RESUSCITATION CASES
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Objectives: The aim of this study was to establish a CAS. All the available literature were reviewed to establish a CAS in our hospital. Criteria were established to trigger off the system. Educational pamphlets were distributed to the medical staff and allied personnel to allow for early recognition of the patients at high risk for cardiac arrest. This enables rapid provision of emergent care, raising the standards for patient safety and alleviating nursing staff stress level.

CAS was employed in the hospital wards. Seasonal reports were provided by the head nurses of each ward with regards the reason for setting off the CAS, how the patient was managed, and the effectiveness of the cardiopulmonary resuscitation team. The critical care committee met each season to discuss and review the process.

Methods:
1. Activating the CAS:
   (1) After evaluation by the nursing staff, CAS is activated notifying the physician on duty.
   (2) The on duty physician performs initial evaluation and the patient’s physician is notified.
   (3) The patient’s physician then evaluates the need to transfer to ICU.
   (4) The physician then prescribes the necessary treatment and documents the whole incidence.
   (5) Nursing staff documents the incidence and records it in the CAS log.

2. Applying the CAS:
   (1) CAS was applied in all medical and surgical wards from July 2014.
   (2) CAS was applied in all hospital wards from January 2015.

3. Keeping surveying the causes of CAS, analyzing the follow-up medical care for patients, and making presentation at the

Results:
1. 54 cases of cardiopulmonary resuscitation in the wards were documented in 2014 and this decreased to 37 cases in 2015 after implementing CAS
2. Added benefits:
   (1) Early detection of patients in distress with earlier, timely and adequate provision of the necessary medical care required. This decreases the amount of medico-legal problems.
   (2) Decreasing the amount of cardiopulmonary resuscitation required. In our hospital, once cardiopulmonary resuscitation code is started, many personnel is required to assist in resuscitation, decreasing the number of times in-hospital cardiopulmonary resuscitation started will decrease the costs involved.

Conclusion: Establishing a CAS system allows earlier recognition of the patients at high risk for cardiac arrest by the nursing staff. Through continued education, constant reminder by the nursing management team and seasonal review of each case can decrease the amount of CPR occurring as well as raising the nursing staff’s awareness to activate the CAS earlier, allowing for rapid transfer to ICU. This will result in lifting the overall standard of care for the patient. This system effectively allows for earlier recognition of the patients in distress by the nursing staff. Our hospital further developed a CAS computer system allowing for even earlier activation of the system allowing for even more timely intervention by the on duty physicians. The system also allows for easy recall of data allowing for better quality control.
WHEN HEALTH CARE PROFESSIONALS BECOME SECOND VICTIMS AFTER INVOLVEMENT IN AN ADVERSE EVENT - A DANISH STUDY

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Objectives: Literature studies reveals an existing need in Denmark to examine how health care professionals are affected by being implicated in an adverse event both professionally and personally and to find out which initiatives would help health care professionals in clinical practice to recover from an adverse event. The aim of this study is to examine above mentioned in a hospital setting.

Methods: A total of two focus group interviews have been conducted based on a hermeneutic perspective. Participants in the interviews were health care professionals who did not work with patient safety or quality improvement from various departments and various health care professions from two hospitals in Region Zealand. The participants were recruited to the interview on a volunteer basis through the local patient safety network with the inclusion criteria that they had been involved in an adverse event. The two interviews were carried out using a question guide based on a literature study conducted at PubMed using the words “adverse event” and “second victim”. The interviews were analyzed using a qualitative content analysis inspired of Steiner Kvale.

Results: The preliminary results indicate following trends showing:
- Some of the participants are still very affected both personally and professionally by the clinical adverse event even though the event was up to many years ago
- Several of the adverse events happened shortly after the participants started in a new job position regardless of their professional seniority
- Some of the participants were close to handing in their resignation because of the event but support from colleagues prevented it from happening
- Approximately half of the adverse events happened when the participants were working under pressure

Some og the physical and psychical reactions to an adverse event were:
- Guilt
- Self-doubt
- Sleep disturbances
- Avoiding similar situations in patient care
- Checking themselves 2-3 times in similar situations
- Concerned for professional reputation

Which initiatives are the employees looking for from their organization?
- The participants felt that the organization don’t use the sufficient tools to support employees who suffer from being implicated in an adverse event
- Participants do not feel that their managers support them sufficiently
- Participants had a feeling of everyone knew that they had made a mistake and experience colleagues are talking behind their back
- Participants are looking for the organization to acknowledge which implications it has to the health care professional to be involved in an adverse event. It is important with management support and support from colleagues
- It is important for the health care professionals to know which consequences it had for the patient

Conclusion: The final results will be presented at the conference. The preliminary results from this study indicate that health care professionals can suffer many years after involvement in an adverse event. They feel their professional identity are taken away from them, and the shock of being part of an adverse event make the health care professionals question themselves professionally and personally. Learning from adverse events and management who support a learning culture is important factors in supporting health care professionals to recover from an adverse event.

To improve our understanding of the implications after involvement in an adverse event and help us provide effective recovery initiatives more studies are needed to support the conclusion of this study. An online questionnaire will be send to all health care professionals at hospitals in Region Zealand in the summer of 2016 to gain more knowledge in this field.
RISK FACTORS FOR MUSCULOSKELETAL DISCOMFORT AMONG NURSES
Y.-S. Ou
^TAIPEI MEDICAL UNIVERSITY SHUANG-HO HOSPITAL, New Taipei City, Taiwan

Objectives: This study has identified a higher prevalence rate of MSDs in neck in our nurses compared to overseas studies. Advanced continuing education programs focused on ergonomic factors and preventive, measures for MSDs among nurses are warranted. The prevalence rate was between 24.3% and 43.9%, followed by pain with the prevalence rate between 8.7% and 23.6%. Both age and seniority were highly associated with the incidence of MSDs, and standing for longer hours was also an important risk factor for MSDs.

Methods: This cross-sectional study employed a self-report questionnaire for data collection. Questions included demographic information, symptoms of MSDs and contents of average daily work. The content validity was 0.96 and the test-retest reliability was 0.99 for demographic information and was 0.80 for contents of work. The study was to understand the magnitude of and risk factors for MSDs in Taiwan nurses, and to identify the preventive strategies of MSDs.

Results: A total of 4,390 questionnaires were distributed and 3,282 completed it, resulting in a high response rate of 74.8%. Among 3,282 nurses, 1,902 (58%) suffered from MSDs in the last one year. The prevalence of MSDs was 49.7% in neck, 45% in low back, 40.9% in right shoulder, 39.4% in left shoulder, 28.3% in right leg, and 26.1% in left leg. The most common symptom being sourness, and the prevalence rate was between 24.3% and 43.9%, followed by pain with the prevalence rate between 8.7% and 23.6%. Both age and seniority were highly associated with the incidence of MSDs, and standing for longer hours was also an important risk factor for MSDs.

Conclusion: This study has identified a higher prevalence rate of MSDs in neck in our nurses compared to overseas studies. Advanced continuing education programs focused on ergonomic factors and preventive, measures for MSDs among nurses are warranted. The prevalence rate was between 24.3% and 43.9%, followed by pain with the prevalence rate between 8.7% and 23.6%. Both age and seniority were highly associated with the incidence of MSDs, and standing for longer hours was also an important risk factor for MSDs.

References:
APPLYING LEAN METHODOLOGY TO IMPROVE THE BLOOD PRODUCTS DELIVERY SYSTEM
J. Y. Lyu 
H. C. Chung, M. W. Chen, L. C. Yu

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Objectives: To improve the blood products delivery processes in a timely manner by lean principles in a hospital.

Methods: The project team comprised nurses, computer technicians, medical laboratory scientist, and transfer staff. Lean methodology was implemented on the basis of five principles: Valuation, Value-Stream, One Piece Flow, Pull System and Perfection. Technology and auto-transfer application were also introduced to improve the blood products delivery.

Results: The effect of introducing lean system: (1) After the completion of the blood cross matching by blood bank, the average time which transfer staff arrived at the blood bank was reduced by 24.4 minutes, from 32.8 minutes the origin to 8.4 minutes, According the character of wards to show the reducing average time: OR 4.0 minutes (from 8.7 minutes to 3.0 minutes)  SICU 22.2 minutes (from 31.8 minutes to 9.6 minutes)  MICU 12.2 minutes (from 22.6 minutes to 10.4 minutes)  PICU 11.3 minutes (from 17 minutes to 5.7 minutes)  RCC 0.7 minutes (from 12.9 minutes to 12.2 minutes)  general ward 31.1 minutes (from 40.7 minutes to 9.6 minutes) .(2)After the completion of the blood cross matching by blood bank, the average time it takes to blood products delivery from blood bank to nursing station is 12.5 minutes. According the character of wards to show the reducing average time: OR 6.7 minutes, SICU 15.1 minutes, MICU 13.4 minutes, PICU 9.8 minutes, RCC 13.8 minutes, general ward 16.2 minutes.

Conclusion: A lean methodology to improving the blood product delivery system resulted in a significant decrease in the time of wastage of blood products delivery, and a significant decrease on the workloads of health professionals. In addition, to increase the quality of medical services to their patients.

A SYSTEMATIC APPROACH TO IMPROVING HAND HYGIENE COMPLIANCE
R. Anderson1,*, H. Gatollari1, V. LoPachin1
1Office for Excellence in Patient Care, Mount Sinai Hospital, New York, United States

Objectives: To describe how a comprehensive hand hygiene initiative can be implemented to improve hand hygiene compliance.

Methods: At The Mount Sinai Hospital, there has been an ongoing effort to decrease hospital-acquired infections (HAI). Performing Hand Hygiene is the single most important way healthcare workers can protect patients and themselves from Hospital Acquired Infections (HAI). To achieve higher levels of hand hygiene compliance, The Mount Sinai Hospital is implementing an initiative developed by The Joint Commission’s Center for Transforming Healthcare which uses the Targeted Solutions Tool (TST) to improve Hand Hygiene. The initiative includes three phases: baseline data collection, real-time coaching and education, and improve. The program has been implemented on 34 inpatient units using a cohort approach, beginning in Sept 2014. By September 2015, all 34 units were collecting data. Trained anonymous observers, who are normative to a unit and not from infection control, collect compliance data, as well as data on staff role, time of day, room entry or exit, and reasons for non-compliance. Units collected a minimum of 100 anonymous observations for 3 months as part of the baseline data collection and then collect 60 anonymous observations per month during the Coaching and Improve phase. Each unit collects 200 total coaching observations, with real-time education and intervention, after the 3-month baseline period was complete. When Coaching observations are complete, units move into the Improve phase of the project, where targeted solutions are implemented to improve compliance. Solutions implemented to date include the use of visual cues, code words, education on appropriate glove use, redesigning work flows, and installing sanitizer dispensers.

Results: In 2015, 25,500 hand hygiene observations were conducted by over 1200 anonymous observers and coaches. Overall, hospital-wide hand hygiene compliance improved from 37% in January to 66% in December, a 79% increase in compliance (Chisquare: 146.1, p-value <.0001). During 2015, 4 Women’s Services units entered the Improve phase. Comparing baseline vs improve compliance for these units cohorts showed statistically significant increases in hand hygiene compliance for 3 of the 4 units.

<table>
<thead>
<tr>
<th></th>
<th>Baseline 2015</th>
<th>Improve 2015</th>
<th>Chi-square</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43% (557)</td>
<td>58% (589)</td>
<td>27.0</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>B</td>
<td>57% (818)</td>
<td>65% (415)</td>
<td>6.4</td>
<td>0.01</td>
</tr>
<tr>
<td>C</td>
<td>60% (655)</td>
<td>64% (236)</td>
<td>1.2</td>
<td>0.3</td>
</tr>
<tr>
<td>D</td>
<td>56% (619)</td>
<td>66% (302)</td>
<td>8.4</td>
<td>0.004</td>
</tr>
</tbody>
</table>

The staff group with the highest compliance in 2015 was Physical Therapy (73%), with Dietary and Housekeeping at the lower end of compliance (35% and 32% respectively). Nurses have compliance rates about 10% higher than physicians (67% vs 56%; Chi-square: 185.7, p-value <.0001). Compliance was significantly different between day and night (61% vs 57%; Chi-square: 31.3, p-value <.0001) and also between washing on entry and exit (55% vs 65%; Chi-square: 220.7, p-value <.0001). In addition to compliance rates, the TST allows for the measurement of reasons for non-compliance. In 2015, the improper use of gloves was the number one reason for non-compliance and accounted for 29% of the hospital-wide non-compliance. Improper glove use was the top reason for non-compliance for both nurses and physicians. Other top reasons for hospital-wide non-compliance include: hands full of supplies/medicine (20%) and frequent entry and exit (13%).

Conclusion: Hand Hygiene can be improved in a large academic medical center through the use of a systematic, data-driven initiative. Ongoing data collection allows for continuous measurement and aids in the focusing of targeted solutions. Many of the implemented solutions require no additional financial resources, and can be implemented on local units through multidisciplinary collaboration and a commitment to process redesign. Future analyses will focus on determining correlation between hand hygiene compliance and HAIs.
IMPLEMENTING MEWS (MODIFIED EARLY WARNING SCORE) SCALE AS AN EARLY WARNING INSTRUMENT OF CLINICAL DETERIORATION OF PATIENTS IN HOSPITALIZATION UNITS
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1Hospital Sírio Libanês, São Paulo, Brazil

Objectives: Implementing Mews (Modified Early Warning Score) scale in hospitalization units with the objective to early warn the detection of deterioration signs in patients.

Methods: As a strategy, one multidisciplinary working group was organized with representatives of hospitalization units. A validated assessment method, called MEWS (Modified Early Warning Score) was selected. This method enables the assessment to be translated by a score which is based on the monitoring of physiological parameters such as heart rate, respiratory rate, systolic blood pressure, temperature and level of consciousness. Each parameter is assigned a score ranging from 0 to 3 where 0 is normal and 3 the worst. The verification of these parameters is integrated in a systematic way and is conducted by the nursing staff in the control of vital signs. To collect this information, the team uses an electronic tool called Personal Digital Assistance (PDA). From the sum of the values obtained in an automated way, we have a numeric result that can alert the start of clinical deterioration. The score of 4 (four) or higher, indicates an emergency situation, and these, therefore, are the values determined for the drive of the on duty doctor. After the drive, the doctor has, as a goal, five (5) minutes to start the evaluation of the patient.

Results: This methodology was initiated by Semi-intensive Hospitalization Units. During three months after the implementation of MEWS method in these units, we obtained 8036 reviews, and, of these, 13.3% (1071 reviews) had a score of 4 or higher. In these patients, the evaluation of the on duty doctor allowed an early discussion about the clinical conditions of any indication of a better monitoring of clinical parameters and also on whether to transfer or not this patient to a Critical Unit. When opting for the patient stay in Semi-intensive Unit, the care plan and needs assessment and reassessment were reviewed for a more accurate monitoring of the clinical condition of the patient.

Conclusion: MEWS was considered a simple tool, easy to be applied by nursing staff and has enabled the early detection of clinical deterioration in patients hospitalized in these units as well as the identification of patients at risk of complications and needing a close monitoring.
THE INTEGRATION OF TEAM RESOURCES MANAGEMENT IN HEALTH INFORMATION SYSTEM (HIS) CAN IMPROVE OR EFFICIENCY AND MINIMIZE UNNECESSARY DELAYS FOR EMERGENCY OPERATIONS

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1Department of Nursing, 2Orthopaedic Surgery, 3Department of Anesthesiology, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

Objectives: The key to save patient's life during emergency operation is all about "Timing". Any unnecessary delay for sending patients to surgery can induce anxiety, stress and may even affect postoperative recovery. It will definitely have impacts on the prognosis and even death. Kaohsiung Chang Gung Memorial Hospital is a tertiary referral institution and is designated as a Level-1 trauma center with the highest operation volume in southern Taiwan. More than 4300 surgeries are performed per month, and among them, 10% are emergency operations. The best scenario is to house the patient in the operation room (OR) within 30 minutes when a decision is made. However, our data in 2012 reveals that near 40% of patients with unstable hemodynamics had around 8 minutes lag in the process. Thus, an improvement program (IP) was formulated. The primary purpose was to reduce the time lag. The secondary measurements included the preparation time, patient's satisfactions, and the utilization efficiency of ORs.

Methods: Prior to the implementation of IP, all root causes relating to the delay of emergency operations were analyzed. Several key factors were identified: 1. Efficiency in communication between medical/nursing staffs; 2. Documentary and data completeness; 3. Readiness for equipment and therapeutic products. An IP with specific aim to above-mentioned factors was implemented since 2012. First, scheduling system server, SMS gateway and mobile phones were integrated to improve communication. OR leader and the on-duty anesthesiologist were notified by mobile SMS. The text messages were sent automatically when emergency operation was scheduled in the HIS. The message contained information including patient's ID, type of surgery, and contact phone numbers. Second, an icon (namely emergency operation) hyperlinked to all necessary preparations would appear on the user interfaces in the emergency and in-patient HIS system. A checklist containing informed consents, image examinations, laboratory tests, and preparations of therapeutic products was mandatory before sending the patient to the OR. Third, real-time information regarding patient status was sent to patient's next of kin with SMS information pertaining arrival at OR, induction of anesthesia, ongoing surgery, end of surgery, recovery room, etc. Finally, the definitions of emergency operations in all surgical departments were reviewed to form a consensus regarding their priority. Retrospective surveillance was regularly conducted for each emergency operation to review its indication.

Results: The mean reception time of emergency operations was 38.3 minutes in 2012 and was decreased to 14.4 minutes in 2015. The number of emergency scheduling has significantly decreased from 2591 cases to 1826 cases as the emergency indication surveillance had been implemented. The incidence of delayed operation was reduced to 0.4%. The utilization rate in each operation room was increased to 89.5%. Overall patient satisfactions have achieved 96.2% as compared to 70.4% before.

Conclusion: The IP program eliminated 40% outliers in 2012 to meet the standards of OR quality that 99.6% emergency operations could be housed in the ORs within 30 minutes upon scheduling in 2015. By binding the emergency scheduling with the checklist of preparations, the preparation time could be reduced by 7-12 minutes. Stringent definition of emergency indication also helped the OR staffs to prioritize true emergency cases by reducing 62% of the reception time. The IP has been successful to allocate team resources to accommodate the increasing number of emergency cases and improves the OR utilization rates. As a consequence, more patients are satisfied than before.
DO TRANSFORMATIONAL LEADERSHIP STYLE AND PATIENT SAFETY CULTURE MATTER TO NURSES’ TASK PERFORMANCE IN HOSPITAL?
D. Liu 1,*, K.-F. Wu 2
1 Department of Nursing, 2 Department of Health Management Center, Wan Fang Hospital, Taipei Medical University, Taipei City, Taiwan

Objectives: This study aimed to explore the effects of transformational leadership and patient safety culture on nurses’ task performance. In addition, the mediating role of patient safety culture on the relationship between transformational leadership and nurses’ task performance was explored.

Methods: The study used a multi-level design. Data were collected from the head nurses (group level) and nurses (individual level) using self-report questionnaires. A random sampling scheme according to the distribution ratio and rank of the hospital accreditation was used. The cross-level effects were examined by the HLM (Hierarchical linear modeling). Transformational leadership style was constructed by the nursing staff’s perceptions of head nurses leadership. It was measured by Multifactor Leadership Questionnaire - MLQ (5X) (idealized influence attributed, idealized influence behavior, inspirational motivation, intellectual stimulation, and individualized consideration). The rwg (within-group inter-rater reliability) was used to measure the internal consistency of the consensus of the group for data aggregation. The Taiwan Joint Commission of Hospital Accreditation-modified Safety Attitudes Questionnaire was employed to measure patient safety culture. The nurses’ task performance questionnaire developed by Huang Jiaqi and McAllister was used to measure nurses’ task performance. Cronbach’s Alpha and CFA were used to examine reliability and validity for research instrument. Questionnaires were sent by mail in June 2015.

Results: The sample consisted of 1521 participants from 23 hospitals, with an overall response rate of 92.18% (147 head nurses and 1347 nurses). As can be seen from Table 1, the results indicated that the five dimensions of transformational leadership style in head nurses had a positive impact on nurses’ perceptions of patient safety culture and nurses’ task performance. Patient safety culture has a completely mediating effect on the relationship between transformational leadership style and nurses’ task performance.

Table1: The cross-level effects analysis by the HLM

<table>
<thead>
<tr>
<th></th>
<th>Patient Safety Culture</th>
<th>Task Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual level</td>
<td>γ</td>
<td>S.E. R²</td>
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<tr>
<td>Patient Safety Culture</td>
<td>0.59</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Groups Level-Transformational Leadership Style

<table>
<thead>
<tr>
<th>Level</th>
<th>Transformational Leadership</th>
<th>Patient Safety Culture</th>
<th>Task Performance</th>
<th>Sobel Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>*0.4 4</td>
<td>0.05 0.14 0.2 0.08</td>
<td>0.23 9</td>
<td>+Z 7.56</td>
</tr>
<tr>
<td>(2)</td>
<td>*0.5 1</td>
<td>0.06 0.14 0.3 0.08</td>
<td>0.23 9</td>
<td>+Z 7.36</td>
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<tr>
<td>(3)</td>
<td>*0.4 3</td>
<td>0.05 0.14 0.3 0.07</td>
<td>0.23 9</td>
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<tr>
<td>(4)</td>
<td>*0.4 9</td>
<td>0.05 0.14 0.3 0.08</td>
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</tr>
<tr>
<td>(5)</td>
<td>*0.4 5</td>
<td>0.05 0.14 0.3 0.07</td>
<td>0.23 9</td>
<td>+Z 7.43</td>
</tr>
</tbody>
</table>

Note: *p < 0.001, + Mediation effect (Mediator: Patient Safety Culture) (1) Idealized influence attributed, (2) Idealized influence behavior, (3) Inspirational motivation, (4) Intellectual stimulation, (5) Individualized consideration

Conclusion: Head nurses play a key role in guiding clinical nurses in the professional socialization process. Therefore, they can improve the nurse’s task performance. In addition, a positive patient safety culture environment such as team work, safety climate, management support patient safety activities and cross-unit team work improves the nurse’s task performance. Furthermore, our data support the mediator role of patient safety culture in the relationship between transformational leadership and nurse’s task performance.
IMPROVEMENT PROJECT ON SAFE APPLICATION OF MECHANICAL VENTILATOR STANDBY MODE
K. S. Lau¹, O. K. A. Lee², Y. L. Leung³, K. K. Kwong³,*
¹Integrated Medical Services, ²Acute Integrated Medical Services, ³Respiratory Medicine, Ruttonjee & Tang Shiu Kin Hospitals, Hong Kong, Hong Kong

Objectives: The objectives of this project were: (1) to identify the current practice of using standby mode of ventilators in all wards that would care of patient requiring ventilator; (2) to identify areas and recommend strategies for improvement on the respective nursing practices.

Methods: A nursing workgroup of mechanical ventilation has been formed. A total of eight workgroup members included experience nurses in caring of patient with ventilator were recruited. They were responsible for the design of the survey, data collection and data analysis. The survey form was designed and endorsed in the Department Nursing Management Committee. Samples were randomly recruited from four major clinical areas that would serve ventilator incuding; Cardiac and Intensive Care Unit (CICU), High Dependency Unit for Ventilator Care (HDU) and five Acute Medical Wards. Nurse students would be excluded from the project. 39 questionnaires were distributed and the return rate is 100%. Characteristic of samples included 13% of nurse manager, 23% of advanced practice nurse and 64% of frontline registered nurse. They were worked in different wards included CICU of 56%, HDU of 31% and acute medical ward of 13%. Questionnaires with twelve common procedures that would use ventilator standby mode were identified from the workgroup. The results was aiming to explore the diversity of practice of using standby mode of ventilators in different wards The results would be use as a guide to standardize the practice across all wards through the benchmarking of practice.

Results: The result shows six out of the 12 common procedures that nursing staff would perform standby mode as their selection for suspension of ventilation. They consisted of intermittent weaning more than 30 minutes as 92.3%, transfer of patient to investigation or procedure as 89.7%, intermittent weaning less than 30 minutes as 74.4%, preparation of ventilator for new admission from Accident and Emergency Department as 63.2%, preparation of ventilator for new admission from Operation Theater as 60.5% and preparation of ventilator for new admission from ward as 57.9%. Use of current mode and connecting to the test lung was rated as the second highest selection for disconnection or suspension of ventilators by nursing staff. The result revealed CICU prefer to use the test lung instead of standby ventilator mode when ventilator circuits or its parts were required to be changed. The result of CICU showed that change of ventilator circuit was 68.2%, change of ventilator filter/ heat moisture exchanger was 81.8% and change of ventilator humidifier was 77.3%. In addition, connect to test when performing bagging during cardiopulmonary resuscitation (CPR) was also noted to be the high preference (77.3%) of CICU. Samples in acute medical wards had high preference (80%) on using ventilator standby mode for changing of ventilator circuit and its parts. Connect to test lung was only considered when transferring of patient as well as preforming bagging during CPR. Results showed that use of the ventilator standby mode was the major choice in HDU and connect to test lung in all procedures were noted to be less than 10%.

Conclusion: The workgroup attempted to standardize the diverse practice in different wards by using the investigation result and to stipulate improvement actions to minimize the further risk of using ventilator standby mode. Alert on safe application of mechanical ventilator standby mode was recommended and reinforcement of new practice was promulgated in different level of nurses training. Through the investigation team, to recommend a serial of improvement actions to shape a safe practice culture in different aspects. This would both benefit to promote the job satisfaction of nurses as well as patient safety.
AN AUDIT OF THE UTILITY OF AN ELECTRONIC CLINICAL HANOVER SYSTEM IN A SURGICAL DEPARTMENT
R. Loh¹,¹, H. B. Oh¹,¹, L. Loo¹,¹, R. Farouk¹
¹Department of Surgery, National University Hospital, Singapore, Singapore

Objectives: Handover continues to be one of the most challenging areas in clinical medicine today. The General Medical Council (GMC) in the United Kingdom & Accreditation Council for Graduate Medical Education (ACGME) in the United States recognises that a well-managed, thorough and organized handover is crucial for ensuring the quality and safety for patient care, and resident education. Electronic handovers have been shown to improve documentation and prioritisation of handovers. We aim to audit the utility of an electronic handover system after its implementation.

Methods: An electronic handover pro forma was created using the AURORA® system within the department of surgery in a tertiary institution. Data including the number of handovers per day, personnel involved in the handover, timing of handover, respective departments involved and other parameters within the pro forma were analyzed after 2 months of implementation.

Results: A total of 216 handovers were performed during this period, highest among interns at 179 (82.9%), followed by residents at 21 (9.7%) and lowest among senior doctors 16 (7.4%). More handovers were done on weekends compared to weekdays, with a mean of 2 (range between 0 to 9 per day) on weekdays and 4 (range between 0 to 11 per day) on weekends. Most handovers occur between 6 to 7pm on weekdays and between 1 to 2pm on weekends. Among all the departments, the colorectal, general surgical and neurosurgical services had the most number of handovers, possibly reflecting the nature of the conditions managed.

Conclusion: Electronic handovers appear to benefit the interns most and were generally well utilized. A standardized electronic platform may help to improve documentation during times of higher volume handovers.
THE EFFECTIVENESS OF MULTIPLE STRATEGIES ON IMPROVING FALL INCIDENCE WITH STROKE PATIENTS

Y. T. Wang 1*, F. L. Lin 1, H. P. Wang 1, C. M. Chen 1
1Far Eastern Memorial Hospital, Taipei, Taiwan

Objectives: The research studies the effectiveness of multiple strategies applied for reducing fall incidence of stroke patients in neurological ward. Literature shows patient falls are associated with age, gender, residential environment, and physical factors. Impaired physical function is considered the most dominant and adverse cause among all. Falls often occur when patients with physical disabilities attempt to leave the bed or early ambulation without assistants. 70% of patients are diagnosed with stroke in our neurological ward and exist physical disabilities. From February to July 2015, the fall incidence was 0.17% far higher than the hospital average 0.07%. Therefore, multiple strategies were proposed by the medical team to lower fall incidence and improve safety of patients as well as quality of nursing.

Methods: The research was a cross-sectional and descriptive study. Study objects were hospitalized patients diagnosed with stroke by neurology department and sampled purposively. Literature and analysis of fall incidence both indicates that major causes include physical dysfunction, lack of assistive devices during transferring process, lack of knowledge and awareness of fall prevention, absent of cautionary equipment which offers surveillance of patient's movement. Multiple strategies were introduced correspondingly by the medical team as following: 1) nursing skill induction for fall prevention via various media; 2) joint meetings between medical teams for each fall case; 3) training for transfer skills; 4) the introduction of transfer board, multifunction shift belt, electric displacement machine, and 5) bedside alarm devices.

Results: Multiple strategies have been implemented since August 2015 to January 2016 and lowered fall incidence significantly from 0.17% to 0.08%. Patients were taught skills to prevent falling through multiple media. Joint meetings affirmed the importance of active assessment of relevant factors and appropriate caring education. The rate of effective transfer with correct skills increased from 71% to 96% after transfer technique training. Moreover, a system includes bedside alarm devices, central control system, and mobile app which effectively prevented falls.

Conclusion: Patients’ safety is a critical indicator in nursing quality supervision in which fall incidence has been a prioritized focus. Stroke patients are specifically at great risk because of physical dysfunction. In view of dealing with different causes of falling and breaking through traditional approaches, close teamwork is essential as well as fresh thinking inspired by multiple strategies. These revolutionary approaches, such as case meetings and education for care skills, encouragement of active nursing involving patients and their caregivers, and clinical assistive technologies, were considerably efficient in preventing fall incidence. As a result, the hospitalized period can be shortened with lower medical cost and improved quality of medical care.
MODIFY WAITING BED IN HOSPITAL FORM TO REDUCES INCIDENCE OF PSYCHIATRIC PATIENT FALLS
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¹Department of Psychiatry, ²Quality management center, Far-Eastern Memorial Hospital, New Taipei City, Taiwan

Objectives: Fall is always first accidents in psychiatric wards, and we've been improved it. We had through high-risk fall groups, adjustment drug dose, and caregiver accompany and reduced ground wet sliding, and incidence of falls for 0.28% to 0.17% in 2012 to 2013. Incidence of falls sudden increased for 0.50% in the first quarter of 2015, contrast Taiwan Clinical Performance Indicator (TCPI) peer hospital incidence of falls for 0.17%, we found had high incidence of falls and improve it.

Methods: This study was conducted with Taiwan Clinical Performance Indicator (TCPI) definition to collect. We analysis reason of fall in the first quarter of 2015, and found the main reason of fall was patient condition of disease and environment, include caregiver temporarily left, and plastic chairs instability. In April 2015, we used method of quality improvement, and implementation three items. First, we modify the waiting bed form included patient status, and when outpatient need to waiting bed, we were explained patient’s disease or care status in the waiting form to shift inpatient staff know. Second, we change plastic chair into the iron chair in the ward. Finally, individualized review and improve immediately. We used descriptive statistics to analysis incidence of patient falls before and after implementation of the psychiatric ward.

Results: After the implementation, the quarterly number of falls for 12 to 5, and incidence of falls for 0.50% to 0.16%, incidence of falls reduced by 68%. Before and after the implementation, the quarterly number of injury falls for 5 to 0, rate of injury of falls for 41.7% to 0%, and all mild injuries.

Conclusion: By improving the project, we reduce falls number in the ward, and found the waiting form can passed patient’s care messages not only can prepared by patient include caregiver, and thus medical staff can know more information in the hospitalized.
VENOUS THROMBOEMBOLISM AFTER GYNECOLOGICAL MALIGNANCY SURGERY: CHANGES OF THE FIBRIN MONOMER COMPLEX AND D-DIMER LEVEL DURING THE PERIOPERATIVE PERIOD.

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1Anesthesiology, 2Gynecology, 3Operation, 4Clinical Functional Physiology, Toho University Omori Medical Center, Tokyo, Japan

Objectives: The goal of this study was to determine the incidence of deep venous thrombosis (DVT) after gynecological malignancy. Another purpose was to clarify the rapid changes of the fibrin monomer complex (FMC) and D-dimer levels during the perioperative period of gynecological surgery for early diagnosis of venous thromboembolism (VTE).

Methods: The participants were 48 patients who underwent gynecological surgery between September 2013 and March 2015. The FMC and D-dimer levels were measured 2 times: 1) the day before surgery; 2) immediately following surgery. All patients received intermittent pneumatic compression devices and received anticoagulation medications. All were examined with ultrasonography assessments of both lower extremities the day before surgery and 1, 3, 9 days after surgery.

Results: There were no patients with clinical signs of DVT, but 3 (6.3%) showed VTE. Patients with VTE had not significantly FMC levels day before surgery and immediately following surgery, compared with those without VTE (day before surgery 1.23 g/ml vs 1.37 g/ml, immediately following surgery 17.43 g/ml vs 7.14 g/ml). Patients with VTE had not significantly higher D-dimer levels day before surgery, immediately following surgery, compared with those without VTE (day before surgery 0.51 g/ml vs 0.35 g/ml, immediately following surgery 2.12 g/ml vs 1.41 g/ml).

Conclusion: In this study the prevalence of VTE after gynecological surgery was 6.3%. The FMC and D-dimer measured at immediately following surgery is considered to be useful as an indicator of VTE.

References:
ASSOCIATIONS BETWEEN MINIMUM SERUM ALBUMIN COUNT DURING HOSPITALIZATION PERIOD AND MORTALITY IN ELDERLY INPATIENTS WITH LOW NUTRITIONAL STATUS.

S. Bito 1,*
1Division of Clinical Epidemiology, NHO Tokyo Medical Center, Tokyo, Japan

Objectives: To evaluate the associations between very low serum albumin level at any time during hospitalization and hospital death and/or very low functional status among elderly inpatients with low nutritional status.

Methods: Research design: secondary analysis of extracted data from electrical medical record. Setting: One educational Hospital in Japan. Patients: We sampled patients aged 65 or over whose serum albumin count had obtained below 2.5mg/dl during hospitalization from April, 2010 to March, 2012. Measurements: We set hospital death and/or poor general health status that need for full functional support at discharge as main outcomes and set minimum serum albumin count during hospitalization was extracted as a predictive variable. Data Collection: Raw data has been directly extracted from database of hospital information system and processed to a CSV file.

Results: Data of 949 elderly patients was analyzed. Bivariate analysis showed that hospital death rates among patients whose minimum albumin count had been 2.2mg/dl or over (control group), 1.8mg/dl to 2.1mg/dl (low albumin group) and 1.7mg/dl or less (very low albumin group) were 29%, 51% and 70%, respectively. Percentages of hospital death or poor general health status among these groups were 45%, 63% and 81%, respectively. Logistic regression analysis adjusting with sex, age, main disease category, general status on admission and serum albumin level on admission showed that adjusted odds ratios of this three grade for hospital death or poor general health status were 3.9 [95% C.I. 2.5 to 6.2].

Conclusion: Very low serum albumin level is one of the conclusive factors of hospital death among elderly inpatients with low nutritional status. Preservation of serum albumin level may be necessary for preventing mortal events of elderly inpatients.
ESTABLISHING MEDICAL ADVERSE EVENT REPORTING SYSTEM IN PURPOSE OF LEARNING AND IMPROVING

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Objectives: The quality improvement in healthcare system relies on the concept of patient-center and positive patient safety culture. The first step in the formation of patient safety culture is to be aware of patient safety issue. To share the experience of adverse events and to learn from the experience are important for all the employees in an organization. We establish and implement a medical adverse event reporting system to facilitate the sharing and learning climate in patient safety issue and improve healthcare quality.

Methods: In MacKay Memorial Hospital, we have the Committee of Patient Safety. There are 8 major task force units under the committee, including the surgical patient safety unit for preventing wrong body part and procedure errors, prevention of patient falls unit, prevention of patient misidentification unit, emergency event unit, tubing safety unit, drug safety unit, medical material and instrument safety unit, root cause analysis unit. The medical adverse event reporting system was established under the committee in 2004. It is open to all employees with both paper and online reporting forms. The employees are encouraged to voluntarily report any medical adverse events including near miss and sentinel events, without any punishment. The reported events are not anonymous and so are disclosed to the public. The aim of the reporting system is to analyze the cause of each event and to correct system errors. After the events are reported, the formats and details of notification processes, the processing timelines, reporting workflows, and track units are defined. Once the cause of an adverse event is determined after analysis, the relevant departments are asked to conduct a process of reviewing and revising their healthcare process. Continuous monitoring of the changing process is also mandatory. The committee reviews and tracks the process of improvement on a quarterly basis.

Results: During Jan 2012 and Dec 2015, a total of 10330 reports were filed. Most of the reported events fall to three major categories, including drug adverse events, patient fall events, and accidental tube removal Incidents. Being a member of Taiwan Patient-safety Reporting system (TPR), we compared the result with the national average and consistency was confirmed. Near-miss cases take up 65.4% and SAC 3-4 level events take up 34.4%. Root cause analysis was applied to 25 cases of SAC 1-2 level and major events, 5 new standard procedures were developed, 10 existing standard procedures were revised, and 9 PDCA projects were conducted. Another 224 events were due to management and supervision oversight factors (47%), poor communication (22%), and poorly designed processes (6.6%). Eighty-four modifications were applied to the physician ordering system in order to improve drug safety. For better team cooperation and communication between different disciplines, 18 team resource management activities were done to integrate patient care between healthcare professionals. A structured electronic information system for multidisciplinary information sharing and handover were established and used in the intensive care units, emergency department, operation room, and wards. Education on patient safety is done regularly, with the “sharing and learning from medical adverse events cases” held annually in order to inform all employees about the event and the preventive measures to avoid recurrence of the similar incidents. The patient satisfaction score of overall medical process rises from 90.4% to 92% during the past 4 years, which indicates a positive patient safety culture as well as patient satisfaction in healthcare in MacKay Memorial Hospital.

Conclusion: To maintain a safe hospital environment requires a strong patient safety system. The medical adverse event reporting system helps data collection, event analysis, and development of systemic actions to improve patient safety
IMPLEMENTATION OF THE CARE OF CVC MAINTENANCE BUNDLES TO REDUCE THE CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTIONS

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Objectives: Patients in intensive care units (ICU) usually require the central venous catheter (CVC) to deliver the medications, supply the parenteral nutrition and monitor the hemodynamic. However, each insertion of CVC has opportunities for the risk of bloodstream infections (BSI), which can prolong the length of stay, increase the hospitalization expense, and increase the mortality rate of the patients. So that to prevent hospital-acquired infections and reduce the central line associated bloodstream infections (CLABSI) is very important in the care process.

Methods: In our ICU the CVC retention rate is about 50%. In 2012, we applied the CVC bundles care, including the introducing the hand hygiene, using the full barrier precautions and personal protective equipment and daily assessment of the continued need for the CVCs. The incidence rate of CLABSI was 4.73 ‰ in 2013, but it was increased to 7.89 ‰ in 2014. Approximately 92% of BSIs are CLABSI. By observing the process of the CVC insertion and the post CVC cares from the patients, we found that there is only 40% of the daily post CVC cares in clinical was executed without errors. Therefore, the improvements for preventing the CLABSI are as follows:
1. Setting up the CVC Maintenance Bundles procedures, including 1) daily review of the line necessity, 2) hand hygiene before the catheter site care and after removing the old dressing, 3) using 2% chlorhexidine for the catheter site care, 4) monitoring catheter site care procedures, 5) changing hub every 3 day, and 6) using the care checking list.
2. Establishing the health care training plan, including teaching in the classes, making the SOP videos of the catheter site care, and using the direct observation of procedural skills, DOPS, to monitor care process for all the healthcare staff.
3. Using clinical information system to integrate the items of CVC bundles, creating daily report forms with CVC bundle retention days, reasons for the retention, insertion, insertion points, methods and time for the catheter site care, discussions for the execution results in the healthcare team leading by the attending physician.

Results: After the improvement, the incidence rate of CLABSI was reduced to 4.95 ‰ in 2015 while the incidence rate of CLABSI was 7.89 ‰ in 2014. The incidence rate of CLABSI is dramatically reduced and lowered than the average among the medical centers in Taiwan.

Conclusion: The CVC Maintenance Bundles resulted in reduction the incidence rate of CLABSI in ICU, including executing the hand hygiene, setting up the CVC care procedures, monitoring the executing results, conducting related CVC care trainings, and supporting by the computer aid systems.

APPLICATION OF STANDARDIZED AND INNOVATIVE STRATEGIES TO REDUCE BLOODSTREAM INFECTION DENSITY IN INFECTIOUS INTENSIVE CARE UNIT
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Objectives: Bloodstream infection (BSI) causes great impacts on patient’s safety and the quality of healthcare. The BSI density, which increased to 8.58‰ in the second quarter of 2013, reflected that there may be some healthcare problems related to the inefficient control of BSI. To improve the quality of healthcare, we identified the causes responsible for the increase of BSI density and designed a continuous quality improvement program to reduce BSI density.

Methods: In June, 2013, we set up a transdisciplinary team, which recruited a director of infection control office, a medical laboratory scientist, and six nurses. We systematically reviewed evidence-based medical papers, used Problem Solving QC Story, and identified the causes by using Check Sheets, Stratification Analysis, and Systematization Diagram. The causes associated with the increase of BSI density included: a) cleaning staffs did not use detergent adequately because of no standardized cleaning procedure; b) there was not enough education and training about how to perform the proper handwashing for medical staffs; c) the infected catheters were not removed in a timely manner because the medical staffs had inconsistent evaluation of the redness of insertion site while conducting central venous catheter (CVC) bundle care. We designed a Quality Control Circle (QCC) program and used Plan-Do-Check-Act (PDCA) cycle theory to reduce the BSI density, including:

1. Developing standard operating procedure (SOP) for cleaning: we educated staffs how to make disinfected solution rapidly and accurately by using NaDCC (sodium dichloroisocyanurate) tablets, developed flashcards to remind the cleaning staffs to follow the standardized cleaning procedures.

2. Improving hand hygiene: we used ultraviolet light detection and germ lotion to evaluate the effectiveness of handwashing techniques.

3. Improving CVC bundle care: we designed flashcards to provide a guide about the timing to remove the CVC according to the degrees of redness.

Results: After the implementation of aforementioned protocol, the cleaning staffs may correctly follow the standard operation procedure to do the environmental cleaning, and the medical staffs are able to accurately perform hand hygiene and conduct CVC bundle care. The average BSI density declined from 8.58‰ in second quarter of 2013 to 1.51‰ in first quarter of 2014, which was much lower than the targeted value of 5.9‰. For whole year of 2014, the average BSI density was 3.7‰, and in 2015, it was 1.87‰.

Conclusion: Implementing the accuracy of hand hygiene and tubing care by using simple, proper and standardized disinfection procedure via visual feedback method can effectively reduce BSI. Use of NaDCC for environmental disinfection exerts good effects on decreasing BSI, which should be widely implemented. Application of PDCA cycle for improving bundle care can effectively enhance the quality of healthcare and improve patient safety.
THAILAND HOSPITAL INDICATOR PROJECT: AN EFFECTIVE PLATFORM FOR PERFORMANCE BENCHMARKING TO COMPLIMENT THE NATIONAL ACCREDITATION PROGRAM

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Objectives: To establish performance benchmarking for hospital quality improvement under the hospital accreditation program in Thailand.

Methods: Since 2007, the collaborative steering committee has been established among 11 HA-accredited university and teaching tertiary-care hospitals and Institute for Hospital improvement and Accreditation (later become Institute for Healthcare Accreditation (Public Organization)). A set of key performance indicators (KPIs) were technically developed, and selected on a consensus basis. Each KPI had a standardized definition and data collection approach. Data on KPIs from hospitals were gathered online through THIP website. Participating hospitals could freely choose KPIs they would like to use for comparison. They were asked to share performance information and lessons learned on applications of the KPIs and improvement stories—or best practices—in meetings and the annual national forums. The KPI set was periodically evaluated and modified. New KPIs were added upon requests from the members as well as proposed by a technical taskforce. The THIP committee periodically conducted performance reviews of the project, such as by member surveys and by an external evaluation.

Results: The original set of THIP's KPIs included 75 indicators, organized into 7 groups. The health-care process group—such as disease-specific measures and infection rates—were more popular than system-based or management indicators. Their results were shared on password-protected THIP website. For the past five years, performance improvement could be demonstrated in many areas, including rate reductions of acute myocardial infarction mortality, stroke mortality, and ventilator-associated pneumonia. Best performers in these areas, as well as some others, shared their practices in the annual HA national forums, which had more than 8,000 attendants. Voluntarily participated, the number of members increased from 11 in 2008 to 45 in 2013. Since 2014, the THIP committee encouraged THIP to hospitals level as the national benchmarking program. Some 149 and 205 hospitals joined THIP in 2014-2015, respectively. The annual renewable rate was over 91 percent. The 2015 in-house survey indicated that 61 percent of the participants gave THIP 4 or more out of 5 scale in terms of confidence. The third-party evaluation showed that re-accredited hospitals were more likely to use comparative data from THIP than first-time accredited or non-accredited ones (25.4 percent versus 8.3-15.8 percent). At present (2016), there are 329 active participating hospitals—public and private—and 176 KPIs in THIP available for benchmarking in four areas: (1) Disease-specific results, (2) Care processes, (3) Key hospital systems and (4) Health promotion.

Conclusion: THIP is successful as a KPI benchmarking program to compliment hospital quality improvement and accreditation program. It enables system-wide, fact-based learning of Thailand's healthcare system, and helps facilitate result-based best practice sharing.
CHANGE AND SUSTAINABILITY IN HEALTHCARE QUALITY: PREDICTING DELAY FACTORS OF BAR-CODING SPECIMEN

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Objectives: The purpose of study is to predict delay factors from different health worker and the efficiency of barcode specimen

Methods: A retrospective cohort study design, all data are enrolled from a barcode tracking system of specimen’s databank. The sampling was proportionate stratified sampling (one hundred samples per month) and rundown by computer, totally enrolled 600 cases. Inclusive criteria were blood type specimen and process completely, exclusive criteria were non-blood type specimen and process incompletely. The primary outcome was time of specimen. The study period is from 1st on July, 2015 until 31st on December, 2015, the analytical techniques by SPSS 19.0 for windows version, the descriptive analysis to calculate the time of average from different health worker and total time of per specimen among the health worker; inference analysis is to predict of various delay of Specimen. Using logistical regression analysis, then control urgent status, transferring by ice, and provision.

Results: The results showed average 4.5 minutes on nursing time, waiting for transfer average was 28.9 minutes, waiting for report the average was 72.8 minutes; the specimen completed of average was 158 minutes; transfer specimen average was 51 minutes; over time the subject has a 260 (44%). Control the urgent specimen, transferring by ice, and provision. Nurses operated specimen more than one minute, the specimen is at risk of delay, β was 1.047 times and significant (p <.012); waiting for sent more than one minute, at risk of delay was 1.051 times (p <.000); time for transfer more than one minute, at risk was 1.078 times (p <.000)

Conclusion: The conclusion was to verify the delay’s specimen related time of operating on different health worker. Time to wait the transferring specimen, time for specimen’s actually transmitted, time of report from different health worker, in order to audit time and manage outcome. Following IOM policy that maintenance specimen security, timely and patient safety is our hospital and government mission. Our study limitation was to get information from human factors so hardly from specimen’s database. Our recommendation was to improve specimen’s quality in the hospital. Implication for clinical practice, we suggest monthly to audit the process of specimen.

IMPACT OF QUALITY CONTROL CIRCLE ACTIVITIES ON INTEGRITY OF EDUCATION FOR FEBRILE PEDIATRIC PATIENTS
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Objectives: To explore the effect of Quality Control Circle (QCC) activities on improving nurse performance with regard to integrity of education for febrile pediatric patients in an emergency room (ER).

Methods: The sample consisted of the families of febrile pediatric patients and nurses in a southern China hospital from March 20 to July 7, 2014. We set up a QCC group and followed the steps of quality management. The improvement program included revising an instruction pamphlet and instruction procedures for febrile pediatric patients, and holding nurses training and establishing monitor instruction guidelines for the nurses, and filming the DVD, taking group education and making poster about fever management for pediatric patients.

Results: After implementation of the QCC activities, the average score of fever-management cognition of the febrile pediatric families and nurses increased from a score of 49.4% to 86.6%(P<0.01) and 77.6% to 91.2%(P<0.01) respectively. The performance rate of nurses’ integrity of education for families of febrile pediatric patients raised from 19.9% to 90.4%(P<0.01). The 72-hour re-visiting rate for febrile pediatric patients decreased from 8.0% to 5.5%(P<0.01).

Conclusion: A satisfactory result can be achieved to take QCC activities on improving nurse performance with regard to integrity of education for febrile pediatric patients in ER. Then it could reduce the 72-hour re-visiting rate. The results should be provided to nurses as a reference for clinical care of the other similar diseases.
Applying AHRQ Clinical Classifications Software in Administrative Claims Model for Comparing Hospital Mortality Rates Among Patients with Pneumonia or Stroke

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Objectives: Outcome predictions models based on the administrative claims data are widely used for comparing quality of care among hospitals. However, the performance of these prediction models is subject to their capability in risk adjustment at patient level. This study aimed to verify that the AHRQ Clinical Classifications Software (AHRQ-CCS), a morbidity classification tool based on diagnosis codes and procedure codes developed by the U.S. Agency for Healthcare Research and Quality (AHRQ), can be used for predicting in-hospital mortality for patients with Pneumonia or Stroke.

Methods: The 2009 – 2013 National Health Insurance Database of Taiwan was used in this study. The information regarding the diagnosis codes and procedure codes in the database includes inpatient and outpatient visits of local clinics, outpatient clinics, and hospitals. Three type of alternative models based on Deyo’s Charlson Comorbidity Index (CCI), Elixhauser’s Index and selected CMS Hierarchical Condition Categories (CMS-HCC) used by the CMS in their hospital report card of Stroke and Pneumonia, were adopted as competitors to the AHRQ-CCS used in this study. A General Linear Modeling technique was used to select candidate comorbidities computed by AHRQ-CCS. All of the morbidity groups measured by these instruments were treated as dichotomous variables in the predictive models. Patient’s age, gender and whether they were eligible to the Copayment Waiver Program for selected catastrophic diseases were also included in the prediction models. Multilevel logistic regression was applied to account for the random effects across hospitals. All models were fitted by the maximum likelihood method with Laplace approximation for a more robust parameter estimation.

Results: A total of 494,902 patients admitted with Pneumonia and 267,028 patients admitted with Stroke between 2007 and 2009 were selected for this study. The C-statistics for the AHRQ-CCS model predicting in-hospital mortality of patients admitted with Pneumonia in 2010 to 2013 were 0.749, 0.760, 0.753, and 0.744, respectively. The in-hospital mortality prediction model adjusted by the AHRQ-CCS performed better than the other three alternative models adjusted by CCI (ranging from 0.728 to 0.745), Elixhauser’s Index (ranging from 0.730 to 0.748) and CMS-HCC (ranging from 0.731 to 0.748). The C-statistics for the AHRQ-CCS model predicting in-hospital mortality for patients admitted with Stroke during the same period were 0.677, 0.682, 0.680, and 0.674, respectively. This model also provided a superior performance compared to the other three alternative models adjusted by CCI (ranging from 0.653 to 0.663), Elixhauser’s Index (ranging from 0.650 to 0.658), and CMS-HCC (ranging from 0.672 to 0.679).

Conclusion: The AHRQ Clinical Classifications Software was found to be valid for predicting the in-hospital mortality for patients admitted with Pneumonia or Stroke. Based on the superior performance of the AHRQ-CCS models presented in this study, this software could be applied for comparing outcomes of care among hospitals.
IMPROVING PATIENT SAFETY CULTURE IN A MEDICAL CITY IN SAUDI ARABIA (2012-2015): TRENDING, IMPROVEMENT AND BENCHMARK ANALYSIS

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Objectives: The road to improving patient safety practices in hospitals can be long and winding, if no persistent efforts are made to improve and measure safety culture. This study aims to present findings and analysis from two rounds surveys of patient safety culture in a Medical City in Saudi Arabia (2012-2015). This study aims as well to compare as well these findings to regional and international studies, and explores the association between patient safety culture predictors and outcomes.

Methods: This cross sectional study adopted a customized version of the Hospital Survey on Patient Safety Culture (HSOPSC), which is composed of 42 items that measure 12 composites. The Medical City is a tertiary care university facility that has a total capacity of 904 beds with all major medical specialties and services. The hospital is composed of two sites, Site A which is large (800 beds) and Site B which is small (104 beds). Data was analyzed using SPSS 23.0 at a significance level of 0.05. The percentage of positive responses for each item and composite was calculated; negatively worded items were reversed when computing percent positive response. Areas of strength consider at least 75% of respondents answer positively while areas with potential for improvement with less than 50% answer positively. Univariate analysis was also conducted to summarize demographic characteristics of hospitals and respondents. Bi-variate analysis was conducted to derive potential variables to be included in the regression analyses.

Results: In 2015, a total of 3000 questionnaires were sent and 2592 were returned (response rate of 86.4%). The response rate of the 2012 survey was 85.7%. Areas of strength in the 2015 survey were Teamwork within units, Organizational Learning—Continuous Improvement, and Management Support for Patient Safety whereas areas requiring improvement were hospital Non-Punitive Response to Error, Staffing, and Communication Openness. Comparing results to international benchmarks showed that the hospital is performing at or better than benchmark on Teamwork within Units, Management Support for Patient Safety, Overall Perceptions of Patient Safety, Feedback and Communication about Error, Frequency of Events Reported and Teamwork Across Units. Comparing results to the 2012 survey showed that the hospital is performing better on all composites with the exception of Overall Perceptions of Patient Safety, Staffing and Non-Punitive Response to error. Comparison of results across the two settings showed significant differences for some composites mainly: Organizational Learning-Continuous Improvement, Teamwork Within Hospital Units, Staffing, Hospital Management Support for Patient Safety, and Teamwork Across Hospital Units with the smaller setting achieving better scores. Both sites reported “Very Good” Patient safety Grade with the smaller site being significantly more likely to report better grades and actual events. Results are trended and benchmarked regionally and internationally.

Conclusion: Continuous monitoring, trending and benchmarking of patient safety culture in health care organizations are critical for bringing actual improvement. While the Medical City has made significant progress over the last few years to improve safety culture, still there are areas for further improvement. Organizations should not only assess patient safety culture on a continuous basis but also devise and implement evidence-based strategies to bring long-lasting improvement in patient safety practices.
SYSTEMATIC REVIEW OF VALUE STREAM MAPPING IN CARE FACILITIES – AN EVIDENCE-BASED INTERVENTION OF ORGANIZATIONAL DEVELOPMENT?
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Objectives: Improving quality within the health and social care sector requires changes but should hereby avoid further investment and rather focus on restructuring the organizations (Porter, 2008). The method of Value Stream Mapping (VSM), a lean management method, has the potential to do so by addressing the customer’s needs through visualization, quantification and thereby improvement of complex workflows (Jimmerson, 2010). The project aims to investigate whether VSM is an evidence-based method of organizational development which can be used in care facilities and seeks to evaluate the effectiveness of VSM on the quality of health and social care settings with respect to patient-centeredness.

Methods: For the purpose of answering the research question a systematic literature review is carried out. The structured approach follows the “Preferred Reporting Items for Systematic Reviews” (PRISMA) scheme. The search strategy is based on the research question, developed sensitively and applied to different databases to identify all relevant studies in German and English. The screening process is done by two reviewers independently and disagreements are solved through discussion. All studies evaluating VSM or a concept named differently but using the same technique are included if they describe an order of steps of the intervention as described by Rother and Shook (2003) and Jimmerson (2010). Exclusion criteria are defined in advance e.g., editorial reports, VSM application in other settings, newspaper articles. Quality assessment is carried out but will not affect inclusion. For data synthesis the outcomes are clustered into Donabedian’s (2002) categories of structure, process and outcome quality and interpretation concerning effectiveness is conducted based on these clusters.

Results: 565 articles were screened, whereby 242 articles were excluded after title screening and 96 after abstract screening. The current status of full text screening further reduced the number to 25 articles. Preliminary results indicate high effectiveness on process quality as well as on outcome quality through VSM. The results do not indicate changes in structure quality. Process quality is mostly indicated by reductions in waiting time or changeover time of patients, whereby reduction of total length of stay or cost savings represent changes in outcome quality.

Conclusion: The preliminary results suggest VSM to effectively improve process and outcome quality in care facilities. Further VSM improves patient-centeredness of these facilities. The results will expand the knowledge about VSM and will support it as reasonable method of organizational development. The presented results are necessary for a correct application of the method and to firmly introduce VSM into the care system. Evaluation studies with high methodological quality are still missing and have to be conducted for final conclusions concerning the evidence of Value Stream Mapping. Nonetheless the results will serve as foundation for subsequent projects concerned with the implementation of VSM within health and social care organizations.

IMPROVING QUALITY BY ADHERING TO NATIONAL GUIDELINES, OR BY ADAPTING THEM? RESULTS FROM A SURVEY WITH HEALTH CARE STAFF

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Objectives: It is well-known that there is a gap between what is known from research and what is done in practice. Guidelines has been suggested as a way to close this gap. This means that evidence developed outside the organization will be implemented, and this evokes the adherence and adaptation dilemma: to what extent you should adhere to the guidelines, and to what extent you should adapt it to your specific context. The limited evidence available so far suggest that adaptations are very common. However, we know very little about why adaptations are done. In particular, we do not know if adaptations are done in order to improve quality, or if they are done for other reasons, such as lack of time or money. The aim of this study was to examine adherence and adaptation in relation to implementation of the national guidelines for methods of preventing disease in Swedish health care. In particular, the aim was to explore the reasons given by health care staff for making adaptations.

Methods: Since 2011 there are national guidelines for methods of preventing disease in Sweden. A web-based questionnaire was sent out to healthcare professionals and managers in Stockholm County between January and March 2014. Questions covered adherence, work with lifestyle habits and adaptations. Both staff from primary care and hospitals were invited to participate. 2388 managers (n = 312) and non-managerial staff (n = 2076) answered the questionnaire. For the sake of this study, only those with detailed knowledge about the guidelines is included in the study (n= 274). Described statistics was complemented by a content analysis of free-text answers describing reasons for adaptations.

Results: There was partial adherence to the guidelines, and there was a significant difference between primary care and hospitals indicating that adaptations were more common in hospitals ($p < 0.001$). Modifications was the most common category of adaptations (55 %) and included mainly prioritisation of specific patient group and increased patient customisation. The most common reason for adaptations (25 %) was to meet the patients' specific needs and capabilities.

Conclusion: This study provides an insight into the adherence and adaptation dilemma in relation to implementation of guidelines. First, the results show that the bigger context matters – the balance between adherence and adaptation differed between primary care and hospitals, with greater adherence in primary care. This may be related to the fact that these specific guidelines targeted work with lifestyle habits, which may be perceived as more relevant in primary care. Contrary to other studies on adherence and adaptations, which has shown that practical concerns (e.g. lack of time and lack of resources) are a common reasons for adaptations, these were not among the top reasons for adaptations in these study. Instead, the most common reasons where done with the patients' needs and capabilities in mind. This indicate that whereas adherence may be important, for example, for quality and safety under certain circumstances, under others, adaptations may be a way to improve quality and safety. In particular, in this study, adaptations was a way to ensure that the care was patient-centred. Future studies need to examine how modifications influences health outcomes.
IMPLEMENTATION OF A SCREENING PROTOCOL FOR PATIENTS WITH POTENTIAL SEPSIS IN AN URBAN EMERGENCY DEPARTMENT

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Objectives: The goal of this study is to evaluate the impact of a newly-designed systematic protocol to screen adult patients presenting with possible sepsis risk to an academic ED that lies at the 80th percentile in 2014 for overall sepsis mortality among its teaching hospital counterparts. We hypothesize that early screening and intervention, in addition to improvement initiatives such as education training programs for ER staff, will decreased time from triage to antibiotics administration (TTAA) which will lower hospital mortality septic patients.

Methods: A multidisciplinary hospital sepsis committee consisting of physician, nursing, and pharmacy leadership, was established to address late sepsis recognition and above average mortality at GW. Based on the committee recommendation, a formalized screening process was suggested to quickly assess and treat patients with a potential sepsis in the ER. The screening protocol consists of two branches. The first mechanism identifies patients during triage through a nurse driven screening process (Figure1). The second mechanism is implemented when a patient who was not identified septic in triage and develops signs of sepsis in the ED. The implementation stage of the screening protocol involved multidisciplinary team education, including nurses and ED Physicians, and rewarding of timely sepsis screening and treatment.

Results: We identified 100 sepsis patient over around 10 weeks before and after the intervention (Figure2). The mean TTAA time per month reduced from 224.71 minutes to 166.54 minutes. We applied a liner regression model to look at the reduction of TTAA vs days of service (DOS) which showed a significant reduction at p value of 0.0466 (Figure3). As a last step we applied Generalized Additive Model (GAM) to TTAA vs DOS and Mortality vs DOS (Figure4,5).

Conclusion: The authors conclude that applying this intervention will lead to early detection of septic patient and early antibiotic administration. It is uncertain at this time how it will impact mortality. The authors conclude that applying this intervention will lead to early detection of septic patient and early antibiotic administration. It is uncertain at this time how it will impact mortality.
WHETHER EXTENDING REPOSITIONING TIME INCREASES THE INCIDENCE OF PRESSURE SORE FOR SEVERE BEDRIDDEN PATIENTS

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Objectives: Health Care Policy of US (2005) suggests reducing tissue burdens and preventing pressure sore by repositioning and correctly placing the patient, and using pressure-relieving mattresses. According to previous studies or the standard guidelines, repositioning the patient once every two hours can reduce pressure sore. However, clinically, it is noted that because patients need to take examinations, treatment, or surgeries, etc., it is common that they are not repositioned really once every two hours. Yet the incidence of pressure sore does not increase. Besides, the patients point out that frequent repositioning often causes disruption of their sleep and pains of pulling the wounds. Therefore, I would like to explore whether the extension of repositioning time increases the incidence of pressure sore for severe bedridden patients through empirical methods.

Methods: I examine that extending repositioning time would not increase the incidence of pressure sore for severe bedridden patients. Through PICO, I search for information with the keywords "bed-ridden," "critical patient," "change position," "reposition," and "pressure sore" at PubMed, Cochrane Library, Trip, and Airiti Library, and discover and review an article in Systemic Review with a selection of 18 papers regarding the clinical issue. I review the paper with “Systematic Review Checklist” of 2013 edition Critical Appraisal Skill Programme. The paper is a research of preventive and random distribution. The result of the review is Level I B. The research notes that: there is no significant difference in the incidence of pressure sore for patients on standard mattress repositioned once every two hours and once every three hours【RR:0.90, 95% CI:0.69-1.16, P=0.41】. For patients on elastic air mattresses, there is no significant difference in the incidence of pressure sore between being repositioned once every four hours and once every six hours【RR:0.73, 95%CI:0.53-1.02, P=0.065】.

Results: The subjects include 55 patients from Department of Medicine, Surgery, and Neurosurgery of Adults' ICU at the medical center in Southern Taiwan (25 patients in control group: repositioned every two hours; 30 patients in experimental group: repositioned every three hours). The requirements for being included as subjects are being hospitalized for 48 full hours; Braden score>13; bedridden patients without pressure sore, and using pressure-relieving mattresses. The examination period is from May 1 2015 to June 30 2015. Both groups do not show significant differences in ages, Braden score, Apache II, and average days of hospitalization. The result shows that statistically, there is no significant difference between the patients of the two groups. They do not have pressure sore.

Conclusion: The empirical evidence indicates that there is not significant difference statistically in the incidence of pressure sore for patients repositioned every two hours and every three hours. Extending repositioning time does not increase the incidence of pressure sore for severe bedridden patients. Instead, extending repositioning time can increase patients’ resting time and improve their sleeping quality. By interviewing the conscious patients after the surgery in the experimental group with the pain score, it is found that their pain reduction index is reduced from 6 points to 3 and their sleeping quality is improved effectively. However, because clinically the levels of severity for the patients are different, the risk factors causing pressure sore might increase. Therefore, I suggest that when we take care of the patients, we should consider the patients’ level of consciousness, nutrition status, secretion, mobility, and bodily circulation in order to assess the interval periods of repositioning timely and provide proper care for the patients.
MALPRACTICE LITIGATION OVER ACCIDENTAL CHOKING IN THE ELDERLY IN JAPAN
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Objectives: The elderly are prone to choking while eating. Malpractice litigation has occurred in Japan following accidental choking in the elderly. This study examined the decisions of litigated dental malpractice cases in Japan to identify factors related to accidental choking in the elderly.

Methods: The study analyzed decisions in malpractice litigation over accidental choking deaths in the elderly in Japan between 1997 and 2015. The content of each decision was summarized to obtain information about the elderly victim, caregiver, nursing service, and subsequent litigation, and a database comprising the content of each decision (n = 19) was constructed. To identify factors contributing to death from choking, we analyzed the court decisions regarding caregiver liability.

Results: The court identified caregiver liability in eight cases and no breach in 11 cases. The reasons for caregiver liability included breaches of duty regarding food choice, surveillance while eating, failure to foresee aspiration, and failure to resuscitate after the accident. The incidences of prior aspiration foreknowledge (p = 0.001), failure to attend part or all of a meal (p = 0.030), inappropriate feeding (p = 0.001), and inappropriate emergency treatment (p = 0.030) were significantly higher when the court decision recognized caregiver liability than when no caregiver liability was found.

Conclusion: To prevent accidental death from choking in the elderly, it is important to foresee aspiration, monitor eating, and resuscitate the individual after an accident.
AN EVALUATION OF THE PREDICTIVE ACCURACY AND USABILITY OF A REHABILITATION-SPECIFIC FALLS ASSESSMENT TOOL.
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Objectives: Falls are a major cause of preventable harm for patients within hospital settings. Older patients undertaking rehabilitation programs may experience more falls due to the active promotion of increased physical activity and patient independence when completing activities of daily living. This study focuses on the implementation of a rehabilitation specific falls risk assessment tool (developed by Shkuratova), that was developed as a key strategy within the sub-acute inpatient rehabilitation service falls prevention program at our centre. This program included increasing the frequency of patient rounds and balance training for high-risk patients. The aim of this project was to evaluate the predictive accuracy and usability of this tool.

Methods: A multiple methods study was conducted that included: (1) A comparison of the tool scores of 45 patients admitted to rehabilitation who had a fall during their admission (cases) with a random sample of 102 patients admitted to the same wards who did not fall (controls). From this data, the predictive accuracy of the tool to identify patients who would fall during their sub-acute care admission was analysed. (2) Semi-structured interviews were conducted with physiotherapists and nurses working on the rehabilitation ward to discuss the face validity and usability of the tool. These qualitative data were analysed thematically.

Results: The mean age of patients in the falls group was 81(SD 11) and in the non-falls group 77(SD 12); 25(56%) fallers versus 65 (64%) non-fallers were female. In the falls group (59%) of patients had a history of falls in the past 12 months versus (46%) in the no falls group. Of the patients who experienced a fall, 8 (18%) had dementia or cognitive impairment, and 2(4%) had acute delirium on admission to rehabilitation; no clinically significant cognitive changes were identified in the non-falls group. The Tool found that 25 (56%) fallers versus 29 (28%) non fallers required supervision whilst transferring and 26 (64%) fallers versus 31 (30%) of non- fallers required supervision whilst mobilising. Balance assessments that form part of the tool demonstrated that 20 (44%) fallers and 26 (25%) non- fallers were unable to balance on one leg and that 5 (11%) fallers versus 29 (28%) of non-fallers were able to pick up an object at knee height independently. Patients identified as being in a high risk group on the Tool had a 5-fold increase in the odds of falling during their admission (Odds Ratio 4.8, 95% CI. 2.2 to 10.7, p < 0.001). The sensitivity of the Tool to predict patients who subsequently fell was 78% and the specificity was 58%, with an area under the receiver operating characteristics curve of 0.7 (95%CI 0.6 to 0.8).

Clinicians using the tool found that it was ‘quick and easy’ to use although completing the assessment within an hour of admission could be difficult. Staff reported that using the Tool as part of their falls prevention program had changed the focus of their care particularly their choice of rehabilitation exercises and the level of supervision patients received. Sustaining the falls prevention program for the large number of patients identified by the tool as having a high falls risk was reported as challenging.

Conclusion: The findings indicate that the rehabilitation specific falls risk assessment tool has a high level of predictive accuracy to identify inpatient falls and that it is a useful tool to direct falls prevention interventions. Sustaining the intensity of supervision required to prevent falls remains a challenge for clinicians when caring for this high-risk population.
REFINING THE QUALITY MEASUREMENT OF DIABETES CARE USING A MODIFIED DIABETES BUNDLE IN SINGAPORE

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Objectives: The National Healthcare Group has 9 primary care clinics (PCCs) that provide comprehensive care to people in Singapore. An operational Diabetes Registry has been developed since 2007 to provide decision support at the point of care and measure quality of diabetes care. In 2015, the measurement of the Diabetes Bundle was refined further from a quarterly cross-sectional measurement to a moving 12-month report every quarter.

Methods: All patients with Diabetes Mellitus (DM) who had at least 1 visit to the 9 PCCs during each report period were first identified. The latest visit to the PCC was denoted as the index date. A “Base” patient would be one who had at least 2 visits (including at least 1 doctor consultation) to the same PCC during the 12 months before the index date. For every “Base” patient, the qualifying period for measuring each quality indicator was the length of time prior to the “Index Date” and this was set at 12 months. The Diabetes Bundle measured quality performance using 8 ‘process’ and 3 ‘outcome’ indicators as recommended by the Singapore Ministry of Health Clinical Practice Guidelines for DM. During each qualifying period, “one” point would be awarded for every ‘process’ indicator meeting target, i.e. one record for LDL-cholesterol test, smoking assessment, retinopathy screening, foot screening and nephropathy screening; and two records for blood pressure (BP) measurement, body mass index (BMI) assessment and HbA1c test. The 3 ‘outcomes’ measured were the latest record of the control of HbA1c (7% and below for patients up to 75 years old; 8% and below for all ages), BP (140/90 mmHg and below for patients up to 80 years old) and LDL-cholesterol (less than 2.6 mmol/L). Meeting each ‘outcome’ indicator scored 1 point. The maximum score for the Diabetes Bundle was 8 for ‘process’ and 3 for ‘outcome’ indicators. The Bundle scores of patients with DM attending the same PCCs in 2015 were measured.

Results: There were 109,030 patients who visited the PCCs for diabetes care in 2015. The mean age was 64.5±11.7 years, majority were 50 to 79 years old. There was variation in the rates of all ‘process’ indicators. Processes that measured physical parameters (BP 98.8%, BMI 81.8%) and laboratory tests (HbA1c 94.9%, LDL-cholesterol 93.8%, nephropathy screening 90.9%) rated much higher than retinopathy screening (56.5%), foot screening (56.1%) and smoking assessment (7.5%). Overall, 3.1% scored all 8 points for the ‘process’ indicators, an improvement from 0.2% in 2014. For ‘outcome’ indicators, 42.4% (up to 75 years) met the HbA1c, 75.4% met the BP and 61.2% met the LDL-cholesterol targets.

Conclusion: The refined Diabetes Bundle measured the quality of ambulatory diabetes care for PCCs using a moving 12-month patient population that was more representative of the population profile during each report period. Every patient could now be assessed globally by a Diabetes Bundle Score which provided a summary of the comprehensiveness of care received and the desired level of risk factor control for the year taking into consideration the age of the patient. The personalized Diabetes Bundle Score could be tracked longitudinally for each patient and for the entire patient population. Patients who remained in suboptimal risk factor control could be identified for more intense treatment and monitoring to improve their clinical outcomes.
ANALYSIS OF THE TENDENCY ABOUT ACCIDENTS OR INCIDENTS BASED ON PATIENTS' DIFFERENT ATTRIBUTES UTILIZING TEXT MINING.
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Objectives: It is important to identify the tendency for incidents or accidents and understand where this risk comes from in order to provide safe high quality medical care. A wide range of people are subjected to nursing from newborn babies to the elderly, and there are a wide variety of different diseases these people are afflicted with. Thus, it has been surmised that the mechanism by which accidents occur has a variety of different types of cases. This study will examine the tendency for accidents or incidents that nursing professionals were involved in based on the different attributes of patients.

Methods: Of the 2013-2014 incident/accident reports from hospital A, 8,708 cases where nursing professionals were involved were subjected to an analysis. This analysis utilized Text Mining Studio 5.1 (NTT DATA Mathematical Systems Inc.). The descriptions of the events leading up to accidents were analyzed. Then, feature extraction was performed using the complementary similarity measure method to examine the features by the patients' attributes and a correspondence analysis with bubble was also performed.

Results: Upon doing a general survey of the content of the report, the most frequent accidents/incidents were internally/externally administered medicine with 1,887 cases (21.7%), followed by injections/IVs with 1,631 cases (18.7%), and the use/management of drains and tubes with 1,454 cases (16.7%). Looking at the results by the patients' attributes, hospital departments that had many adults and elderly had many trips or falls while the pediatric ward had many accidents and incidents related to the use/management of types of drain tubes or to meals/nutrition. The results of examining featured words were as follows: in surgical or internal medicine departments where there are many adults and elderly people the words "self-management" and "medications brought in" were extracted; in the pediatric ward the words "mother" and "medications brought in" were extracted. Words associated with trips or falls that were extracted were as follows: in the surgical or internal medicine departments "wheelchair" and "toilet;" in the pediatric ward "fall," "mother" and "crying." Words associated with the use/management of types of drains and tubes were as follows: in the surgical or internal medicine departments "length," "peripheral route" and "control;" in the pediatric ward "mother" "NG tube" and "crying." Words associated with meals/nutrition were as follows: in the surgical or internal medicine departments "tube feeding" and "feeding;" in the pediatric ward "mother's milk" and "milk." In this way, the words that appeared in accordance with patient attributes were identified. It is possible that accidents could be reduced if counter-measures are taken by referencing these words.

Conclusion: It was supposed that the mechanism by which accidents/incidents occur and their underlying causes differ depending on the patients' attributes (if they are a child, adult or elderly person). Among all the types of accidents/incidents, those related to the meals/nutrition for infant patients displayed a distinctly characteristic tendency.
SMALL CHANGES FOR BIG IMPROVEMENTS: A COMPREHENSIVE APPROACH TOWARDS ENHANCING PATIENT SATISFACTION THROUGH SMALL INITIATIVES

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Objectives: Patient satisfaction is a key indicator of how a department’s processes are aligned to patient needs and facilitate patient experience. The objective of this quality improvement project was to look at key patient satisfaction factors and plan small improvements based on Kaizen principle to achieve enhanced patient satisfaction.

Methods: Radiology patient satisfaction is gauged every quarter by an independent team through conducting face-to-face interview with patients and attendants. For the project, a team was formulated which utilized the PDSA methodology. The team first reviewed the patient satisfaction survey findings to identify key factors affecting patient satisfaction. The analysis revealed receptionist’s courtesy, efficiency, provision of complete instructions/information, radiographers and radiologists interaction, and waiting capacity as key factors which affect patient experience and hence satisfaction. The team then brainstormed and identified a list of improvement actions including (a) introduction of meet-and-greet service with the presence of a service coordinator, (b) training sessions for team radiology on service excellence and efficiency, (c) monitoring, in real time, patient waiting time and intervening to speed up where possible, (d) encouraging through supervisory focus staff behaviors aimed at courteous interaction with patients, (e) using awareness posters/messages for continuous reinforcement, and (d) rewarding staff with exemplary display of service excellence behaviors. The team then implemented these actions and maintained continuous monitoring. Sustainability of these actions and resulting improvement was also maintained.

Results: The patient satisfaction surveys done after successful implementation of the improvement actions showed remarkable improvement. Patient satisfaction rose from an average of 88.5% prior to improvement to 94.6%. Service excellence rating rose from 79% to 88%, staff communication rating from 84% to 90%, and attitude rating from 64% to 86%.

Conclusion: The quality project and initiatives taken as a result of it clearly demonstrated that small improvements when done appropriately and with consistency do help in achieving big improvement.

The quality project and initiatives taken as a result of it clearly demonstrated that small improvements when done appropriately and with consistency do help in achieving big improvement.
THE CLINICAL SERVICES EXCELLENCE TEAM: IMPROVING PATIENT OUTCOMES AT EVERY LEVEL OF THE HOSPITAL SERVICE

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Objectives: Safety and Quality in healthcare is becoming increasingly complex and complicated, and as such healthcare organisations require decision making tools that are timely, evidence based, flexible, and importantly, data driven. To this end, the Clinical Services Excellence Team (CSET) has become an increasingly important asset in the Safety and Quality/Clinical Governance domain.

CSETs objectives are to:
- Facilitate innovation and excellence in patient outcomes by providing clinical staff with access to expertise in clinical evaluation and analytical methodologies
- Facilitate informed organisational decision making through the provision of robust, reliable data.

Methods: CSET is able to divert its resources depending on the organisations priority and uses best available evidence (be it data, guidelines, research) to undertake:
- Health Service wide gold standard audit program
- Clinical Chart audit and reviews
- Clinician triage reviews in cases of individual clinician concerns
- Senior Medical Officer Performance & Appraisal Reviews
- Multi-disciplinary data analysis education
- Quality Improvement Methodology Education and Facilitation
- Systems Reviews
- National and International Benchmarking

Results: - 98% of staff who have engaged its services believe CSET have assisted in providing better patient outcomes – outcomes that could not have been achieved without CSET assistance
- 100% of staff who have engaged its services would recommend CSET to their colleagues
- CSET provides all levels of the organisation with relevant data to make informed decisions
- CSET has a 3 month waiting list for its services
- The CSET structure and function is being replicated in other health services in Queensland

Conclusion: With Safety and Quality in healthcare becoming increasingly complex and complicated, evidence based decision making is essential. The Clinical Services Excellence Team provides a flexible and responsive service that aids in informed decision making for better patient outcomes.
OUTCOMES OF IMPLEMENTING SHARPS INJURY RISK REDUCTION STRATEGIES IN THE OPERATING ROOM IN ONE TERTIARY HOSPITAL IN TAIWAN
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Objectives: According to the analysis of the World Health Organization (WHO), approximately 3 million healthcare givers were injured by sharp objects annually. The most concerning of the events is the great risk of blood-borne pathogen exposure, and this might cause a lifetime psychological impact on those injured. Nearly half of the needlestick injuries in the sample hospital happened in the operating room, which averages approximately 5 events monthly in 2014, compared to 2 events monthly in 2013, with an increased rate as high as 150%. In order to protect the safety of staff, the sample hospital launched the sharps injury prevention program in 2015. The program implemented sharps injury risk reduction strategies in the operating room, after reviewing the international literature and guidelines. This study presents the outcomes in the sample hospital.

Methods: The sample hospital conducted the cause analysis of sharps injuries in the operating room by using Pareto charts to find the significant contributing factors. The program made adjustments to the operating procedures, and reeducated the staff of the new standard operating procedures in safely handling the sharps. In addition, further information for sharps injury risk reduction was researched and reviewed in the literature. After a comprehensive discussion, the interdepartmental task force of the sharps injury prevention program, which includes members of the operating room, the labor safety & health department, the quality and safety department, the infection control room, the logistics department, prioritized strategies for sharps injury risk reduction. The strategies include introducing the neutral (hands-free) zone, double gloving, and speaking up before passing the sharps were implemented in the operating room. These strategies were disseminated through the surgery management committee, related educations were done by videos and lectures, post-education tests were also conducted to ensure the perioperative team staff had truly understood the information. Chi-square test was used to examine and calculate the sharps injury rate of the operating room.

Results: After one year of risk reduction intervention in the sample hospital, the sharps injury rate analyzed according to the surgery conducting times was significantly decreased from 0.14% in 2014 to 0.08% in 2015 ($\chi^2=5.1663$, p = 0.0230, OR=0.5656(CI=0.3636-0.8798), CL=95%). The sharps injury rate analyzed according to the numbers of perioperative team members who participated in the surgeries was significantly decreased from 0.03% in 2014 to 0.02% in 2015 ($\chi^2 =7.3876$, p = 0.0066, OR=0.5470(CI=0.3517-0.8507), CL=95%). Table 1 shows the statistics analyzed according to the numbers of perioperative team members who participated in the surgeries.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sharps Injury Events</th>
<th>Total</th>
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<tbody>
<tr>
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<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>2015</td>
<td>n</td>
<td>%</td>
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<tr>
<td></td>
<td>0.02</td>
<td>99.98</td>
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<tr>
<td>2014</td>
<td>n</td>
<td>%</td>
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<tr>
<td></td>
<td>0.03</td>
<td>99.97</td>
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<tr>
<td>Total</td>
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<td></td>
<td>0.02</td>
<td>99.98</td>
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Conclusion: Policies and procedures should be developed to guide, support, and monitor adherence to safe sharps handling practices, and transparent reporting must be encouraged to ensure accurate data collection. The implementation of risk reduction strategies to minimize the sharps injuries has shown significant improvement in the sample hospital, but the threats of sharps injury exist still. The ongoing education, training, and competency validation must be done continuously, and the compliance of safe sharps handling practices should be monitored uninterruptedly. In addition, new perioperative personnel should receive education that addresses sharps safety practices upon orientation to the perioperative setting to ensure their safety.
EVALUATION OF QUALITY IMPROVEMENT ACTIVITIES USING PATIENT SATISFACTION SURVEY
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Objectives: The Goal of the study was to evaluate quality improvement activities by patient satisfaction changes between 2014 and 2015. In order to achieve the objective, we worked on the following objectives. They are:

- To conduct baseline patients satisfaction survey among the patients
- To analyze the survey result and develop work plan and conduct ongoing assessments
- To conduct patient satisfaction survey and compare the improvements of the work plan activities

Methods: The patient satisfaction survey design and questionnaire were developed and approved by the relevant committees of MOH and the hospital. Satisfaction survey was containing 5 sections and 35 questions. September 2014, from 709 patients of 23 departments was randomly selected and filled the questionnaire. The results were analyzed by SPSS programme and distributed to the departments to develop their work plans. The questionnaire was downsized by topics and was conducted quarterly at the departments to assess the ongoing outcome of the workplan implementation. As a result of ongoing assessment, workplan of the departments were updated and implemented. Final survey was conducted September 2015 using the full questionnaire and analyzed by SPSS programme.

Results: The results of the baseline and evaluation surveys were compared between 2014 and 2015 and conclusions were developed. Organizational culture questions were improved from 80% to 86% after the improvement activities. Positive answers for ethics and communication of the hospital staff were raised from 79-87%. Quality and safety issues were improved by 78-87% and general patient satisfaction were improved by 78-87%. The negative answers on organizational culture were reduced from 2% up to 0.7%, communication and ethics answers reduced from 2% till 0.4%, quality and safety issues were reduced by 0.8%. General satisfaction negative answers were down from 2% till 0.4%.

Conclusion: 1. Patient satisfaction survey can be done to evaluate the result of the quality improvement activities
2. Patient satisfaction survey should be used with the short term ongoing assessments of the quality improvements activities and workplan in order to enable continuous quality improvement process.
IMPROVING THE REPORTING RATE OF INCIDENTS BY NURSE PRACTITIONERS THRU TRM

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Objectives: Patient Safety is the most important medical quality issue all the time, and is the top goal of medical services as well. Most of the nursing staff discusses the clinical incidents in private instead of reporting to organizations. Our goal is to make the idea of patient safety as staff’s habit and to build a better, safer medical environment thru improving the reporting rate of incidents.

Methods: Using skills of TRM (Team Resource Management), such as leadership, communication, mutual support and help to achieve team tasks and to decrease medical disputes and improve the patients’ safety. Project team came up with a semi-structured questionnaire for staff to analyze why the reporting rate of incidents was low, and then 50 copies were sent out and collected. The following reasons making the lower rate were (a) fearing to involved with legal issues(100%), (b) fearing to be blamed or edged out(76%), (c) complicated process of reporting(100%), (d) lack of feedback(56%) and (e) lack of understanding(72%). A proposal was generated based on the reasons above which included (a) building a duty-free, punish-free culture, (b) encouraging to report proactively, (c) simplifying the process of reporting near miss incidents, (d) holding on-job training.

Results: After the proposal was implemented for 6 months, the reporting rate of incidents was improved to 52.8% from 0%. The easier the process of reporting was, the higher the willing of reporting was. And thru on-job training, staff realized that the importance and benefits of reporting.

Conclusion: It happens that project team causes incidents and harms patients due to ineffective communication and cooperation. It is helpful to improve the reporting rate, make staff learn from incidents and build a safer medical environment if we encourage staff to report and develop the inter-professional training.
THE ASSESSMENT OF ADVERSE EVENTS RELATED TO MRI EQUIPMENT - A CASE STUDY OF MAUDE DATABASE

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Objectives: The aim of this work was to identify the occurrence of adverse events (AE) and injuries related to the use of the magnetic resonance imaging equipment informed in the incident notification system and to classify them accordingly to their causes following a generic system risk model.

Methods: The World Health Organization (WHO) recommends that health care systems should be able to identify, report and recalls all incidents, especially adverse events (AE) (Murff et all. 2003). A few authors have developed a generic system risk model to search and to analyze the root causes of AE (Shepherd 2004). The AE notifications were collected from the Manufacturer and User Facility Device Experience Database (MAUDE). The AE were classified based on Shepherd’s model (The Systems Risk Model - SRM) (Shepherd 2004).

Results: We analyzed 91 AE related to injury occurred in the last year (period from 01/01/2014 to 12/31/2014). Three cases were excluded because they are repeated. From the remaining 88 cases, the study showed that 71 AE were related an injuries in patients (80.7%), 11 AE were related an injuries in MRI technicians (12.5%), 05 AE were related an injuries in MRI professional maintenance (5.7%) and 01 AE was related only to damage of device (1.1%). The causes of injuries in patients were burn skin, the most frequent one (61 cases, 69.3%), collision with ferromagnetic objects (4 cases, 4.6%), and mechanical chock between patient and magneto (3 cases, 3.4%), and others (3 cases, 3.4%). The causes of injuries in MRI technicians were mechanical chock between operator and MRI table (7 cases, 8.0%), collision with ferromagnetic objects (3 cases, 3.4%) and fall of the technologist (1 case, 1.1%). The causes of injuries in MRI professional maintenance were collision with ferromagnetic objects (4 cases, 4.6%) and helium gas escape (1 case, 1.1%). The ferromagnetic materials found in notifications were gas cylinder, metal stretcher, magnetic wheelchair, magnetic monitor, magnetic spanner, metal crutch and metal stool. The causes of burns patients during scanning, including coupling with intend high power radio frequency (RF) energy; patient’s skin contact with the coil, with the coil cables, with the monitor cables, with the pieces of equipment (table or magneto), and skin to skin; obese patient and perspiring excessively; use of electrically conductive material (perfume, suntan lotion or ointment); wearing clothes with metallic elements or own clothes of the patient; use of incompatible components with MRI (ECG electrodes and cables ); and implant metal material. Our work classified the AE based on Shepherd’s model, being the operator component the most frequent to the direct cause (46 cases, 52.3%) and all 46 cases were related to the education/training sub-component, the root cause.

Conclusion: We think that Shepherd’s model is very useful to identify causes and to assess the risks of AE surveyed. This model can be useful for improving the protection of the health and safety of patients and users by disseminating information and to preventing the occurrence of AE. For future studies, we propose to use this model to evaluate the AE related to the use of radiology equipment like digital x-ray and mammography.

Objective: One of the most significant elements of patient care is the handoff. This is the point of time when crucial evidence on the patient's care is transferred to the patient's new care provider. At the Aga Khan University Hospital, Karachi, Pakistan a quality initiative was undertaken with an aim to improve patient safety by means of effective handoff communication.

Methods: Juran’s CQI Methodology was used to carry out improvement. Need was identified as the result of a sentinel event, the root cause of which was found to be ineffective handoff communication. A multidisciplinary team was formulated including representatives from medical, para-medical and administrative management. Next, brainstorming session was conducted to identify causes of the communication breakdown. Those causes were then plotted on fish bone diagram and pareto analysis was conducted. Vital few causes included lack of handoff tool and gaps in knowledge. As a remedy, a customized “Endoscopy Hands-Off Communication Checklist” was made, following the SBAR (Situation, Background, Assessment, Recommendations) standard. In the first phase, nursing staff of the endoscopy suite was educated about significance of process and utilization of checklist. Same training sessions were later conducted with nursing staff of other medicine and surgical units.

Results: By the end of the project, 100% of endoscopy nursing staff and 98.6% of nursing staff from other med-surg areas were trained. The checklist was successfully implemented in October, 2014 and a compliance of 96.4% and 99.2% was maintained until ends of 2014 and 2015 respectively. Sustainability is assured by monitoring clinical indicator entitled “Safe Transportation of patient from ward to Endoscopy Suite.” In addition to this, zero sentinel event has been reported so far.

Conclusion: Implementation of the handoff program was associated with cutbacks in unsafe practices in patient safety and in avoidable adverse events, without a negative effect on workflow.

LETHAL ADVERSE EVENT INVESTIGATION SYSTEM - PROBLEMS AND NECESSARY SUPPORTS FOR THE INVESTIGATION OF UNEXPECTED PATIENT'S DEATH DUE TO MEDICAL SERVICE IN JAPAN
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Objectives: In Japan, every hospital is required to report unexpected patient’s death due to medical service to a third-party organization by law from October, 2015. Investigation has to be conducted by each hospital, but it may be difficult for some hospitals since their resource or abilities to investigate the cause of adverse event may insufficient. This study aimed to reveal the problems of in-hospital investigation and necessary supports for hospitals especially with limited resources.

Methods: A mail survey was conducted using 3,270 hospitals which were selected by stratified random sampling according to bed-size in 2015. The questionnaire included questions about the patient safety management system of the hospital, the ability to investigate the cause of patient’s death and the problems when they are to manage in-hospital investigation.

Results: The response rate was 22.4% (731/3270), corresponding to 9% (731/8,595) of all hospitals in Japan. Patient’s deaths due to adverse events were experienced in 32% of the hospitals for three years before the survey. Among the respondents, 49% replied that they could investigate the cause of patient’s death by themselves, and 15% replied they could not, and 36% replied that it was unknown. The most frequently-cited problem was the absence of specialists regarding patient safety or investigation (40%) at the hospitals. According to multivariate analyses, the hospitals which answered that they could not investigate were related to five problems as follows: appropriateness of our investigation methods or the results is unclear (Odds ratio (OR) = 3.2); there is no organizational culture of discussing adverse events among staffs (OR = 3.1); there is no specialist of patient safety or investigation at our hospital (OR = 2.4); analysis method of adverse events is unknown (OR = 2.3); autopsy imaging is not available at our hospital (OR = 2.1).

Conclusion: The hospitals where they answered that they could not investigate the cause of unexpected patient’s death were related to five problems. Although medical associations, hospital associations, academic societies and public medical institution groups were designated by Ministry of Health, Labour and Welfare as supporting organizations which provide assistance for in-hospital investigation, the effects are to be investigated. The shortage of resource or the insufficient ability of hospitals might be resolved by the assistance of supporting organizations, but it might be difficult for the supporting organizations to intervene in the organizational culture of discussing adverse events among staffs. For the effective introduction of this new system, the enhancement of the supporting organization’s ability and improvement of patient safety culture in each hospital might be needed.
A COMPARISON OF GRAPHICAL REPRESENTATIONS APPLIED TO HOSPITAL PATIENT SAFETY SURVEYS
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Objectives: To analyze data of hospital patient safety surveys using graphical representations to screen out meaningful outliers for improvement.

Methods: Data were downloaded from annual report of Taiwan Joint Commission on Hospital Accreditation (TJCHA for short) regarding the hospital patient safety survey. We used (1) exploratory factor analysis to determine the number of factors for the 9 dimensions of the survey, (2) the point series correlation coefficient and outlier index to detect the outliers for hospital units or classifications, (3) the item-by-item box plot to present the dimension scores in comparison with other counterparts, and (4) the pyramid plot to show the comparative dimension scores between years.

Results: A total of 50,601 workers from 69 Taiwan hospitals participated in the 2013 patient safety survey. The results show that the 9 dimension scores can form a unidimensional construct (with Cronbach’s alpha of 0.92, dimension coefficient of 0.80, and the explained variance of 71.08%). The scatter (constructed by the point series correlation coefficient and Outlier index), the item-by-item box plot, and the pyramid plot can elicit much more meaningful information than the traditional one reported by the TJCHA. Outlier index to detect the outliers for hospital units or classifications, (3) the item-by-item box plot to present the dimension scores in comparison with other counterparts, and (4) the pyramid plot to show the comparative dimension scores between years.

Conclusion: The graphical representations for the results of hospital patient safety survey can be an useful way to help TJCHA provide comparisons and benchmarks as a valid tool to hospitals for continuous quality improvement.
CURRENT ISSUES SURROUNDING IMMUNITY FOR HEALTH CARE PROVIDERS REGARDING ADVANCE DIRECTIVE LAWS IN THE US STATES

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Objectives: In Japan, the draft for the Advance Directive (AD) bill, which gives physicians immunity if they withhold and/or withdraw life-sustaining treatment (LST) in accordance with the patient’s AD, was proposed by a group of non-partisan MPs in 2012. However, the draft bill has yet to be discussed in the Diet in Japan. In the US, all 50 states and the District of Columbia have enacted similar AD laws since the 1970s. In view of this, it is useful to analyze these prior laws for other countries. This study aims to 1) review health care provider immunity in the context of AD laws in the US, and 2) compare US AD laws and the Japanese draft bill with respect to immunity and consider current issues for legalization.

Methods: Each provision regarding health care provider immunity in legislation was extracted and compared with that described in the Japanese draft bill.

Results: We found that all 50 states and 1 district provide immunity that protects health care providers, including physicians and health care facilities. The major points of analysis are shown in Table 1.

Table 1. Characteristics of immunity

<table>
<thead>
<tr>
<th>Conditions for immunity</th>
<th>Number of states (district) with legislation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Acting in accordance with patients’ Living Will (LW) or</td>
<td>51</td>
</tr>
<tr>
<td>attorney’s health care decisions, including withholding and</td>
<td></td>
</tr>
<tr>
<td>withdrawing life-sustaining treatment (LST) as authorized by laws</td>
<td></td>
</tr>
<tr>
<td>2 Acting in good faith</td>
<td>39</td>
</tr>
<tr>
<td>3 Complying with patients’ LW or attorney’s health care</td>
<td>37</td>
</tr>
<tr>
<td>decisions in the absence of actual knowledge of a revocation or</td>
<td></td>
</tr>
<tr>
<td>based on the assumption that there is no revocation</td>
<td></td>
</tr>
<tr>
<td>4 Acting in accordance with reasonable medical criteria</td>
<td>31</td>
</tr>
<tr>
<td>5 Refusing health care decisions made by health care attorney</td>
<td>14</td>
</tr>
<tr>
<td>when he or she may lack the authorization for decision-making or</td>
<td></td>
</tr>
<tr>
<td>exceed authority of attorney</td>
<td></td>
</tr>
<tr>
<td>6 Providing LST in an emergency situation when the existence</td>
<td>8</td>
</tr>
<tr>
<td>of health care directives is unknown</td>
<td></td>
</tr>
</tbody>
</table>

Moreover, 49 states and 1 district allow “conscientious objection in medicine”, which means that health care providers, such as physicians and health care facilities, may refuse to comply with the patient’s AD contrary to good faith or policy. If health care providers refuse to comply with it, some states stipulate that they should make an effort to find others which may comply with the patient’s AD. Furthermore, most of the US states have applicable conditions for AD, which includes determining terminal condition or persistent vegetative state, and/or determining incompetence for making health care decisions. The draft bill in Japan suggests that physicians may withhold and/or withdraw LST, if the patient is determined terminally ill, in accordance with the patient’s LW. In addition, they shall not be subject to civil, criminal, or administrative liability for withholding and/or withdrawing LST in accordance with the provision of the draft bill. We found a difference in applicable conditions for AD between the US and Japan. In Japan, the draft bill only includes determining terminal condition. Furthermore, the draft bill acts as a blanket provision for physician immunity from liability.

Conclusion: Our findings suggest that, with regard to the draft AD bill, a safeguard for respecting patient will should be discussed, which deals with a revocation of or refusal to comply with the patient’s LW in good faith. Moreover, it is unclear whether or not a blanket provision for physician immunity from liability can fit in the Japanese legal structure. The need to give physicians immunity in addition to the provision that physicians may withhold and/or withdraw LST should be considered.
OBJECTIVES: Identify an alternative means for conducting an accreditation survey of a health care organization located in a high-risk travel or safety-sensitive international region.

Methods: A pilot study using video survey technology to facilitate a Joint Commission International (JCI) Accreditation survey was conducted in two hospitals located in regions of Nigeria and Pakistan. Both regions were designated as high-risk or safety sensitive. Two approaches to the pilot test were used. The first method consisted of a survey team in Oak Brook, Illinois, communicating with the hospital directly through the use of video technology. The second method was a hybrid survey approach that used two physician surveyors on site in Pakistan as well as a survey team in Oak Brook, Illinois. The JCI Accreditation Hospital Standards Manual - 5th Edition was used for both surveys with two additional chapters being applied in the hospital in Pakistan to evaluate this organization as an Academic Medical Center. The two organizations uploaded a specific list of required documents to a secured portal in order to facilitate the survey process. Both surveys took place during August 2015. The survey in Nigeria was four days in duration and the survey in Pakistan was five days. Each survey consisted of an opening conference on day one and a summation or exit conference on the final day of survey. The survey teams consisted of JCIA trained surveyors with both clinical and hospital administration backgrounds and both teams were led by the same Team Leader, an experienced JCI Nurse Surveyor. The survey teams interacted with the hospital staff and JCI surveyors through the use video technology transmitted to JCIA Central Office Headquarters where the survey team resided. Hospital staff and JCIA surveyors on site maneuvered the camera throughout the facility at the direction of the survey team.

Results: Both video survey approaches were successful in evaluating the hospitals on the accreditation standards; however, the survey process was enhanced with the hybrid survey approach. With the hybrid approach, the onsite surveyors were able to review documents that were not previously transmitted to JCI Central Office Headquarters. They also had expanded access to remote locations within the facility that were limited without having someone in the facility. On both surveys, there were some limitations in the ability to stream video when hospital staff traveled throughout the facility for example while in stairwells or on the roof of the facility. These obstacles were not as significant in the organization in Pakistan which was equipped with progressive technology and internet connectivity.

Conclusion: Video survey technology is a viable alternative for conducting an accreditation survey of a health care organization located in a high-risk travel region. When possible, a hybrid survey approach is preferred because it allows for more thorough assessment of the organization and enhanced interaction with hospital staff. Video surveys are most effective in organizations with contemporary technology including video equipment and internet connectivity.
ACUTE CORONARY SYNDROME PATIENT TREATMENT IN TAIWAN-A SIX-YEAR TENDENCY IN EMERGENCY MEDICAL SERVICE SYSTEM
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Objectives: In order to delivery and rescue acute severe patients with specific diseases to appropriate hospitals in prime time, Taiwan government fostered the policy and implement Emergency Medical Service (EMS) Program since 2009. The EMS set the criteria of each indicator on the basis of diseases to encompass the needs of the majority patients and enhance the quality of hospitals. Although remarkable progress in medical services, and Acute Coronary Syndrome (ACS) mortality rate had been decreased in recent year, the industrialization still influenced eating habits and fast-paced of modern lives. Therefore, cardiovascular disease still is one of the major leading causes of death in Taiwan and continues to be a public health challenge in recent year. According to Taiwan 2014 vital statistics, the heart disease was No.2 killer of top ten cause of death among Taiwan citizens (Table 1). We sought to explore the tendency of ACS indicators, whether the EMS policy could efficiently improve the majority patients’ cardiovascular care and heart health.

Methods: There are 113 Taiwan hospitals participate in EMS program, which were designated as emergency first aid hospitals in areas and voluntary to report data from previous treatment experience. The data was from a 6-year (2009-2014) database which reported by participate hospitals. The database collected patients who diagnosed as acute ST-segment elevation myocardial infarction (STEMI) and Non-ST-segment elevation myocardial infarction (NSTEMI). The indicators including:
1. Number of ACS patients who had their first EKG less than 10 minutes.
2. Number of received Cardiac Troponin T/I report less than 120 minutes.
3. The percentage of patients who qualified to give Clopidogrel and ASA (fibrinolytic therapy) should equal or larger than 70%.
4. The percentage of ACS patients (ST-segment elevation) who received percutaneous coronary intervention (PCI) (door to balloon time) less than 90 minutes.

Results: According to the collecting indicators from 2009 to 2014, the statistical data demonstrate as follows:
1. ACS patient who had their first EKG less than 10 minutes (Figure 1): The average percentage of EKG obtained time less than 10 minutes was increased from 61.3% to 78.2%.
2. Received Cardiac Troponin T/I report less than 120 minutes (Figure 2): The average percentage of received Cardiac Troponin T/I report less than 120 minutes was increased from 89.8% to 96.4%.
3. Patients who qualified to give Clopidogrel and ASA (fibrinolytic therapy) (Figure 3): The average percentage of the indicator was increased from 69.7% to 86.1%.
4. Primary PCI (door to balloon time) less than 90 minutes (Figure 4): The average percentage of Primary PCI less than 90 minutes was increased from 63.3% to 85.4%.

The data had demonstrated that participate hospitals followed the EMS standards in treatment of ACS patients; their quality of cardiovascular care has been improved in order to save acute severe patient in prime time.

Conclusion: Primary PCI is defined as coronary intervention in the infarct-related artery within 12 hours after the symptom onset of STEMI without any previous thrombolytic therapy. It is an agreement with recent studies in Taiwan Society of Cardiology (TSOC), American Heart Association (AHA) and European Society of Cardiology (ESC). The EMS program in Taiwan is following the treatment guidelines from TSOC, AHA, and ESC. From the result has shown that the current indicators could efficiently improve the cardiovascular patients’ care. In conclusion, the findings will provide to the Taiwan Society of Cardiology association and clinical divisions to modify the practice guideline and execute the policies in the future.
THE TRENDS OF ACUTE ISCHEMIC STROKE PATIENTS TREATMENT IN TAIWAN HOSPITALS, WHO PARTICIPATE IN EMERGENCY MEDICAL SERVICE SYSTEM

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Objectives: According statistical analysis of Taiwan top ten deaths of causes in order: malignant neoplasms, heart disease, cerebrovascular disease, pneumonia, diabetes are the top five causes in recent years with the changing lifestyle of people. In order to successful manage heart disease and cerebrovascular disease, whether the hospital is able to provide appropriate medical care in prime time relate to the success rate in treatment. In order to strengthen the effectiveness and quality of the hospital for medical treatment of acute severe patients in Taiwan, the government had established the emergency medical service (EMS) program since 2009. Until 2014, there are total 113 hospitals participate in this program. To the analysis result of acute ischemic stroke patient treatment trends from 113 hospitals, find out the effect on emergency treatment of those hospitals after the EMS implementation.

Methods: The capacity of EMS participate hospitals determine by their emergency services, human resources, facilities provided and the evaluation results. The hospitals can be distinguished as severe level, moderate level and general level. The framework of standards including 6 chapters: there are emergency department, acute ischemic stroke, acute coronary syndrome, major trauma, high-risk pregnancy, Neonatal and premature care, intensive care unit.EMS program tend to analysis from 2009 to 2014 indicators by collecting 33 severe level and 80 moderate level hospitals to discover the following results:
1. The percentage of acute ischemic stroke patients with thrombolytic indications treated by rt-PA.
2. The percentage of acute ischemic stroke patients received intravenous thrombolytic therapy less than 60 minutes.
3. The percentage of symptomatic intracerebral hemorrhage after treated intravenous thrombolytic therapy.

Results: From the results had founded:
1. The percentage of acute ischemic stroke patients with thrombolytic indications treated by rt-PA increased from 59.3% to 76.6% in moderate level hospitals. The severe level hospitals remained at 95% to 96%.
2. The percentage of acute ischemic stroke patients received intravenous thrombolytic therapy less than 60 minutes. The moderate level hospitals increased from 43.5% to 63.6% and severe level hospitals increased from 24.5% to 58.4%.
3. The percentage of symptomatic intracerebral hemorrhage: The moderate level hospitals decreased from 28.6% to 13.0% from 2009 to 2012, but increased slightly to 16.0% in 2014. Severe level hospitals remained at 4.7% and 7.4%.

Conclusion: There is improvement in rising the percentage of the acute ischemic stroke patients received intravenous thrombolytic therapy, since Taiwan government has implemented Emergency medical service in 2009.
1. To compare the percentage of the patients with acute ischemic stroke treated with severe level hospitals, the injection rate of moderate level hospitals has improved significantly.
2. Both severe level and moderate level hospitals have improved significantly in the indication of acute ischemic stroke patients treated by intravenous thrombolytic therapy time less than 60 minutes.
3. In the aspect of the percentage of symptomatic intracerebral hemorrhage after treated intravenous thrombolytic therapy, moderate level hospitals significantly decreased in comparison with severe level hospitals.
According to these findings, moderate-level EMS hospital in treatment acute ischemic stroke patients was improved significantly. Through the tendency of the analysis, the findings will provide to the Taiwan government, experts and associations to modify the practice guideline and execute the policies in the future.
STRATEGIC EVOLUTION OF HEALTH INFORMATION MANAGEMENT SERVICES (HIMS): THE ESSENCE OF A COMPETENT EVALUATION SYSTEM

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1Health Information Management Services, Aga Khan University Hospital, Karachi, Pakistan

Objectives: The Aga Khan University Hospital (AKUH) in Karachi, Pakistan, is the first private teaching hospital to be accredited with Joint Commission International (JCI) alongside ISO 9001: 2008 certification. The University Hospital provides high quality patient care services to over 50,000 inpatients and approximately 600,000 outpatients annually. Health Information Management Services (HIMS) provides facilities for storage and circulation of approximately 1.8 million medical record files. The challenge faced on a daily basis is to ensure timely availability of the same to all healthcare providers. The objective of the study is to enhance customer satisfaction through evaluation of feedback regarding HIMS services, specifically medical records availability at point of care.

Methods: A centralized storage area for medical records was established in 2012. After an adjustment period of one year (by QTR-3 2013) HIMS started evaluating its file delivery system through feedback surveys which included ratings on services provided for booked and walk-in patients at outpatient areas. Service improvement strategies were planned after processing feedback from external evaluators, which included:

1 - Identification of physicians who required special service of monitoring availability of their booked patient files on regular basis.
2 - Monitoring of timely delivery of walk-in patients files through a system based application (control chart).
3 – Scrutiny of medical record files condition/appearance.
4 - Availability of all previous clinic notes.

The team identified the physicians expressing lowest satisfaction with file availability, met with them to discuss their queries and started monitoring services provided to these specific physicians. In order to keep the individual physicians informed about proceedings, HIMS representative regularly shared updates on availability of medical record files at their particular clinic through e-mail. Review of services was carried out till QTR-4 2015 at quarterly intervals to ensure that satisfaction levels were met after which normalized processing was initiated with emphasis on continued monitoring.

Results: Feedback was elicited from users showing the service trends. The initial plan was to get feedback from nursing services and physicians as both parties are end users of medical record files. However, a major fluctuation in the responses was observed in performance review of 2014 where it was seen that the ratings were significantly affected due to staff rotation in nursing services. Hence it was decided to elicit separate feedback, which was done in 2015. The following are the outcomes reflecting the improvement trends in two stages; (1) QTR-3 2013 – QTR-4 2014 and (2-A) QTR-1 2015 – QTR-4 2015 (Physicians), (2-B) QTR-1 2015 – QTR-4 2015 (Nursing Services):

<table>
<thead>
<tr>
<th>Years (Physicians)</th>
<th>QTR-1</th>
<th>QTR-2</th>
<th>QTR-3</th>
<th>QTR-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>68.67%</td>
<td></td>
<td>76.46%</td>
<td></td>
</tr>
<tr>
<td>2014 (Physicians)</td>
<td>74.14%</td>
<td>81.50%</td>
<td>73.56%</td>
<td>76.54%</td>
</tr>
<tr>
<td>2015</td>
<td>66%</td>
<td>71%</td>
<td>74%</td>
<td>74%</td>
</tr>
<tr>
<td>2015 (Nursing Service)</td>
<td>78%</td>
<td>75%</td>
<td>81%</td>
<td>78%</td>
</tr>
</tbody>
</table>

Conclusion: Feedback from key evaluators led to the formulation of strategic services, resulting in an increase in satisfaction level with regard to HIMS services, particularly file availability. Accomplishment of this project resulted in maximization of scope of work. This improved service plan has now been absorbed into the daily workflow scheme.
THE EFFECT OF INSTITUTIONAL REVIEW BOARD/ETHICS COMMITTEE SURVEY PROGRAM IN TAIWAN

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Objectives: To determine the effect for improving the quality of Institutional Review Boards/Ethics Committees (IRBs/ECs) which participated in the Institutional Review Boards/Ethics Committees survey program in Taiwan.

Methods: This study collected the score data of 85 IRBs that passed from inspection in Taiwan since 2012. These 85 IRBs were classified into two types. 55 IRBs which set up and passed before 2011 were categorized type 1 IRB and the other 30 IRBs were categorized type 2 IRB which set up and passed after Human Subjects Research Act was took effect in 2012. All of type 1 IRBs participated in this IRBs/ECs survey program once or above voluntarily from 2007 to 2011 but type 2 IRBs were not. We used T test method (p=0.05) to compare the score between these two types and evaluated the effect of IRBs/ECs survey program.

Results: There were 96.09 ±4.42 score among type 1 IRBs (n=55) and 93.02 ±6.71 score among type 2 IRBs (n=30) in the collected data from 2012 to 2015. In table 1, the score of type 1 IRB was higher than type 2 IRB significantly (p=0.029). The average qualified rate of inspection in type 1 IRBs was 93.7 percent. It was 10.4 percent more than type 2 IRBs since 2012. As a result, the Institutional Review Boards/Ethics Committees survey program had good effects for improving the quality of IRBs and let them having more performance in the next inspection.

Table 1: The statistic results of type 1 and type 2 IRB.

<table>
<thead>
<tr>
<th>Type</th>
<th>mean</th>
<th>S.D.</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 IRB</td>
<td>96.09</td>
<td>4.42</td>
<td>0.029</td>
</tr>
<tr>
<td>(n=55)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 2 IRB</td>
<td>93.02</td>
<td>6.71</td>
<td></td>
</tr>
<tr>
<td>(n=30)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The full scale was 100 points.

Conclusion: Institutional Review Boards/Ethics Committees survey program had been done by MOHW (Ministry of Health and Welfare) and JCT for many years in Taiwan. JCT still used the inspection and consulting method to promote IRBs improving their quality continuously. Finally, there was significant in this study that an IRB could get better by participating in the IRBs/ECs survey program. The results can be provided MOHW and JCT for reference when the relevant policy will be needed. Therefore, it will increase the development about human research protective and biomedicine synchronously while the IRBs’ quality will be enhanced.
CORE SURVEYOR SYSTEM: AN INNOVATIVE MECHANISM BRINGS BETTER QUALITY OF HOSPITAL ACCREDITATION IN TAIWAN

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1Division of Research and Development, 2Division of Hospital Accreditation, 3Deputy Executive Officer, Joint Commission of Taiwan, New Taipei City, Taiwan

Objectives: Surveyors play important roles in the hospital accreditation process. In order to ensure the survey quality and to achieve the surveyors’ assessment consistency, after accepted the ISQua’s International Accreditation Programme (IAP) External Evaluation Organisations in 2010, Joint Commission of Taiwan (JCT) established the Core Surveyor System in 2011. Core surveyors are senior and must be requested to fulfill the qualification of having more than 4 years survey experience. They also need to attend the consensus meeting before on-site survey. Moreover, core surveyors are given the roles as the leads to ensure that the survey process proceeds smoothly, and are in charge of assisting other surveyors during each on-site survey. The purpose of this study is to investigate the surveyors’ performance tendency after JCT practiced the “Core Surveyor System”.

Methods: After the on-site survey, JCT asked the accredited hospitals to make evaluation for the surveyors’ performance by using the “Surveyor Evaluation Form” as a questionnaire tool which adopted a five-point Likert scale (5 points represent excellent, 1 point represents poor). The contents of questionnaire include preparation of survey, accreditation competency, communication skills, counselling ability, attitude during on-site survey, and teamwork. From 2011 to 2014, the 563 person-times of surveyors in total were evaluated from accredited hospitals.

Results: There were 161 person-times of core surveyors and 402 person-times of non-core surveyors in total accepted the evaluation. The study results showed that the core surveyors’ overall performance is higher than non-core surveyors’. The core surveyors’ performance is 4.39, and the non-core surveyors’ performance is 4.29. Moreover, the core surveyors’ average performance of each dimension is also higher than non-core surveyors’. Besides, during 2011 and 2014, the core surveyors’ overall performance also rose from 4.31 to 4.53, and the non-core surveyors’ performance rose from 4.23 to 4.43.

<table>
<thead>
<tr>
<th></th>
<th>Core Surveyors (n=161)</th>
<th>Non-core Surveyors (n=402)</th>
<th>T-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>4.39±0.20</td>
<td>4.29±0.30</td>
<td>4.90***</td>
</tr>
<tr>
<td>Preparation of Survey</td>
<td>4.29±0.18</td>
<td>4.18±0.27</td>
<td>5.35***</td>
</tr>
<tr>
<td>Accreditation Competency</td>
<td>4.43±0.23</td>
<td>4.31±0.34</td>
<td>4.56***</td>
</tr>
<tr>
<td>Communication Skills</td>
<td>4.47±0.23</td>
<td>4.35±0.36</td>
<td>4.72***</td>
</tr>
<tr>
<td>Counselling Ability</td>
<td>4.40±0.24</td>
<td>4.31±0.42</td>
<td>3.15***</td>
</tr>
<tr>
<td>Attitude during On-site Survey</td>
<td>4.47±0.23</td>
<td>4.35±0.36</td>
<td>4.72***</td>
</tr>
<tr>
<td>Teamwork</td>
<td>4.34±0.18</td>
<td>4.25±0.28</td>
<td>4.09***</td>
</tr>
</tbody>
</table>

***P<0.001

Conclusion: The study demonstrated that the core surveyors’ performance is better than non-core surveyors’ because the core surveyors are more experienced and trained. The whole surveyors’ overall performance also rose after JCT practiced the “Core Surveyor System”. In order to achieve the same level of performance between core surveyors and non-core surveyors, JCT may conduct more continuous educational training and courses for non-core surveyors, such as e-learning courses, webinars, and also encourage them to join the recognized programs of JCT for advanced accreditation knowledge. In 2016, JCT plans to include the ISQua-ASQua-JCT Joint Fellowship Programme in the
surveyors’ continuous training. They can get additional webinars related to quality improvement. In addition, JCT will take
the research results as references to continuously improve the Core Surveyor System.

ISQUA16-2033

PATIENT OPINIONS OF A PHARMACY RATING MODEL IN THE UNITED STATES
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Objectives: Currently, no mechanism exists for reporting and rating the quality of pharmacies. Thus, development and
use of the Pharmacy Star Rating Model (PSRM), a pharmacy-specific aggregate performance score based on the Centers
of Medicare and Medicaid Services Medicare Star Rating, will provide a reporting system for the US public. The study aim
was to identify patients’ understanding of what constitutes a “quality pharmacy” and obtain their feedback with regard to
the PSRM.

Methods: Moderated focus groups were conducted in the Southwestern, Southern, and Eastern regions of the US; and
one-on-one interviews were conducted in the Midwestern region of the US to acquire consumer insight into the PSRM.
Eligible patients were required to routinely use a community pharmacy. Focus-group and interview discussions targeted:
pharmacy selection; pharmacy quality; and opinions regarding the PSRM. Patient responses were analyzed using
qualitative data coding techniques to identify themes.

Results: Forty-nine subjects participated in the focus groups (N=7) and one-on-one interviews (N=3). Participants’
average age was 55 years (SD ±13). Eighty-eight percent of participants reported taking at least one medication and 87%
reported having at least one health condition. The seven themes identified during qualitative analysis included: patient
care; relational factors for choosing a pharmacy; physical factors for choosing a pharmacy; factors related to use of Star
Rating System; reliability of Star Rating System; trust in pharmacists; and measures of pharmacy quality. Cost of
medications and location of the pharmacy were the most reported factors used in selecting a pharmacy. Subjects noted
that specific aspects, including wait time, refill notification, and customer satisfaction, defined a “quality pharmacy”. Most
participants agreed the ratings would aid in selecting a pharmacy, especially if they were moving to a new place.
However, they felt the scores would not influence their decision if they were content with their current pharmacy.

Conclusion: Patients consider several factors when selecting a pharmacy. The quality of a pharmacy and the services
they receive are important to patients. The Pharmacy Star Rating Model was acceptable to participants and most
indicated they would use it under certain situations.
NEW TRENDS IN CONTINUING PROFESSIONAL DEVELOPMENT CERTIFICATION AND LICENSURE
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Objectives: 1) Describe new innovations in CPD certification and licensure within the USA. 2) Compare those trends with the external evaluation systems in other countries.

Methods: Conduct an objective summary of pilot innovations and emerging trends in CPD certification and medical licensure in the USA during the past twenty years as identified in regulatory boards’ enabling legislation and certification organization policies.

Results: Continuing educational requirements for U.S. practicing physicians have evolved in the past twenty years to require more meaningful involvement from learners as a condition of license renewal, maintenance of specialty certification, and membership in professional organizations. Contributing factors include development of educational frameworks for learner engagement, requirements for practice-relevant education involving assessment and demonstration of improvement in practice, and recognition of engagement in quality improvement processes as substantially fulfilling educational requirements. This has been facilitated by concerted efforts among licensing, certification, and accreditation bodies to harmonize processes and requirements.

Conclusion: Medical licensing boards have typically relied upon participation in continuing professional development education activities to help ensure that physicians remain competent to practice medicine. This work summarizes emerging trends in the educational requirements for medical license renewal in the USA, and explains how these are evolving in relation to certification and accreditation systems for CPD. The paper describes initiatives that aim to achieve optimal protection of patients, while ensuring effective and non-burdensome physician engagement in meaningful educational activities and processes as a demonstration of lifelong learning.

THE REGULATORY ROLE IN ADDRESSING PHYSICIAN BURNOUT AND WELLNESS: EMERGING INITIATIVES IN THE UNITED STATES
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Objectives: 1) Describe how burnout affects provider wellness and presents threats to competence and patient safety
2) Identify strategies for diagnosing, treating, and preventing symptoms of provider burnout
3) Explain the importance of role-specific interventions for effectively addressing burnout

Methods: A literature review was conducted on the prevalence and symptoms of burnout among different segments of the American medical workforce. Further research on strategies for treatment and prevention of burnout symptoms was conducted, followed by expert interviews. This informed the design of a new strategic initiative for addressing burnout that is described herein.

Results: Physicians, trainees, and medical students are facing symptoms of burnout at alarming rates. This presents significant challenges to licensing and disciplinary bodies, hospital administrators, and institutional accreditors as they work to ensure quality care and patient safety. Expert interviews placed significant emphasis on the importance of role-specific interventions for addressing burnout to overcome barriers of trust inherent in the regulator-professional relationship. An intervention that builds on the research results was designed to educate regulators about issues related to physician wellness, reduce stigma attached to seeking assistance for these issues, and coordinate parties from across the medical, accreditation, and patient safety communities to effectively address burnout to benefit patients and providers.

Conclusion: The prevalence of burnout among physicians signals a need for coordination across the medical community to address its symptoms and the patient safety risks to which they give rise. While several research studies exist on the prevalence of burnout, very little has been done to develop effective ways of treating and preventing burnout. This work is an attempt to postulate one such approach, specific to the medical regulatory community.

References: Prevalence studies conducted through the Mayo Clinic Physician Well-Being Program, and other related research.
**Objectives:** Due to the complexity of the healthcare system, it can be difficult to demonstrate the added-value of participating in an accreditation process. Accreditation Canada, as part of its continuous improvement process, wants to further its understanding regarding the benefits of participating in accreditation through its clients' perspectives; this was the study aim.

**Methods:** In January 2015, Accreditation Canada’s 237 clients who had an on-site survey in 2014 received an annual client feedback questionnaire. The questionnaire was anonymous, administered by an independent third party. The focus was open-ended questions exploring: *What is the greatest benefit of the accreditation program for your organization?* The qualitative results were analyzed using NVivo software. One coder completed the analysis and discussed the results with the team.

**Results:** Participation to the questionnaire was high with a response rate of 53%. Six main benefits to participating were identified (Table 1).

<table>
<thead>
<tr>
<th>Respondents N (%)</th>
<th>Benefit identified – “The program …“</th>
<th>Example quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 (39)</td>
<td>has a focus on continuous improvement</td>
<td>The accreditation program provided a standard reference of quality system requirements upon which to build a quality infrastructure for a health services organization.</td>
</tr>
<tr>
<td>18 (23)</td>
<td>helps them ensure that their clients are safe</td>
<td>The greatest benefit was the integration of structures and processes into our day to day patient care that support patient safety.</td>
</tr>
<tr>
<td>17 (22)</td>
<td>external evaluation component is of value</td>
<td>External, independent view of how we are doing.</td>
</tr>
<tr>
<td>15 (19)</td>
<td>helps to promote teamwork and staff engagement</td>
<td>It motivates all staff in their performance of the needs of clients. It also engages all to feel a part of the organization.</td>
</tr>
<tr>
<td>10 (14)</td>
<td>helps to create structure, including ensuring policies and procedures are in place</td>
<td>It provides structure to our organization with clear policies for safety of staff and the community.</td>
</tr>
<tr>
<td>9 (11)</td>
<td>promotes accountability with patients, stakeholders and funders</td>
<td>Being an accredited organization gives us credibility with funders and community.</td>
</tr>
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</table>

**Conclusion:** Healthcare organizations report that participation in an accreditation program promotes accountability internally and externally. Internally, it directs staff attention to ensuring structures and processes are current, the promotion of teamwork and their engagement in safety and quality activities. Externally, it focuses awareness on ensuring positive relationships and the needs of patients, stakeholders and funders are addressed. This knowledge can be used by accreditation bodies to help encourage organizations to participate in accreditation. It can also be used by organizations themselves to help communicate with staff and physicians the benefits that accreditation will bring. Accreditation Canada will continue to use client feedback to strengthen its accreditation program.
EXPERIENCE IN SPECIALIST OUTPATIENT CLINICS FROM PATIENT PERSPECTIVE
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Objectives: Patient experience reflects the quality of care from the perspective of patients and it is recognized as key measures of quality in health services worldwide. Improving patient experience continues to be a top strategic priority for hospitals and health systems. The study aimed to explore patients’ experience by adopting a locally validated tool - Specialist Outpatient Experience Questionnaire (SOPEQ). The SOPEQ provided a representative picture of patient experience and identify areas for improvement in delivering specialist outpatient services.

Methods: A territory-wide cross-sectional survey was conducted in those attending 26 Hospital Authority (HA) specialist outpatient clinics (SOPCs) between 11 July and 27 November 2014, using SOPEQ. The participants must be aged 18 or above, and able to speak Cantonese. Attendances at paediatrics, hospice, psychiatry, dental, multi-speciality, anaesthesiology, pathology and nurse clinics were excluded from the survey. The SOPEQ consisted of 48 evaluative items which covered 10 care aspects to codify the patient experiences following the patients’ journey from making appointment to leaving the clinic. The response to evaluative items would be converted score using a scale of 0 (most negative experience) to 10 (most positive experience).

Results: A total of 13,966 patients responded to the survey with a response rate of 62% and the findings were encouraging. The survey revealed that the overall patient experience on specialist outpatient services was rated 7 out of 10. The majority of the respondents were positive towards “trust and confidence in healthcare professionals”, “level of coordination among healthcare professionals” and “respect and dignity to patients”. However, there was room for improvement in several aspects of patient experience including (1) information on logistic arrangement before and during the appointment; (2) self-introduction of healthcare professionals to patient; (3) involvement in decision making; (4) information on self-care after leaving the clinic; and (5) information on the channels to express opinions/complaints.

Conclusion: This study is a first territory-wide patient experience survey on specialist outpatient service using a locally validated tool. The findings provides a representative picture of patient experiences in HA SOPCs setting which is an important insight for the hospital management and frontline healthcare staff in delivering health care, and identifying areas for continuous improvements. The survey also serves as an important platform for patient engagement in care process. Further study is needed to identify the underlying factors or subgroup of patients for those aspects of patient experience with relatively lower scores.
KIDNEY STICKER BOOK: A NUTRITIONAL GUIDE TO RENAL FAILURE
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Objectives: Chronic renal failure is highly prevalent in Taiwan; however, self-cognition is relatively low. This is due to a lack of obvious symptoms in the beginning stages of chronic renal failure. As such, prevention, which starts with nutritional guidance, should aim to retard worsening renal failure so that fewer patients develop end stage renal failure.

Methods: Sticker books and games can be incorporated to increase patients' learning interest and teach the correlation between food and health in order to better understand the affects food choice has on the kidneys, better retain information, and increase patient cognition. Seventeen participants were included in this study.

Results: The results showed that patient cognition increased from 54.2% to 86.8% indicating that after intervention with the kidney sticker book, patients' understanding of chronic renal failure nutritional information increased markedly. The renal failure nutritional sticker book can be an effective and fun tool for teaching patients with renal failure dietary information.

Conclusion: The majority of patients with renal failure are older adults, many of whom are illiterate or have some age-related vision or memory loss; this causes many problems in learning. Moreover, the nutritional guide pamphlets used by nurses mainly convey information via the written word, resulting in only partial understanding of any health education given to patients. Thus, foods high in salt and potassium are still part of patients' diets. As such, health education should be delivered using different methods. Bright flashcards can be used to attract attention in order to help patients retain health education content and increase knowledge.
ANTIBIOTIC STEWARDSHIP ON PERIOPERATIVE ANTIMICROBIAL PROPHYLAXIS: ITS IMPACTS ON A BIG ITALIAN TEACHING HOSPITAL
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Objectives: Tools to improve an appropriate antibiotic prophylaxis (AP) include antibiotic stewardship, in order to prevent postoperative complications and antibiotic resistance, and could help reducing healthcare costs. We implemented an antibiotic stewardship program in a large Teaching Hospital to improve quality in AP by surveying appropriateness level of AP in surgical wards and measuring the necessary quality improvement actions thus implemented.

Methods: Our survey was conducted during two non-consecutive weeks on all patients undergoing elective surgery in April-May, 2013. The protocol was approved by the Ethical Committee on January 21st, 2013. Confidentiality of patients’ data was thus guaranteed. Patients were taken from the daily list of surgical interventions of the “A. Gemelli” Teaching Hospital, one of the biggest teaching and training hospitals in Italy, with approximately 1,500 beds and 14 main surgical departments. To calculate the sample size required, the use of an appropriate AP was expected to be approximately 50%, assuming a confidence interval of 95%, a tolerable level of type-1 error of 5%. The minimum size required of the sample was estimated to be at least 384. From December 2013 to April 2014, quality improvement actions consisting in audit meetings within each surgical departments to analyse survey results and define the most appropriate actions were performed. We followed the NHS NICE current methodology on audit to review, evaluate selected clinical records and improve quality of care. As a proxy of quality improvement measurement, we analysed the consumption data of cefazolin (in defined daily doses, DDDs per 100 interventions). Both intramuscular and intravenous AP administrations were analysed and included in the analysis. Data were taken from the hospital pharmacy registry so to compare the consumption of cefazolin before and after quality improvement interventions. Costs were calculated on the purchase costs from January 2013 to December 2014 from the pharmacy registry. A 2-tailed Student’s t test was performed to compare continuous variables in the pre-post analysis.

Results: We selected 672 surgical procedures, classified according to AP type, timing, duration, excess and defect. After quality improvement interventions, we registered a significative reduction in cefazolin use (-21.5%, p-value<0.005) and linked costs (-22.9%, p-value<0.005).

Conclusion: Antibiotic stewardship may trigger quality improvement against abuse, misuse and overuse in antibiotic administration, e.g., in surgery. In our study, in 45.9% of cases, AP was recommended and appropriately administered, so highlighting a huge gap between theory (i.e.: international guidelines and hospital internal procedures) and real prescribing practices. By applying rigorous monitoring and auditing tools, clinical teams have been supported towards the optimal selection, dosage, and duration of antimicrobial prophylaxis, so to increase the appropriateness of AP with a consequent improvement in the quality of care and costs.
LITERATURE REVIEW OF TEAMSTEPPS STUDIES MEASURING QUANTITATIVE OUTCOMES

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Objectives: In recent decade, some teamwork programs have been developed, of which TeamSTEPPS (TS) is one of most evidence-based; however, outcomes-related evidence for TS remains scarce. Our objectives were to summarize the research designs, outcomes and implications of relevant TS studies, thereby offering evidence for TS training and promoting evidence-based TS studies.

Methods: The literature review, conducted in Aug and Dec 2015, covered 10 years and searched Medline for keyword ‘TeamSTEPPS’ in the title/abstract. Selected studies met the following criteria: in English, abstracted in Medline, included quantitative outcomes in clinical settings, not targeted to students, and obtainable from Japanese sources. Review methods followed those of the Institute of Medicine (2015).

Results: In total, 28 studies that met the quantitative outcomes criterion were extracted: 1 Randomized Control Trial (RCT), 3 Controlled Before After (CBA), 5 Interrupted Time Series (ITS), and 19 Before After (BA). 16 were reviewed: 1 RCT, 2 CBA, 3 ITS, and 10 BA. Controls for the RCT at three separate small hospitals were one no-teamwork training hospital and one didactic TS training hospital. Control for one CBA was another hospital; for a second CBA, it was three other surgeons and their teams at the same hospital. Comparison times in procured ITS studies were 1 year and 9 months. Measured patient outcomes in 16 literature were six events (e.g., morbidity, mortality, falls, infection), and one patient/family satisfaction. Measured practice outcomes were eight questionnaires on teamwork perception, four on patient safety perception, and one on work satisfaction; and with six behavior observations (e.g., teamwork, practice performance) and four efficiency (time-saving).

The number of participants in the ITS studies was not reported; however case numbers were 1322 vs 1609 otolaryngology operation cases, and 94 vs 59 adverse events from a combat hospital in Baghdad. The RCT’s participants were 134 (36, 38, and 60 staff from separate small hospitals). CBA’s participants were 18 vs 16 staff in medical acute care units from separate hospitals, and 29 vs 26 (each with three surgeons and three operating team from one hospital). Two BA participants numbered less than 30; three were below 50; one was 64 of all staff from an ultrasound service; one was 1204 registered nurses from five hospitals. The remaining three failed to report, but used all staff of women's services from 10 hospitals, all staff from an operation room, and all staff from an obstetric service.

For RCA, CBA, and ITS, the effect of TS training was significant on some dimensions of teamwork and patient safety perception and on observed behavior. In one RCT, perinatal morbidity decreased by 37%; in one ITS, patient falls decreased by 60%; in another ITS, operation time and on-time first-starts improved; in yet another, communication-related errors, medication and transfusion errors, and needle stick incidents decreased. Also, evidence levels for BA were ranked 2B or 2C.

Conclusion: Studies examining outcomes of TS are increasing, and methodological limitations continue to confound interpretation and generalization of the results. Some well-designed studies are necessary, because more effective TS training should be found and developed. In the interim, more case studies from clinical providers should be reported and shared. Clinical providers can use both efforts to achieve evidence-based TS training and improve patient safety and practice performance.

REDUCTION OF DAYS OF VENTILATOR DEPENDENCE AMONG PATIENTS IN ICUS THROUGH PHYSICAL THERAPY AS INVENTION

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Objectives: Patients with acute respiratory failure on ventilators constitute the majorities of patients in intensive care units (ICU). Early extubation has always been one goal that medical teams want to achieve. Rehabilitation invention has already been administered in ICUs in other countries and has successfully helped achieve the goal of early extubation. It is therefore hoped that physical therapy as intervention can help create a safe environment that facilitates early extubation for patients.

Methods: The participating patients with acute respiratory failure were all in the conditions of stable hemodynamics, normal nutritional status and no infectious complications and first underwent joint assessment by the medical teams based on their progresses in recovery after treatment for their diseases before receiving rehabilitation consultation, which directed them to cardiopulmonary rehabilitation that included T-tube training. Upon the confirmation of their ventilator weaning indications, their endotracheal tubes were removed. They were then engaged in early ambulation activities ranging from Level II to Level IV according to their abilities. During this period, the medical teams conducted 3 sessions of education training led by physical therapists, followed by exercises and group testing.

Results: Days of ventilator use were reduced from 6.3 (days) previously to 4.1 (days) after improvement. The secondary goal, i.e. days in ICUs, were reduced from 10 (days) to 6.1 (days). Hospitalization costs were also reduced from NT$329,000 before improvement to NT$241,000 during improvement and NT$186,000 after improvement. During the improvement, no tube slippage or patient falls occurred. This shows that this innovative proposal has achieved its purpose and also ensured patient safety.

Conclusion: It is suggested that medical teams for ventilation in severe cases can develop weaning protocols that have shared goals and integrate multiple technologies and find weaning solutions for ventilator dependent patients by exploring literature and relevance of content in protocols. This provides possible indicators for assessing healthcare for ventilator dependent patients and serves as a reference for healthcare facilities in developing patient care plans.

HEALTH LITERACY, SELF-MANAGEMENT, QUALITY OF LIFE, AND DISEASE CONTROL OF PATIENTS WITH CHRONIC KIDNEY DISEASE: A LONG-TERM FOLLOW-UP

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Objectives: Chronic kidney disease (CKD) is a kind of long-term disease, in order to prevent from early stage into the dialysis stage, patients will receive advices from the medical team. Such as providing health education on disease control, dieting, maintaining good daily health, and other related topics. However, whether if patients could thoroughly understand the content of health education and implement self-management to enhance their quality of life, is worth the research and investigation. The study explores long-term follow-up CKD patients’ health literacy, self-management, quality of life, and the current status of disease control and predicted factor.

Methods: This was longitudinal research design, and 150 CKD patients were recruited from medical center hospital in southern Taiwan. This study used structured questionnaires to collect data from them and total three times. The data included a base information sheet, the Symptom distress Scale, Short-form Mandarin Health Literacy Scale, Chronic Kidney Disease Self-Management Scale (CKD-SM) and SF-36 Taiwan Vision. Data were analyzed in SPSS for 20.0 software.

Results: The result of the study shows that as time increases, the CKD patients' quality of life and self-management have improved and significantly correlated (p<.001). Exercise was significantly influenced individual quality of life (p<.05). Symptom distress and quality of life were significantly negatively correlated (p<.05). CKD-SM was significantly influenced individual factors (p<.05) included: religious status, level of education, whether if assisted on reading medical information and exercise. Health literacy and quality of life were significantly correlated (p<.05). However, the score of CKD-SM was significant negative correlated with symptom disease after the sixth months of observation (p<.001). eGFR was different significantly between the initial time and six months (p<.005).

Conclusion: This study assists in understanding long-term changes in CKD patients' self-management and quality of life. It recommends that medical teams can provide diverse and proper care model, enhancing the overall quality of life and self-management of CKD patients, in order to delay the deterioration of their kidney function and avoid the possibility of conducting dialysis.

THE EFFECTIVENESS OF DIFFERENT HEALTH EDUCATION STRATEGIES FOR THE HEALTH OUTCOMES IN PATIENTS WITH TYPE II DIABETES

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Objectives: Background: Diabetes is a prototypical self-care disease. One of the most important measures of controlling diabetes is to offer the health education for patients. For instance good control of diet, drugs and exercise can stable the blood sugar and prevent complications.

Purpose: The purpose of this intervention study will evaluate the effectiveness of different health education interventions (usual health education and customized health education) for the health outcome of Type II diabetes patients.

Methods: Methods: A quasi-experimental, pretest-posttest research design will be used. The participants diagnosed as Type II diabetes will be recruited from a Medical Academic Center located in Taipei city. They will be divided into the intervention group (customized health education) and control group (usual health education) using random assignment. Data will be collected using structural questionnaires including basic information, Short Test of Functional Health Literacy in Adults (S-TOFHLA), Diabetes knowledge questionnaire, Perceived Diabetes Self-Management Scale (PDSMS), and diabetes self-care scale (DSC) and physiological parameter including fasting plasma glucose, blood pressure and cholesterol obtained from the patient’s hospital records. SPSS 20.0 (Statistics Package for Social Science 20.0) software package for descriptive statistical analysis, and paired-t test and GEE (Generalized Estimating Equation) for inferential statistical analysis will be used.

Results: Expected outcome: The results of this study will be a good reference for those who plan to design new health care education program. The optimal goal will identify the effectiveness of different health education interventions for the care quality improvement of the Type II diabetes patients.

Conclusion: The results of this study will be a good reference for those who plan to design new health care education program.
TO ENHANCE MEDICATION ADHERENCE RATE AMONG PATIENTS WITH CHRONIC DISEASE POST DISCHARGE FROM AN ACUTE HOSPITAL.
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Objectives: To improve patient’s medication adherence rate to at least 65% and to improve patient/caregiver health literacy.

Methods: For the root cause analysis and initial brainstorming, our team used the “cause and effect” diagram to aid in identification of the possible root causes on home-bound patients who have medication adherence issues. To achieve a group consensus on the selection of the best solutions, team used the Prioritization Matrix to

Team worked closely with community partners to ensure the continuity of our intervention. Interventions included packing medications in pill box, volunteers to check or remind patient to take their medicines daily.

Results: The number of readmissions has been reduced by an average of 40% during the period Q2 2013 – Q1 2014. Total length of stay for patients has been reduced by 619 days during the period of Q2 2013 – Q1 2014. As a result, the patients would not have been unnecessary hospitalized due to medication issues, thereby making unnecessary trips to the hospital. Our project reduces the inconveniences and minimise the disruption to the life of the carers, who have to accompany their loved ones to the hospital. By meeting this need, we are assured of the patients’ safety. The organization’s quality statement of “Best Outcome, Best experience” is met. This improves the organization’s image and patients’ satisfaction with our services.

Conclusion: The study achieved its objective of improving patient’s medication adherence rate to at least 65%. Several stakeholders have benefitted from the revised work process. Improved medication adherence rate has led to reductions in the number of readmissions, thereby decreasing requirements for hospital bed. The decrease in the length of stay helps to reduce healthcare costs for patients. The improved medication adherence rate has increased patient’s satisfaction with the hospital services leading to enhancement of hospital’s reputation among the public.

References: Banning (2009), A review of interventions used to improve adherence to medication in older people. Williams et al. (2008). Interventions to improve medication adherence in people with multiple chronic conditions
ASSESSMENT OF KNOWLEDGE AND ATTITUDE ABOUT QUALITY OF HEALTH CARE AMONG NURSES IN AIN SHAMS UNIVERSITY

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Objectives: 1- To assess the level of knowledge about quality of health care, patiet safety and attitude among nurses in Ain Shams University, Cairo, Egypt.
2- To assess the effect of an educational program on nurses knowledge and attitude regarding quality and patient safety.

Methods: The current study is a cross sectional study that included two groups of working nurses enrolled in postgraduate studies, each 150 subjects. One group in their first semester and the second group in their third semester and got a course of quality and patient safety. A self - administered questionnaire was used to assess the nurses' knowledge and attitude.

The study assessed the candidates' knowledge regarding patient safety goals, their attitude towards some of the items related to this topic using a questionnaire which was developed, validated, and tested by the researches. Two experts' comments and opinions were considered, one from faculty of nursing and one from the faculty of medicine. The questionnaire was accepted and the reliability of the questionnaire was confirmed using Cronbach’s alpha coefficient (0.81) after a pilot study on 30 nurses. In addition, the total score of the questionnaire was approved by the experts.

The questionnaire was coded and entered using SPSS program version 16. The studied subjects were considered to have adequate knowledge score when the total score was equal to or above 60% (equals to or above 7 in the current work) and the score was inadequate if below 60% (below 7 in the current work).

Data analysis was performed applying appropriate statistical methods including; frequencies, means, standard deviations, Chi-square test and independent samples-t test.

Results: The study showed highly significant differences between the two groups regarding their knowledge, with mean score 9.1 among those who got the educational program compared to mean score of 5.9 among the other group who did not attend the course. On the other hand, some attitudes did not change significantly after the program e.g. importance of team work, reporting of errors and supporting those who do errors.

Conclusion: Inclusion of quality and patient safety course in the curriculum of nurses is important to promote their knowledge and attitude.
USING MOBILE LEARNING MODEL TO ENHANCE PATIENT SATISFACTION WITH NURSING CARE

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Objectives: Traditional health education always give papers to patients, and want patients read the points of papers. In recent years, technology developed and information changed, we can use and choose multimedia learning tools to teach patients daily care, so the study wants to know use mobile learning model to patient satisfaction influence.

Methods: We start to design mobile learning model in April. The first, we design health education micro-film and upload video in the bedside health education system in July. Sensed, Patients can click though education video and completed the quiz anytime, the quiz result was transfer to the nursing information systems for patient care division, and thus nurses was described again quiz error section. Finally, though QR Code scan the phone link e-learning platform that offers users quick links to browse YouTube TMUSHH health education video channel, integrated into self-health management platform.

Results: We completed 6 commonality and 7 specialized about care micro-films in December. Bed health education system clicked number of times was 914 in July, and after implement numbers increased 1,395 in December. After teaching quiz completed rate was also from 39.4% increased to 70.5%. With QR Code linked YouTube TMUSHH website, videos click through numbers of times were 9,617. Finally, patient satisfaction with nursing care from 2014 was 86.6% increased to 92.4% in 2015.

Conclusion: We found implement mobile learning model can help patient improve patient involve, and patient though with the system understand themselves daily care. Implement mobile learning process, we understand in view of the patient to design mobile learning tools and interactive process, and thus let patient to enhance knowledge and learning effectiveness, and finally help themselves daily care actives.

DEVELOPING ASSESSMENT FOR RADIOLOGICAL TECHNOLOGISTS CORE COMPETENCY TRAINING IN TAIWAN
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Objectives: Two-years post-graduate training for radiological technologists was initiated from 2007 in Taiwan. This study aims to develop assessment for Core Competency achievement of training. As the first year of study, we publish the preliminary results.

Methods: In 2014 we established five core competency of radiological technologists includes: life-long learning, clinical ethics, patient-center, quality and professionalism. According to the core competency, we developed DOPS and mini-CEX as competence assessment. A 9-score scale was used for scoring and criteria are defined. The main skills of assessment were general radiology, interventional radiology, angiography, ultrasound imaging, computerized tomography, and magnetic resonance image etc. The preceptors were usually senior radiological technologists in study hospitals. For reaching consensus of assessment, we had a workshop for preceptors and ask each study hospitals to hold their consensus group. Trainees who get involved in this study in 2015 are our objects. Data collection is from 2015 to 2017. Each one measured by DOPS and mini-CEX before and after training. This study shows the preliminary results of DOPS.

Results: 62 trainees from 21 hospitals were involved in study and 431 DOPS were collected. For the training effectiveness, a significant difference can be seen (p<0.01) that their posttest scores are better than pretest scores. For example, the scores of “patient identification” was from pretest 6.14 to posttest 8.87; “patient safety” was from 5.69 to 8.64; “communication and protect patient privacy” was from 5.57 to 8.45. According to the results, post-graduate training is efficient for radiological technologists’ practice and DOPS is useful for assess the core competency of RT. In the first year of data collecting, most DOPS were pre-test of general radiology assessment (48.3%). And because the samples of evaluation item “informed consent” and “check image and drug” were less in general radiology, we will collect more DOPS to analyze these items in the future.

Conclusion: A standardized structural DOPS assessment for radiological technologists training was first time developed and applied in Taiwan. Establishing tools and model of assessment for the core competence of radiological technologist trainee were ongoing. We hope at the end of study, the assessment can be verified it to be effective and can be used on other healthcare providers for assessing the core competency.
THE STUDY OF SELF-EVALUATED CLINICAL CARE COMPETENCIES AMONG THE TRADITIONAL CHINESE MEDICINE NURSES

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Objectives: Chinese medicine had been officially covered by National Health Insurance since 1995, along with the vigorous development of Chinese medicine healthcare work. Medical centers had established the Department of Traditional Chinese Medicine (TCM) and the nursing staff had also actively involved in Chinese medicine healthcare practice. Building the standardized care competence in Chinese medicine nurses is imperative for promoting nursing care level of Chinese medicine. Therefore, assessment of clinical care competence of Chinese medicine nurses is a very important issue.

Methods: The study was a cross-sectional survey. Chinese medicine nurses were recruited from northern, middle, and southern locations of the Medical Foundation used a convenience sample. The instrument was a self-designed structured questionnaire of the Self-Rated Chinese Medicine Clinical Care Competence. The study distributed 322 questionnaires and 301 questionnaires were returned with 93.5% of returned rate. The data was analyzed using descriptive statistics and inferential statistics, including one-way ANOVA and linear regression.

Results: The grand mean score of self-rated Chinese medicine clinical care competences among Chinese medicine nurses was 2.51 (SD = 0.54). The highest mean score was assistance in performing Chinese acupuncture nursing care according to far-infrared light operational procedure (mean = 3.61, SD = 0.64), whereas the lowest mean score was assistance on executing Chinese trauma nursing care according to medicated bath (mean = 1.20, SD = 1.39). There were mean differences in education, status of the advanced study, working experience of Chinese medicine nursing, clinical ladder of nursing, workplace, working units, working willingness of Chinese medicine nursing unit, and learning experience of Chinese medicine nursing. Multivariate linear regression showed workplace, ever attended projects or researchs, and ever underwent basic training in traditional Chinese medicine nursing were significant predictors of self-evaluated Chinese medicine clinical care competence.

Conclusion: The self-rated Chinese medicine clinical care competence was below 3 using the 5-points Likerst Scale. In addition, the self-rated Chinese medicine clinical care competence was diverse by education, status of the advanced study, working experience of Chinese medicine nursing, nursing clinical ladder, workplace, working units, willingness of working in Chinese medicine nursing unit, and learning experience of Chinese medicine nursing. Workplace, ever attended projects or researchs, and ever underwent basic training in traditional Chinese medicine nursing could predict Chinese medicine clinical care competence. This finding could be a reference of planning inservice education program in Chinese Medicine nurses, the index of cultivating Chinese medicine nurses’ competence, support of promoting administrative resources for Chinese medicine personnel cultivation, and enhancement of multidisciplinary collaboration and implementation of the concept of holistic care.

References:


EFFECTIVENESS OF A MULTIMEDIA EDUCATION ON COMPLIANCE AND SYMPTOM MANAGEMENT IN NEWLY DIAGNOSED LUNG CANCER PATIENTS POST-TREATMENT
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¹Chang Gung Medical Foundation at Linkou, Taoyuan County, Taiwan

Objectives: Lung cancer patients often suffer from clinical symptoms and side-effects, including cough, bloody cough, chest pain, wheezing, difficulty breathing, and vocal cord paralysis, these symptoms may generate fatigue and immune impairment and impact on daily lives and physical performance resulting in treatment compliance and treatment discontinuing. The purpose of the study was to investigate the effects of a multimedia education on treatment compliance, symptom management, and quality of life in newly diagnosed advanced lung cancer patients.

Methods: This study was a repeated-measured study with randomized two groups, using a pre- and post-test design. The experimental group received a multimedia health education, which developing based on treatment guideline of lung cancer provided diagnosis, symptom, treatment, assessment and management of side-effects, daily lives through multimedia and pictures to satisfy needs. The control group received standard care. Participants were recruited between January 1, 2012 and October 31, 2014. Patients were assessed for compliance for clinic visit, physical functions, role, emotion, cognitive, social dimensions and symptom distress at four time points: admission, 1, 2, and 3 months after admission.

Results: (1) The experimental group had significantly higher clinic visit rate than control group.
(2) At 2 months after admission, the experimental group had significantly lower level of sleep disturbance and cough.
(3) At 3 months after admission, the experimental group had significantly lower level of nausea, vomiting, and loss of appetite.

Conclusion: The multimedia education can improve clinic visit rate in lung cancer patients. Patients received multimedia education had significantly lower levels of symptom distress and higher level of quality of life at 2 and 3 months after admission.

INTERPROFESSIONAL EDUCATION PROGRAM FOR THE TWO YEARS POST-GRADUATE PHARMACISTS: NURSE SHADOWING

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Objectives: Interdisciplinary teamwork is an important issue of medical treatment which includes every professional division of labor and together cooperation to improve the quality of the medical care. We designed a two years postgraduate program for the new pharmacists and aimed to enhance the comprehension of the new pharmacists on the nursing colleagues through the understanding of their work contents and cooperation with mutual respect and coordination.

Methods: We recruited 10 new pharmacists as the study subjects in two-year postgraduate program. The participant pharmacists had to fill the questionnaires before and after the shadowing experiences. The questionnaires included 20 topics as follows. (1) The flow roster of nursing hangovers. (2) The key items of nursing hangovers. (3) The purpose of nursing hangovers. (4) The understanding of nursing plan for patients. (5) The purpose of nursing plans for patients. (6) The communication between doctors and nurses. (7) The communication between patients or patients’ family and nurses. (8) The communication of nurses and other departmental colleagues. (9) The receiving drugs process for the first day. (10) The process of distributing drugs. (11) The process of preparing drugs. (12) The procedures of drugs repercussion. (13) Writing a nursing record. (14) The clinical condition occurred which needs promptly the pharmacist’s assistance. (15) The understanding the key points of drug instruction for patients. (16) The understanding of practice once adverse drug reaction was found. (17) The flow schedule and notices when high risk drugs were applied. (18) The practice on the adverse drug reaction when high risk drugs were applied. (19) The inquiry of drugs information system. (20) The practice of the dynamic monitor in the open drug inquiry system for the first day drug application. We scored the answers from the participants on five levels, “very clear” as 5 points, “clear” as 4 points, “aware” as 3 points, “ambiguous” as 2 points, and “very ambiguous” as 1 point. The total scores were then subject to a statistics T-test in statistical product and service solutions software (SPSS). p<0.001 indicated a significant difference.

Results: In our survey, we found that before the training program the top three high scored topics were topic 14, 3, and 15 which showed the scores as 3.10±0.57, 2.90±0.57, and 2.70±0.48, respectively. After the training program, the top three high scored topics were topic 10, 11, and 2 which showed the scores as 4.50±0.53, 4.40±0.52, and 4.40±0.52, respectively. Among the twenty topics in the questionnaire, 18 topics showed p<0.001 and only 2 topics (topic 16 and 20) showed p=0.001. In general, the nursing shadowing training course has significantly improved the two-year postgraduate program pharmacists’ understanding on every nursing procedure.

Conclusion: Inter-professional education provides the opportunities for two or more professional medical staffs learning together. With this particular concept, an inter-disciplinary medical team is expected not only to develop a well-training and learning model, but also to have a better cooperation and communication. Through the mutual understanding and enhancing partnerships between the expertise groups, more patient-centered medical care could be put into practice. In addition, pharmacists can learn more professional skills from other partners and have the positive reflections on their own work positioning and clinical values.

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ANGER MANAGEMENT PROGRAM FOR PSYCHIATRIC CLIENTS UNDER THE CARE OF COMMUNITY PSYCHIATRIC SERVICE
K. B. Yeung 1,*, C. W. Leung 1, W. C. Lung 1, P. Y. I. Cheng 1
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Objectives: 1. Conduct and evaluate the effectiveness of a community-based anger management program for individual who frequent faces anger and finds difficulty in managing anger emotion. 2. Empower individual coping strategies to manage anger-provoking situations in appropriate way. 3. Collect the case managers’ feedback and suggestion of using the coaching manual and anger workbook in empowering the individual.

Methods: An anger workbook is designed and based on modified cognitive behavioural approach for psychiatric clients to manage their anger emotion. A coaching manual is designed to provide a guiding reference to case managers to conduct three sessions anger management program to psychiatric clients in outreaching visit with the anger workbook. Case managers provide one session of anger management program in each outreaching visit respectively.
1. An anger workbook is designed for psychiatric clients to manage their anger emotion. A coaching manual is designed to provide a guiding reference to case managers to conduct three sessions anger management program to psychiatric clients in outreaching visit.
2. Twelve Case mangers (included psychiatric nurse and social worker) chose one to three clients under their case list. The program period was from 1 July, 2015 to 30 November, 2015.
3. Twenty clients were recruited to participate the program, fourteen clients able to complete the program and assessment form.
4. The Chinese version of the State Trait Anger Expression Inventory-2 (STAXI-2) and WHO (Five) Well-Being Index data were completed by the clients before and after the program. Clients and case managers completed the questionnaires after the program. (The use of the Chinese version of the State Trait Anger Expression Inventory-2 (STAXI-2) was approved and obtained by Prof. Cindy, H. Y. Sit in 2015).

Results: Fourteen selected clients completed all the assessment. Eight were males and six were females. In the Trait Anger scale (Male - Pre: 18.1 (S.D 4.7), Post: 16.9 (S.D 6.1); Female – Pre: 21.3 (S.D 6.6), Post: 17.5 (S.D 4.6)) and anger expression index scale(Male - Pre: 40.9 (S.D 7.5), Post: 40.6 (S.D 9.5); Female – Pre: 46.7 (S.D 9.5), Post: 41.3 (S.D 9.5)) mean, the participants showed improvement after the programs. In WHO (Five) Well-Being Index scale mean, thirteen participants (93%) moods were improved after the program. (Male - Pre: 12.3 (S.D 6.6), Post: 15.8 (S.D 2.9); Female – Pre: 11.6 (S.D 5.6), Post: 15.3) (S.D 4.5).
In the post program questionnaire, all of the participants agreed the program was useful to help them dealing the anger emotion and help them to facing the anger problem. They agreed the workbook was easy to read and it was an effective tool to enhance their knowledge in mange anger emotion. All of them agreed the multi-media were useful and enhanced the learning effect.
Twelve case managers (100%) agreed the workbook, and teaching manual were systematic for teaching the clients in handling anger emotion in different situations.

Conclusion: Participants get benefit from physical and psychological after they have the ability to deal with their anger through different skills and self-awareness. Participants in our program showed improvement in their ability to control their anger. They showed reduced anger expression towards self, others and ability to deal the trigger situations. Their mood was also improved in overall after the program according to WHO-5 index. Clients can decrease their anger thought and behaviour and they can enhance their assertiveness and become a self-therapist.
**EFFECT OF A BUNDLE CARE MODEL ON CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) IN A MEDICAL INTENSIVE CARE UNIT (MICU) IN NORTHERN TAIWAN**

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**Objectives:** Catheter-associated urinary tract infection (CAUTI) is an important risk factor related to hospitalized mortality and a prolonged length of stay (LOS), especially in intensive care units. The purpose of the present study was to reduce the CAUTI rate using an evidence-based medical (EBM) care model.

**Methods:** To reduce the occurrence of CAUTI, a complex bundle care model, which consisted of a series of educational lectures, standardized technical demonstrations/performance, random external audits, and the addition of an objective structured clinical examination (OSCE) for all medical staff, was implemented in a medical intensive care unit (MICU) in Northern Taiwan. The infectious density of CAUTI, the accuracy of care techniques, and the rate of staff confidence in knowledge, attitude and practice (KAP) were evaluated before and after intervention following a bundle care model.

**Results:** The EBM-based bundle care model was implemented for 12 months. The infectious density of CAUTI was 5.49/1,000 in the pre-intervention stage, which improved significantly to 0.77/1,000 in the post-intervention stage. The accuracy of care techniques and the staff confidence rate in KAP for CAUTI prevention were significantly increased, from 66.7% and 63.9% in the pre-intervention stage to 93.7% and 95.0% in the post-intervention stage, respectively.

**Conclusion:** An EBM-based bundle care model combined with OSCE evaluation was effective in terms of reducing the infectious density of CAUTI, the accuracy of care techniques, and the staff confidence rate in KAP for CAUTI prevention in a MICU.
OBJECTIVES: Using multiple teaching approaches to improve new nursing staff orthopedic clinical learning.

METHODS: Planning stage (1st April ~ 20th July, 2015)
1. Design new staff orthopedic clinical skill learning questionnaire to understand the cause of poor learning effect.
2. Design evaluation improvement form: Using Grid Analysis method to analyze nursing personnel work knowledge and skill training effectiveness.
3. Assign new staff flipping course: According to new staff learning curve, change their learning model by assigning new staff self-learning main topics, not only by clinical tutor teaching only.
4. Use team cooperation to make orthopedic short video, in line with 3C products, software, and with the help from orthopedic surgeons to make teaching movies, set up working groups to send all the movies done to the learning platform to facilitate colleague learning.

Execute stage (1st July ~ 21st Sept, 2015)
1. Announce procedures to be worked out for this project: Announce during morning meetings and during evening meetings, for one week, use 30 minutes to explain the aim of this project, the important, method, course period and content of this project.
2. Announce new staff flipping training, discussion timetable, and announce learning aims and their learning curve into their mark to excite their learning mood.
3. Hold work site teaching, including introducing "Orthopedic operation" related equipments, materials, surgeon familiarity and animal model work-out demonstration, using Q & A methods to answer their questions and test their results.
4. Observe "orthopedic sliding pelvic joint screw" teaching film, and discussion after watching the film to have a better understanding of how much they have learned up, so that the project group can adjust teaching materials.
5. Hold flipping teaching activity, workshop, to help nursing staff become more familiar and smooth with their work.
6. Send the teaching movie to the group teaching platform for them to learn by themselves when they are free.

Using the orthopedic operation recognition, technique questionnaire, orthopedic clinical learning mood study, to understand their learning curve and effectiveness.

RESULTS: After the change of teaching method, increase demonstration course, help to improve the familiarity and correctness of procedure significantly improved from 63.6% to 83.5%, technique correctness from 75% improved to 91%, this has attained our project aim.

CONCLUSION: This project, through flipping teaching, making of orthopedic equipments usage movie etc. intervention, nurse work knowledge and skill had improved dramatically, improve the new nurse learning curve in orthopedic surgery, and thus gain the trust from orthopedic surgeons toward nursing professionalism.
EFFECT OF CONVERSATION MAP EDUCATION TOOLS ON TYPE 2 DIABETIC PATIENTS FOR BLOOD SUGAR CONTROL

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Objectives: Conversation Map education tools are an innovative education method that using interactive group participation to empower people with diabetes to become actively involved in managing the disease. A colorful visual display activity cards, and a facilitator guide are difference being that they are used in a discussion of education tool. Regional modifications ASIA–Taiwan including seven education topics: 1.Living with diabetes. 2. How diabetes works. 3. Healthy eating and keeping active. 4. Staring insulin treatment. 5. Diabetes and caring for your feet. 6. Understanding the many factors of managing diabetes. 7. Living in a family with type 1 diabetes.

Methods: From April 1st to June 30th 2015, we received a total of 40 cases of type 2 diabetes patients from clinics Diabetes Shared Care Project, and join the Conversation Map education three times. We use three topics: 1. How diabetes works. 2. Healthy eating and keeping active. 3. Staring insulin treatment. With the aim of improving self-care capabilities and quality, we conducted pretests, posttests, and biochemical analyses; paired t-test was used to for statistics.

Results: Our study showed these diabetic patients have general clinical improvement after three-month Conversation Maps. For the effectiveness of glycemic control values before and after the participation of patients overall mean HbA1c from 10.1% to 7.6%, from the overall mean fasting plasma glucose 211.9 mg / dl dropped to 120.1 mg / dl. According to The Diabetes Attitudes, Wishes, and Needs (DAWN) study diabetes self-management assessment, it revealed a significant improvement of diet behavior, medication compliance, self-monitoring, Physical Activity (P < 0.05). Insulin knowledge and attitude it revealed a significant improvement. DAWN Goals and Strategies it revealed a significant improvement.

Conclusion: Our study showed these diabetic patients effect of conversation map education tools, people with diabetes play an active role in sharing their knowledge with their peers and raising awareness importance of changing our approach to diabetes care and focusing more on the attitudes and needs of people, significantly improved their Diabetes self-management and glycemic control.

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EXPLORE OF NEWLY EMPLOYED NURSING STAFF LEARNING NEEDS - A QUALITATIVE STUDY

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Objectives: A shortage of nurse staffing has a significant impact on patient outcomes. The high nurse-to-patient ratio will lower the nursing care quality as well. According to the report of American Nurses Association (ANA), increasing 1% of the nurse staffing could reduce 0.3% to 0.7% of the patient’s infection rates. Unruh found that a 10% increase of nurse staffing could decrease the incidence rates of pressure ulcers to 2%. The high mortality rate is related to uneven nurse-to-patient ratio, therefore, it is important to maintain the adequate nurse staffing and nurse-to-patient ratio to keep the patient safety and nursing care quality. Newly employed nursing staff would require training and orientation for professional capacities, skills, and attitudes of nursing organizations. High turnover rates in current nursing workforces are associated with work environment related adaptions, stress-coping behaviors, nursing profession capacities, and poor preparation for reality shock in works. Reducing nursing turnover is an important topic in current nursing workforces in Taiwan.

Methods: The current study is a review study based on documents of the Newly Employed Nursing Staff Support Group in southern Taiwan that aimed to discuss the situation and problems in newly employed nursing staff. Data were involved with a total of 18 documents from support group between January 2013 and December 2014. Subjects attended the support groups were one-month, two-month, and officially nursing staff.

Results: Results were divided into two themes, theme 1: working environment, including health care teams, work-related regulations and policies, equipment’s, and working environments; theme 2: work-related adaption, involving nursing clinical preceptors, teaching styles, shifts, workloads, and working adaption and personal growth.

Conclusion: The study results would be helpful for health care team, nursing clinical preceptors and nursing administers to better understand the problems and situation that newly employed nursing staff that are encountered when they try to fit into a new working environment.


EFFECTIVENESS OF ENDOTRACHEAL TUBE SKIN BUNDLE CARE TRAINING PROGRAM
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Objectives: “To maintain the skin integrity of patients” is an important quality indicator in clinical care. If facial skin tear takes place, it will difficult to secure the endotracheal tube for ICU patients, thus leading increased risks of endotracheal tube slippage and threatening the safety of the life-support system for patients. The purpose of this study is to adopt the evidence-based approach to explore the effectiveness of endotracheal tube skin bundle care in reducing ICU patients’ facial skin tear incidences.

Methods: This study is a quasi-experimental study, with purposive sampling adopted. The participants comprised 46 ICU nurses from an anonymous medical center in Northern Taiwan. Each participant received 60 minutes of endotracheal tube skin bundle care classroom teaching and 30 minutes of technical training. Using the literatures as references, the researcher designed an Endotracheal Tube Skin Bundle Care, which consists of four steps: degumming, cleaning, protection, and fixation. There are 3-5 evidence-based care measures for each step. Data collection was carried out prior to the endotracheal tube skin bundle care training (June 2014 to March) and after the training (June 2015 to March).

Results: (1) After the endotracheal tube skin bundle care training, the nurses’ skin care knowledge improved from 14.93 to 19.87 (t=11.24, P<.0001); (2) After the training, the nurses’ the endotracheal tube skin bundle care technique accuracy ratio increased from 34.62% to 94.67% (X²=108.89 P<.0001); (3) The ICU patients’ facial skin tear incidences decreased from 11.30% (June 2014 to March) to 4.78% (June 2015 to March) (P<.0001) ; (4) The ICU patients’ unplanned endotracheal tube slippage rate reduced from 0.60%(June 2014 to March ) to 0.23%; ( P<.0001).

Conclusion: Endotracheal tube skin bundle care can effectively improve ICU patients’ facial skin tear incidences and prevent unplanned endotracheal tube slippage. The study results shall contribute to the revision of the endotracheal tube care standards, thereby enhancing ICU patients’ facial skin care quality and patient safety.

UTILIZING SITUATIONAL SIMULATION IN NURSING EDUCATION TO IMPROVE NURSES’ SELF-EFFICACY OF COMMUNICATION SKILLS WHEN COMMUNICATED WITH FAMILY CAREGIVERS OF PATIENTS

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Objectives: The purpose of this study was to apply situational simulation in nursing education to increase nurses’ self-efficacy of communication skills when communicated with family caregivers of patients.

Methods: This study featured a cross-sectional, correlational research design with convenience sampling. Participants were eligible if they joined the training program of intensive nursing care. They completed the questionnaire as a pre-test data collecting after being asked to sign a consent form. And then they received the situational simulation education program and completed the same questionnaire as a post-test.

The questionnaire included a background information form and the self-efficacy of communication questionnaire (SEC questionnaire, 14 items on a 11-point ranging from 0 to 10). Higher scores of the SEC questionnaire indicate stronger self-efficacy of communication skills.

This simulation education program consisted of watching the situational simulation teaching video and discussing communication skills after watching the film. Data were analyzed using SPSS version 16.0 (SPSS Inc). Descriptive statistics were used to summarize responses for the questionnaire. One-way ANOVA and the part-t test were used to examine the difference of self-efficacy of communication skills in participants’ demographics and between pre-test and post-test of SEC questionnaire. The Pearson’ correlation was used to examine the relationship between years of clinical experience and self-efficacy of communication skills.

Results: Forty-five participants joined this program and completed the pre-and post-SEC questionnaire. The majority of participants were females (95.5%), with the mean of clinical experience 52.7 months (SD=7.8). The majority were in the intensive care unit (44.4%), but 37.8 % in the ward unit and 17.8 % in the emergency department.

Before receiving this intervention program, participants reported a moderate level of self-efficacy communication, with a mean score of SEC questionnaire 6.6 (SD=1.2). Participants reported a significant increasing score of self-efficacy communication after completing this program, with a mean 7.34 (SD=1.47; t= -2.38, p<0.05). Each item of the SEC questionnaire was also increase. The results that participants increased their self-efficacy of communication skills after completing this situational simulation education.

Moreover, nurses who had longer years of clinical experience reported higher increase score of self-efficacy communication in this education program (r=0.30, p<0.05). The result showed that there was a different trend but no statistical significance (F=2.93, p=0.06) in different ward units. The post hoc test showed that ICU nurses reported greater increased score of self-efficacy communication than those in the ward unit (M ICU=20.9, SD ICU=28.4; M ward=0.7, SD ward=24.3).

Conclusion: This study showed that nurses who completed the situational simulation education program improved their self-efficacy of communication skills. The results were consistent with a previous study by Huang, Hsieh and Hsu (2004). Furthermore, participants who were in ICU reported more increases in self-efficacy of communication skills than those in ward unit after completing the education program. This study added to the growing knowledge about the situational simulation program which would lead nurses to learn appropriate communication skills. Additionally, the simulation education program is to improve nurses’ communication skills and provide a great quality of patient-centred care.
APPLYING AN EDUCATIONAL TRAINING MODAL TO IMPROVE THE USAGE OF PALLIATIVE SHARED CARE: THE EFFECTIVENESS IN INTENSIVE CARE UNITS

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Objectives: As the medical techniques progress, more and more patients with critical condition prolong their lives. In some cases, they might have to sustain their vital signs with machines or even spend their last days in Intensive Care Unit (ICU). In this situation, the medical staff and the patients’ families inevitably question whether the current cardiopulmonary resuscitation (CPR) or the life-sustaining treatments (LST) is saving lives or prolonging the dying process. Nowadays, the care goal of the critical ill is beyond curing the disease. It has been to sustain the patients’ dignity, to alleviate the suffering, and to assist the patients and families doing the critical decision with their best benefit when the patients’ treatments might be futile.
In 2012, there was only 21 person-time in ICU involving in the palliative shared care (PSC) in our hospital. The palliative care in critical ills was expected to widespread to improve the quality of end-of-life care.

Methods: An interdisciplinary team with PSC and ICU was established to outreach the palliative care in critical ills. The aim was to improve the person-time of PSC in ICU from 21 to over 50. The current weakness was evaluated and found that the ICU staff missed the timing of consulting PSC team because: (1) the staff misunderstood the concept of palliative care, (2) they were lack of the knowledge and skills to discuss the end-of-life medical decisions with the patients and the families, (3) they did not know how to console the families’ grief when delivering the bad news. Thus, the interdisciplinary team planned to: (1) give well designed lectures of the concepts of palliative care and the practice of family meetings, etc., (2) hold regular case references monthly to review the care experiences, (3) organize the psychological de-briefing groups for the medical staff involving this plan.

Results: The person-time of PSC in ICU was improved year by year: (1) 70 person-time in 2013, (2) 117 in 2014, (3) 123 in 2015.

Conclusion: Life and death is a natural process in a person’s life, and the philosophy of palliative care is to improve the quality of care in the end stage of life, not only for the dying person, but also for the caregivers. Our ICU cooperated with PSC as an interdisciplinary team to heal the sufferings which was unable to cure. The team provided symptom control, supportive treatments and comfort care, as well as the psychological console of accompanying and empathy. In sum, the physical, psychological, social, and spiritual care in the end stage of life was provided to assist the suffered dying person to be comfortable in their last days, and the grieved family members to be able to cope with the loss, and the medical staff could sustain their resilience in this tough work.
A PRACTICAL, MULTI-INTERACTION APPROACH TO IMPROVE PATIENT SAFETY AWARENESS AMONG HEALTHCARE PROFESSIONALS USING CREW RESOURCE MANAGEMENT

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Objectives: To develop a classroom-based training program using crew resource management (CRM) in a public hospital setting and to assess whether CRM classroom-based training using a multi-interaction approach could improve in attitude among frontline healthcare professionals.

Methods: We randomly selected 240 healthcare professionals involving teamwork and direct patients care to participate in a CRM classroom-based training program and 167 (69.6%) of them showed up. We collected data from 26 January to 27 March 2015 including pre-and-post intervention surveys and post-program evaluations. The intervention was a half day program led by 2 CRM certified instructors and emphasized leadership, communication, assertiveness and situational awareness. We selected these four CRM principles based on the staff learning needs among the high-risk departments in the hospital[1]. All sessions were specially designed according to the staff learning needs and each session began with a brief introduction, followed by various group interactions such as games, video clips, open discussion and exercises. The program cost approximately HK$47,500 (US$6,129) for 167 participants, CRM instructors, materials, and audio visual support.

Results: Of the 167 participants, 164 of them completed the survey. The mean age was 38±9.4 years and 84.8% of them were nurses. After the training, the mean scores for all the survey items were found to increase to 82%. There was statistically significant positive attitude shifts (p<0.05) between the participant responses in the pre-intervention and post-intervention for items related to leadership, communication, assertiveness and communication. The biggest improvement was assertiveness which showed that their attitude towards speaking up for patient safety was greatly increased (p<0.001) at the end of the program. The post-program evaluation revealed that more than 85% of the participants found the program was useful, relevant to practice and interesting.

Conclusion: Results suggest that a multi-interaction approach, with trained instructors, can improve attitudes towards patient safety among frontline healthcare professionals. The provision of CRM education to frontline healthcare professionals can be an effective and low cost strategy for promoting CRM in a public hospital setting. Thus, we believe changes in attitudes conducive to patient safety and effective team performance.

SATISFACTION SURVEY OF TRIANEES ENGAGED IN 1-YEAR POSTGRADUATE TRAINING PROGRAM
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Objectives: The 1-year postgraduate (PGY) training program implement by the Ministry of Health and Welfare (MOHW) since 2011. Medical graduates in Taiwan are obliged to accomplish general medical training before residency. Through a trainee’s satisfaction survey, we could assess the effectiveness of the project.

Methods: The online questionnaire survey was conducted on a 5-point Likert scale in 4,070 trainees who registered with the program from 2012 to 2015. This questionnaire contents include six perspectives: hospital resources, clinical supervisors and tutors, training programs, training time, self-evaluation, and program support. Regarding the degree of satisfaction analysis in this research, the sums of “highly satisfied” and “satisfied” were adopted to calculate the frequencies of the assessed data.

Results: A total of 1,664 trainees responded to the survey questionnaires, with a recovery rate of 40.88%. Summary of questionnaire survey’s results were shown in table 1.

1. The results of the questionnaire survey showed an overall high level of satisfaction. And the satisfaction had been increasing annually.
2. In 2015, the results of the hospital resources are between 77.7% and 84.5%.
3. In 2015, the results of the clinical supervisors and tutors are between 84.7% and 91.3%.
4. About the structure and contents of training programs, the satisfaction is 78.5% in 2015.
5. In 2015, more than 93% of trainees would like to be a teacher in the future.

TABLE1.

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<td>Hospital resources</td>
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<tr>
<td>1. Hospital advocates and explains the effect of PGY training</td>
<td>80.6</td>
<td>81.1</td>
<td>77.9</td>
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<td>2. The education department of hospital manages the courses and quality of training</td>
<td>84.1</td>
<td>82.2</td>
<td>81.8</td>
<td>70.3</td>
</tr>
<tr>
<td>3. Hospital provides ways to reflect my opinions</td>
<td>77.7</td>
<td>75.0</td>
<td>77.9</td>
<td>69.1</td>
</tr>
<tr>
<td>4. Hospital provides the teaching spaces and equipment</td>
<td>84.5</td>
<td>86.9</td>
<td>82.6</td>
<td>76.8</td>
</tr>
<tr>
<td>Clinical supervisors and tutors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Teaching skill of clinical supervisors</td>
<td>91.3</td>
<td>93.5</td>
<td>93.1</td>
<td>86.1</td>
</tr>
<tr>
<td>2. The frequency of evaluation</td>
<td>84.7</td>
<td>91.8</td>
<td>88.5</td>
<td>79.2</td>
</tr>
<tr>
<td>3. There are immediate feedbacks from clinical supervisors</td>
<td>88.0</td>
<td>91.6</td>
<td>89.9</td>
<td>81.9</td>
</tr>
<tr>
<td>4. The instruction from clinical supervisors and tutors</td>
<td>90.5</td>
<td>91.4</td>
<td>91.5</td>
<td>86.9</td>
</tr>
<tr>
<td>Training programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. The structure and contents of training programs</td>
<td>78.5</td>
<td>74.5</td>
<td>72.5</td>
<td>67.2</td>
</tr>
<tr>
<td>Program support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. [2014-2015] PGY training can enhance the ability of holistic health care in my future career</td>
<td>73.2</td>
<td>68.3</td>
<td>47.2</td>
<td>34.8</td>
</tr>
<tr>
<td>[2012-2013] I support entering PGY training before my residency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I'd like to be a teacher in the future (the percent of yes responses)</td>
<td>93.7</td>
<td>90.8</td>
<td>87.7</td>
<td>71.8</td>
</tr>
</tbody>
</table>

Conclusion: This study concluded that the satisfaction of majority trainees increased every year. Overall satisfaction means good performance of this program, and high support to this training policy.
A STUDY ON IMPROVEMENT OF THE COMPLETION RATE OF PAIN CARE PROVIDED BY ONCOLOGY NURSES FOR CANCER PATIENTS

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Objectives: Background and Motivation:
Pain is one of the common and frequent symptoms of cancer patients. If the pain problem hasn’t been communicated effectively and the nurses lack proper knowledge of pain treatment and care, the completion rate of pain care for cancer patients will become low, thereby affecting the willingness of patients to participate in the treatment, reducing satisfaction with hospital care, prolonging hospital stay and increasing the medical cost.

In the hematolgy oncology ward where the authors work, the statistics of May 2013 showed that nearly 60 percent of the patients needed pain control. According to the monitoring of care quality conducted by the hospital, only 50 percent of the inpatients in this ward were satisfied with the relief of their pain. A further analysis indicated that the low satisfaction rate was caused by the nurses’ incomplete assessment and inadequate care of the cancer pain. Thus the authors were motivated to explore the related factors that affect the completion rate of pain care provided by oncology nurses for cancer patients.

Methods: Analysis of Reasons:
Among the inpatients, 50% were dissatisfied with the pain relief, and the top three reasons for dissatisfaction were as follows: 86.6% among them complained about the poor analgesic effect; 73.3% were afraid of addiction to analgesics; and 66.6% said that the doctors or nurses did not believe it when they were in pain. All these showed that the inpatients had insufficient knowledge of pain control. Besides, concerning the incomplete pain assessment and inadequate care by the nurses, by means of “A Quiz on the Knowledge and Administration of Pain Medications,” it was found that the nurses didn’t have a clear understanding of the WHO principles for using analgesics. They were just following the doctor’s order, without knowing exactly when the medication would take effect or how long the analgesic effects would last. And only four nurses (12.5%) gave correct nursing instructions to the patients in pain.

Results: Interventions:
1. Formulating a standard operating procedure for pain care through team work.
2. Holding interdepartmental discussions regularly to deal with the issues of pain relief.
3. Conducting educational training in cancer pain and demonstrating the key points in health education.
4. Revising the health education pamphlets, giving instructions to patients and family members by means of slide shows on knowledge of pain, and incorporating pain assessment into the change of shift report.

Results:
After the nurses learned the proper knowledge of pain medications, the complete pain assessment procedure and how to give nursing instructions, the completion rate of nurses’ pain care for cancer patients was raised to 74.9% in June 2013, and then to 98.7% in December 2013. A follow-up showed that the rate of the patients’ satisfaction with the pain control rose from 50% to 92.3%.

Conclusion: Assessment of procedures, teaching, health education pamphlets, and cooperation with other medical teams in joint care have enabled the nurses in this hematolgy oncology ward to teach the patients with consistent methods. Moreover, through evaluating a patient’s satisfaction rate with pain control by means of the Brief Pain Inventory (BPI) questionnaire, strengthening the checking of medical records and promoting relevant knowledge, the nurses can put what they have learned into clinical practice more efficiently, thus enhancing the quality of pain care for cancer patients.
LONG-TERM EFFECTIVENESS OF THE DIABETES CONVERSATION MAP PROGRAM: A PRE-POST EDUCATION INTERVENTION STUDY AMONG DIABETIC PATIENTS IN TAIWAN

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Objectives: Objective: Health education is compulsory for all patients with chronic and life-threatening disease, especially patients with diabetes mellitus who self-manage their disease. The Diabetes Conversation Map Program is a novel, group-based, interactive diabetes management education program that has been shown to help patients adapt to their disease. So the study aimed to examine the long-term effectiveness of the Diabetes Conversation Map Program among diabetes patients in Taiwan.

Methods: This quasi-experimental study used a purposive sampling method to recruit diabetic subjects from a hospital in southern Taiwan between January and May in 2014. A total of 95 subjects were recruited. In addition to routine care, the experimental group patients (n=49) received seven Diabetes Conversation Map sessions delivered over two months, while the control group patients (n=46) received routine care only during the same period. After the experimental group completed the Diabetes Conversation Map sessions, medical records data of both groups were reviewed and structured questionnaires were collected at three time points: before intervention, three days after intervention completion, and three months after intervention completion. Baseline and post-intervention parameters were compared between the two groups and Diabetes Conversation Map effectiveness was determined by generalized estimating equations model.

Results: Significant improvements were found in body mass index, blood glucose, glycated hemoglobin, self-monitoring of blood glucose and diabetic health literacy in the experimental group compared to controls (all $p<.05$), with no significant changes in depressive symptoms. Positive effects were maintained for 3 months after the Diabetes Conversation Map education intervention (all $p<.05$).

Conclusion: Findings of this study support the long-term effectiveness of the Diabetes Conversation Map Program for educating diabetes patients. Results may serve as a reference, helping healthcare professionals provide appropriate interventions to improve adaptation processes and clinical outcomes of diabetes patients.
REDUCTION OF ACCIDENTAL LEAKS IN STOMAS OF INPATIENTS BY USING QUALITY CONTROL CIRCLE METHOD

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Objectives: Colostomy and ileostomy were created for diversion of fecal material in patients with gastrointestinal disorders. Complications associated with stomas are frequent and range from inconvenience to life threatening. The complications of accidental leaks include irritation of skin and embarrassing social situations. Repeated appliance of the stoma adhesive bags also increases the loading of nursing staff. We reported our experience of reduction accidental stoma leaks by quality control circle method (QCC).

Methods: The QCC team consists of multidiscipline members, including surgeons, nursing staff of general surgical ward, stoma therapist and staffs of center of quality management. The target of improvement was reduction of accidental stoma leaks and re-appliance of stomal bags. The first step was definition of the accidental leaks of stoma. We used the unplanned re-appliance of stomal bags as the proxy of accidental leaks. As the base line, the rate of accidental leaks which need re-appliance of stomal bags was 25.56% between January to June 2014. The target rate was set as 13.0%, a 12.5% reduction of the base line rate. Through fish bone and pareto charts to conduct cause analyses, the QCC team discovered that the top three causes of accidental leaks were related to inadequate stoma formation, unskilled manipulation of stoma bags, and increased fecal and flatus content. Our team designed three strategies to improve the condition. We arranged reeducation of optimal stoma formation to surgeons. The nursing skill and appliance were educated to the junior staff by senior staff. Observation and self-designed teaching aids were used to improve the skills. We designed lengthened stomal bag to increase the capacity. During the study period, the QCC team also checked the skin erosion related to accidental leak and the satisfaction of nursing staff by questionnaire.

Results: The rate of accidental leak had been reduced from 25.56% in August 2014 to 5.88% in December 2014. As a result, the rate of skin erosion was 0% after the interventions, compared to the base line rate of 32%. The satisfaction of nursing staff increased from fair to good.

Conclusion: Optimal care of patients’ stoma are composed by improvements in all directions. “Team work” can not only provides brainstorms, but also lead to thorough solutions. In order to continuously improve quality of stomal care, the QCC team keep monitor the leak rate and set the skill-training program in annular education of nursing staff and surgeons.
EXPERIENCES OF NURSE PRECEPTORS REGARDING THEIR TRAINING PROGRAMS
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Objectives: Although numerous studies have reported that training exerts crucial effects on the competency, clinical skills, and satisfaction of nurse preceptors in guiding new graduate nurses (NGNs), not every nurse preceptor is sufficiently trained to assume this expanded and complex role in a highly complex and specialized healthcare environment. In addition, this study addressed the following research questions: (1) Which components of the training courses were the most and least effective in fulfilling the learning needs of nurse preceptors, and which were the most and least clinically useful for nurse preceptors in mentoring NGNs during their preceptorship? (2) What were the nurse preceptors’ experiences as preceptors? The present study specifically focused on nurse preceptor training courses to improve the quality of preceptor training content by obtaining feedback from nurse preceptors that can be provided as a reference to hospital nursing educators. Furthermore, by using the findings of this study, hospital nursing educators may develop an infrastructure for preceptor training courses to satisfy the future learning needs of nurse preceptors completely and improve the training outcomes within the contemporary nursing care environment.

Methods: A mixed method design was conducted. Nurse preceptors who currently work at one of eight hospitals in northern Taiwan were recruited to participate in this study. A questionnaire survey and focus group interviews were conducted. A training course perception scale was developed and generated based on the current nurse preceptor training programs offered in eight hospitals. Focus group interviews were conducted to obtain additional information on nurse preceptors’ experiences in working as preceptors. The survey data were analyzed using descriptive statistics. Interview data were transcribed and analyzed using a qualitative content analysis approach.

Results: The results from the surveys of 386 nurse preceptors revealed that most courses included in the current preceptor training programs did not fulfill the learning needs of nurse preceptors and were clinically impractical. The most necessary and clinically useful course was the quality Improvement and communication skills course, whereas the least useful course was the adult learning theory and principles course. Three themes were identified as problems based on the three focus group interviews conducted with 36 nurse preceptors: inadequate training was received before nurses were appointed as nurse preceptors, the courses were more theoretical rather than practical, and the preceptors experienced stress from multiple sources.

Conclusion: The results revealed that the current preceptor training courses are impractical; therefore, the content of preceptor training courses must be altered to fulfill nurse preceptors’ training needs. Furthermore, problems identified through the focus group interviews reinforce the survey results.

THE EFFECT OF EDUCATION PROGRAM ON PERCEPTION OF PATIENT SAFETY CULTURE AMONG NURSING STAFFS IN A UNIVERSITY HOSPITAL IN TAIWAN.

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Objectives: Patient safety culture reflects the common attitudes, value and behaviors toward patient care in a healthcare institute. Positive culture could lead to good team work, reduced errors and high care quality. Patient safety culture among health staffs could be improved by several measures and educational programs are one of the important approach to enhance awareness, improve skills and share experience. Therefore, it is common for hospitals to provide education programs, but their effects on safety culture perception were not well-studied yet. We hypothesized that receiving education program could augmented the perception of patient safety culture among nursing staffs. Our goals were to survey the change of patient safety culture among nursing staffs longitudinally and investigate the influence of educational programs and other demographic features.

Methods: This is a retrospective study with repeated measurement in a university hospital in northern Taiwan. A hospital-wise survey of patient safety culture was conducted annually via an online system with a Taiwan Chinese version of Safety Attitude Questionnaire (SAQ), including 6 domains: teamwork climate, safety climate, stress recognition, working conditions, perceptions of management and job satisfaction. Only the data from nursing staffs who had answered the survey in 2014, and finish at least 2 times survey during 2012 and 2014 were included. The intervention was the educational programs of patient safety provided by the Center for Quality Management between the surveys in 2012 and 2014. The center provided 16 courses in the study period. The scores of each domain were computed and the effect of education program on them was analyzed with Generalized Estimating Equations (GEE). Job seniority and position (supervisor or not) were included as confounders.

Results: Forty and thirty-four nursing staffs completed the SAQ for 2 or 3 times between 2012 to 2014. Among them, 16.0% had attended at least one educational program. 20.0% of the supervisor had participated in education programs, while 15.1% of the non-supervisor were participants. The job seniority between 10-20 years had highest participation rate (24.5%) than others. At baseline, stress recognition had the highest SAQ score and perception of management had the lowest for all subjects and the SAQ score in each domain was similar between 2 groups who received education programs or not. The supervisors had significantly higher SAQ scores than non-supervisors in all domains, except for stress recognition. At follow up, there was a significant reduction of SAQ score in teamwork climate (69.4 to 66.2) and safety climate (68.2 to 65.6) for all subjects. The increase was also significantly higher among supervisors than non-supervisors in most domains. After adjusting for job seniority and position, attending education program was associated with higher SAQ score in working condition ($\beta=2.19$, $p=0.04$) and perception of management ($\beta=2.87$, $p=0.004$) through GEE analysis.

Conclusion: The current studies disclosed a positive effect of education programs on the SAQ scores of work conditions and perception of management. Supervisors had higher perception of patient safety and it raises the precautions for supervisors not to overlook the relatively low perception of safety culture among non-supervisors. There were some limitations of the current study. First at all, the intervention was not a randomized and the participants might have been more engaged in patient safety activities. Besides, the education programs were heterogeneous and we were not able to clarify the effect of specific programs. Lastly, we did not include the effect of other education programs the subjects received before the study periods or through other resources.
THE VALIDITY OF COMPLETION RATE OF PGY TRAINEE SATISFACTION QUESTIONNAIRE REGARDING COMMUNITY-BASED TEACHING PROGRAM: A SOUTHERN REGIONAL TEACHING HOSPITAL AS AN EXAMPLE

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Objectives: A Southern regional teaching hospital joined the partnership for community-based teaching program for PGY trainees. The hospital will schedule a two-month training program for the PGY trainees. To increase the validity of the trainee satisfaction survey regarding the contents of the program and to apply the results as the evidence for future improvements, the changes of questionnaire formats may be applied to evaluate the validity of the survey.

Methods: In order to analyze the effects of the program, the PGY trainees were required to fill out two anonymous satisfaction questionnaires before and after the two-month community-based teaching program. A negative worded question (i.e. I failed to learn from the on-site practice sufficiently at the training unit) was added in the questionnaires to examine whether the trainees were aware of the differences between the negative and positive worded questions and thus evaluate the validity of the satisfaction survey. The study period was between March 2013 and October 2016.

Results: Seventy-six copies of questionnaires were completed between March 2013 and October 2016. Each questionnaire consisted of 12 questions, including one negative worded question. The questions were 5 points each. The higher scores, the better satisfaction; but in negative worded questions, the higher scores, the worse satisfaction. Among those 78 completed questionnaires, the scores of negative worded questions in 18 copies were 3-5 points per question, which were consistent with the scores in positive worded questions. The results indicated that the respondents were aware of the negative worded questions. By contrast, 12 copies out of 78 completed questionnaires gained 3-point (i.e. no comment) in individual negative worded question while 4-to-5-point per question was observed in positive worded questions. The results exhibited that the negative worded questions may be confusing to the respondents. In the rest 48 completed questionnaires, the scores for either negative or positive worded questions were both 4-5 points, which demonstrated that the respondents may not read the questions carefully, and thus resulted in up to 61.53% of invalidity.

Conclusion: Most of the PGY trainees (61.35%) failed to read the satisfaction questionnaire carefully before answering the questions. Moreover, approximately 15.4% of respondents were confused by the design of negative worded questions. It may indicate that the questions were more regarding the adequacy of the program contents rather than trainee’s satisfaction toward the training program. The study results imply that an amendment of the questionnaire is required to increase the validity of the survey. For example, trainee’s satisfaction along with their opinions about the adequacy of the program should be both provided to the respondents for answering the questions to eliminate the confusion while reading the questionnaire. In addition, negative worded questions are required to be heighted with bold fonts, so the respondents can be aware of different natures of the questions and consequently give individualized answers (e.g. their satisfaction or opinion about the adequacy of the program) to the questions regarding community-based teaching program by concentrating on the questionnaire. As a result, the hospital may acquire more valid information and thereby arrange a better and more comprehensive community-based teaching program for their PGY trainees.
THE DEVELOPMENT OF A BRIEF DIETARY ASSESSMENT TOOL FOR JAPANESE TYPE 2 DIABETIC PATIENTS

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Objectives: Independently of total caloric intake, a better quality of the diet is associated with lower risk of diabetes and metabolic syndrome. The aim of this study was to evaluate the relationship between a brief dietary assessment tool and metabolic profile in the Japanese patients with type 2 diabetes.

Methods: A cross-sectional survey including 309 Japanese patients with type 2 diabetes was conducted in Nerima, Tokyo, Japan. To evaluate the quality of dietary pattern, we created the Japanese healthy Mediterranean diet score (JHMDS) as a reference to the Mediterranean diet score (1). Briefly we asked the patients how many days in a week they had consumed each food item in dietary questionnaires. A value of 0 or 1 was assigned to each food component using median days as cut-off. The score range was 0 to 11. The JHMDS positively weighted vegetables, fruit, whole cereals, nuts, low-fat dairy, fiber, monounsaturated fatty acid, and alcohol in moderate amounts; while it negatively weighted red meat and palm oils. Clinical data from medical examinations were extracted and analyzed.

Results: Individuals in the highest tertile of the score (8-11 points) were higher HDL-cholesterol values than those in the lowest tertile of the score (0-4 points) (51.2±17.2 mg/dl, vs. 57.6±15.1 mg/dl, p<0.03). Individuals in the lowest tertile of the score were higher ALT values. No association was found between the score and HbA1c values.

Conclusion: JHMDS, a brief dietary assessment tool can capture the association between metabolic profile and the quality of diet. A brief tool may have the advantage of allowing immediate feedback to participants in interventional studies and may be useful for further assessment of diet and diabetic complications.

OBJECTIVES: Chemotherapy induces neutropenia, which can threaten patients’ lives when they are infected. Deadly bacteria come from various types of food; hence, a low-microbial diet can decrease the risk of infection. Previous studies have indicated that when child patients with Cancer approach hospital discharge, they typically exhibit a low correct diet cognition rate and thereby extend their hospitalization periods. Therefore, this program was conducted to revise diet care guidance for improving the correct cognition rate of child patients with Cancer.

METHODS: The survey period lasted from April 30 to October 31, 2014. The results revealed the following reasons regarding the low correct cognition rates of the participants: insufficient in-service training, uninformative care guidance booklet, incomplete care guidance standards, the lack of appropriate care guidance instrument, insufficient assessment content, and the lack of a monitoring system. The following solutions were adopted: revising the care guidance booklet content, creating care guidance instruments, revising the assessment content, administering in-service training, revising the care guidance standards, and establishing a monitoring system.

RESULTS: The results revealed that the correct cognition rate of the child patients was increased from 65.8% to 94.7%, and that of the nurses was increased from 77.2% to 96.1%.

CONCLUSION: Implementing this program enhances the guidance provided to child patients with Cancer. Thus, the child patients could receive individualized and comprehensive care.

STAFF EMPOWERMENT: SELF SCHEDULING OF NURSING ROSTER IN SURGICAL WARD

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Objectives: 1. To empower all nurses self-scheduled own day shift duties under the pre-set rules and regulations. 2. To promote staff communication and increase staff satisfaction by sharing responsibility on self-scheduling nursing duties.

Methods: The project was piloted from May 2015. Convenient sampling and involved all clinical nurses. Written rules and regulations were set up to safeguard nurse supervision and adequate coverage in manpower each shift. Meetings and education were given to staff prior the project in order to introduce self-scheduling process. A duty facilitator was appointed in rotation base to ensure each duty roster pattern was completed smoothly and had adequate manpower coverage. Engaging all nurses responsible to schedule own day shifts and fill up duty worksheet before deadline. During the whole process, ward manager monitored the process, encouraged participation especially the junior nurses and reassured that they can consult their supervisors for any problems encountered. The project was evaluated after 8 months on December. Pre and post staff questionnaires using five-point Likert Scale to collect the data of staff satisfaction. Conducted individual staff post project interview by a headnurse. Objective data including staff sick leave rate, duty amendment and the staff turnover rate were measured retrospectively.

Results: Self-scheduling of nursing roster had been in use for over 8 months. 1. The overall result of staff satisfaction was positive. More than 80% staff agreed self-scheduling can increase flexibility. 87% staff agree that self scheduling can meet personal needs. Over 60% staff agreed that communication among staff was increased and they more preferred to self-scheduled their own duties. 2. The sick leave days have 47% decreased and the number of duty amendment have 64% decreased after the self-scheduling implemented. The staff turnover rate was also decreased from 11.1%(from September 2014 to April 2015) to 0%(from May 2015 to December 2015). 3. The comments from individual staff interview were positive. Majority staff said that they can have better control over their times and personal lives. Over 80% said that they can make their own planning in advance and have improvement in staff communication.

Conclusion: Self-scheduling of nursing roster promotes nurses' autonomy and increase staff's satisfaction, promotes staff retention, improves communication among staff and develops staff's negotiation and problem-solving skills. Moreover, the role of the duty facilitator could also increase staff's responsibility to overlook the manpower situations. Management level agreed that team spirit was improved because of increased communication and understanding among nurses. Successful self-scheduling can help to maintain a stable workforce, increase staff moral which in turn can help to improve quality of patient care.

TO IMPROVE THE INTEGRITY OF ISOLATION PRECAUTIONS FOR CLEANING STAFFS
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Objectives: Nosocomial infection is the indicators of medical care. Each hospital employee is the major role of preventing nosocomial infection. Isolation ward is the need for strict implementation of infection protection unit. But unfortunately cleaning staffs are easily ignored, we found cleaning staff turnover rate high, they knowledge deficit even illiteracy and advanced age. Because usually did not understand corresponds the isolation protective measure to dread working conditions, then a high risk of exposure to occupational injury happens, that encourage us to improve by project.

Methods: Use an actual observation method, Hospital isolation hospital ward Statistics January 2015 to March check the number of cleaning staffs a total of 174 people,
1. In and out isolation room do isolation precautions protective measures is poor
2. Environmental control not really clean implemented
3. cleaning staffs are mostly illiterate elderly, high rates of speak Chinese mainland provinces Language
4. Lacks the isolation prompt system indication.
Through the project improvement adopt a fellow method
1. Organized cleaning staff education and training programs,
2. Poster of protective device instruction,
   (it contains the exact wearing procedure of surgical and N95 mask, gloves and isolation gown. To strengthen memory of the correct procedure, we paste the poster of protective device instruction to instructing cleaners to use protective devices properly through illustrations and simple wordings).
3. Chart of infectious excrement disposal : (Post the chart of infectious excrement disposal for cleaners to bleach and soak the excrement correctly as well as dispel pathogen transmission route.)
4. Making multiple provinces Language equipment protective equipment care guide DVD
5. Construction cleaning staff professional and technical audit review mechanism

Results: Based on the statistics in terms of cleaning staff isolation precautions, the result is as follows:
1. The ratio of correctly using isolation precautions was improved from 24% to 89% ;
2. Environmental cleaning and disinfection prior to improve the accuracy increased from 18% to 97%;
3. The occurrence of asking isolation precautions was reduced from 39 to 7 cases/month ;

Conclusion: The project pluralistic and diverse learning mentoring programs point of departure for the design of by picture instruction resulting in isolation poster instruction.
Individual behavior patterns consistent with language communication teaching videotapes
This method not only served as a reminder for illiterate employees, but also helped reduction of consulting time, which have received positive clinical responses. Such creative concept helps all employees conduct their tasks and practice the aim of securing patient safety and medical quality.

Yueh-Pi Chiu1 · Mei-Nan Liao (2011). Hospital Perspective on Nursing Staff Role and Function in Infection Control The Journal of Nursing, 58(4), 2011
THE EXPERIENCE OF AUDIT TO ENHANCE THE EFFECTIVENESS IN THE HOSPITAL QUALITY IMPROVEMENT

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Objectives: Audit is an effective and reliable tool, and its results can add to the unit prevent or improve. In Taiwan, many hospitals import ISO 9001 to build themselves quality management system (QMS) and achieved verification, and our hospital also do it. We according to ISO spirit to build documents control system and internal audit, and let all staff participate. We have implemented this QMS system for nearly 10 years, and want to know effectiveness of the internal audit and whether it can effectively maintain the standardization work to ensure the correct effectiveness of workflow.

Methods: When we build a preliminary documents control system include medical, routine care and administrative procedures. We invited external lecturer to hold audit workshop from 2008, and thus train internal auditor to check the procedures, and ensure the same among speak, write and do. We set up auditor training program, and divided three training level of observers, auditor, and leading auditors. We hold to internal audit in October, and all effective procedures were scope, just qualified auditor can participate the internal audit. Auditors can use document review, observation, and staff interview to ensure workflow effectiveness. If check results have incompatible, and thus feedback to improve. We used descriptive statistics to analysis numbers of auditor, units, and internal. We also want to know difference of audit compliance rate from 2008 to 2015.

Results: We have implemented internal audit for 8 years, auditors for 68 auditors increased to 109 in 2008 to 2015, audit units for 10 units increased to 68 units include 18 administrative units and 50 medical units. Document numbers of procedure for 122 numbers increased to 1112 numbers, and compliance rate for 77.87% increased to 96.58% (p<0.001). All incompatible items after two months were recheck by the same audit team, and next year will be recheck again. In addition, audit satisfaction average scores of auditor or unit were over 4, and agreed to audit their job help.

Conclusion: The study found implemented audit can maintain the correct effectiveness of work, and also found what point need to improve. Finally, focus on promoting internal audit, and that can prevent difference between workflow appear in the units. In our experience, staffs were not understand the audit process in 2008, but with the increase numbers of audit, we found that auditors and audit units have been learning from each other in the process, and it also can help quality of more stable, and improvement.
IMPROVING OPHTHALMOLOGISTS ADHERENCE TO INITIAL WORKUP AND SETTING TREATMENT TARGET IN PRIMARY OPEN ANGLE GLAUCOMA PATIENTS THROUGH EDUCATION

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Objectives: Primary Open Angle Glaucoma (POAG) is the most prevalent form of glaucoma and a leading cause of irreversible blindness. Major risk factors for blindness include severity of disease at presentation and life expectancy. Appropriate and timely investigations are crucial to determine severity and risk of progression. As intraocular pressure (IOP) is the major modifiable factor, setting and achieving a target IOP is prudent to halt progression in long run. Through this work, we aim to compare the change of adherence to ordering standardized investigations before and after intensive reinforcement of medical staff through seminars and resident tutoring, including (1) gonioscopy, (2) optic disc photography, (3) retinal nerve fibre layer imaging by optical coherence tomography, (4) central corneal thickness and (5) automated or manual perimetry. We benchmark the above tests to be performed within 6 months after establishing the diagnosis.

We also aim to compare the percentage of patients where (1) ophthalmologists establishing the diagnosis set a target IOP and (2) IOP reduction reached >= 20% from baseline after 6 months, before and after intervention.

Methods: The reinforcement work was done between January to June 2012, by means of seminars and resident tutoring. Pre- and post-intervention retrospective reviews of medical records were performed. 50 patients where POAG diagnosis was made before January 2012 and 50 patients on or after July 2012 were analyzed. All patients were followed up for at least 6 months. Odds ratios were determined to compare the outcome parameters, in addition to descriptive statistics.

Results: There was improvement of performing the 5 baseline tests within 6 months of diagnosis, where optic disc photography, retinal nerve fibre layer imaging and central corneal thickness reached a statistically significant increase between study periods (p < 0.05). However, even after intervention, only 66% of patients received gonioscopy within 6 months and 26% of cases where doctors had documented an IOP reduction target. 78% of patients had their IOP reduced by >= 20% at 6 months, which showed a small non-statistical significant increase.

Conclusion: The reinforcement measures satisfactorily facilitate ophthalmologists' compliance to order initial tests to obtain baseline disease status and prognostic indicators. However, there are rooms of improvements regarding gonioscopic examination which classifies the type of glaucoma, and setting target IOP according to the stage of disease and probability of blindness.
PARTICPATING AT TAIWAN TALENT QUALITY-MANAGEMENT SYSTEM (TTQS) LESION FROM AT ONE REGIONAL HOSPITAL IN 2015

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Objectives: In the era of knowledge economy, human capital is important factors of competitiveness. Accordingly, The Workforce Development Agency of Ministry of Labor formulated “Taiwan Talent Quality-Management System, TTQS” to ensure the reliability and accuracy of the training process and enhance organizational performance. Our institution is a regional teaching hospital. We introduced TTQS in 2009 and gained the silver medals in 2013 and 2015. Through the 5 domains (Plan, Design, Do, Review, Outcome, PDDRO) and 19 indicators of TTQS, we evaluated the outcomes of the strategical human resource development in hospital.

Methods: The 5 domains (PDDRO) linked together. Plan (Vision / Mission / Strategy expose and objectives set, training planning and business objectives link managerial capabilities and responsibilities, training system and core categories). Design (Functional analysis, training system design, stakeholder participation, selection and procurement of training services). Do (The degree of implementation of training, transfer of learning outcomes, training materials management information). Review (Assessment reports and periodic analysis, monitor and correct abnormal case). Outcome (Level 1 ~ Level 4 assessment: reaction, learning, behavior, performance, executives’ awareness, training results).

Results: To link personnel functions stronger with training planning and business objectives, we revised the job description document. First, the document analyzed the personnel functions and professions which incorporated with the needs of individual education and training to enhance professionalism. Second, the document incorporated with strategy map which can link training planning with business objectives and increase the organization efficiency.

Conclusion: The impact of TTQS to our hospital described by Balanced Score Card. 1. Internal business processes (system and processes): organization restructuring, proposing new medical technologies and patents, increasing numbers of quality improving projects, improving efficacy and quality of e-learning. 2. Learning and growth (learning new technology): improving nursing upgrading and diploma, increasing internal and external training hours, certificate numbers; setting up annual plan for whole institute which included learning objectives, intergrading courses from different departments, increasing external training hours, obtaining the opportunity of international benchmark learning, training special function personnel by Balanced Score Card method. 3. Customer (innovating market and customers’ value): increasing market share, proportion occupying of global budge, reputation and positive reports of mass media. 4. Financial: increasing business profit, productivity per capita (revenue rate of change per person: 987, 444 in 2012, 1044063 in 2013, 1,564,071 in 2014; operating profit rate of change per person: 24,452 → 85,246 → 128,261; training fee per person: 12,856 → 18,912 → 18,990). 5. Social perspective: charitable activities, health screening, international marathon, operation of industry and university cooperation.
QUALITY IMPROVEMENT IN PHARMACY EXTERNSHIP EDUCATION TO ENHANCE MEDICATION COUNSELING FOR ACUTE ANGINA

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Objectives: Angina is a major public health problem in Taiwan. It is essential that pharmacists provide comprehensive instructions on sublingual nitroglycerin (SLNTG) for acute angina because poor understanding can impact patient safety. In recent years, SLNTG recommendations in Taiwan have been updated to meet the circumstances particular to our country. However, it contains disparities with other international guidelines which can cause confusion among health professionals. This necessitates urgent action to improve patient safety. A new quality improvement initiative was implemented in 2015 at our medical centre with the objective to train future pharmacists to be better equipped with the knowledge and confidence to help angina patients to take SLNTG properly.

Methods: All fourth year pharmacy students enrolled in our 2015 externship program were required to participate in this quality improvement initiative. They must demonstrate competency to provide quality pharmaceutical services through measured outcome. As a result, quality indicators for satisfactory SLNTG counseling were developed based on the latest recommendations from Taiwan Society of Cardiology and American Heart Association. Senior drug information pharmacists conducted a literature review and identified areas in the curriculum that required improvement. A new curriculum was implemented with emphasis placed on updated guidelines and dispelling common misconceptions. The new curriculum includes an interactive workshop with a lecture on guideline recommendations, demonstrations on SLNTG counseling, group discussion and role play exercises. The objectives were reinforced with structured practical training: students shadowed drug information pharmacists providing SLNTG counseling, provided patient counseling under pharmacist supervision, conducted mini-CEX assessment and received feedback from senior pharmacists. The students completed an open-ended questionnaire before and after the education program to assess whether the students met the quality indicators for satisfactory SLNTG counseling; improved in knowledge and self-reported confidence.

Results: The new curriculum helped pharmacy students to become more competent in providing SLNTG counseling: 90% met the quality indicators for satisfactory SLNTG tablet counseling post assessment, compared to 30% pre-assessment. Majority of the students had misconceptions, especially in regards to potency: SLNTG tablets have a shelf life of 1-6 months after opening the bottle (80%) and a tingling sensation felt under the tongue is a sign of medication potency (60%). These misconceptions could be detrimental to patient safety because patients would receive incorrect information on the potency of a life saving medication. Fortunately after participation, all students (100%) have the correct concepts: SLNTG can be kept until the date specified by the manufacturer and a tingling sensation is not a sign of product potency. Additionally, the students perceived their ability to educate angina patients improved with all students (100%) felt “confident” or “very confident” with providing SLNTG counseling post-assessment compared to 70% pre-assessment.

Conclusion: The new externship curriculum demonstrated our pharmacy department’s strive for quality improvement in pharmaceutical care. The results showed that it helped the students to take evidence-based guidelines into clinical practice, dispel common misconceptions, improve confidence and in turn, provide the best possible care to angina patients when they practice as pharmacists in the future.
THE EFFECTIVENESS OF CLINICAL COMPETENCY BY USING MINI-CEX IN A SOUTHERN TEACHING HOSPITAL

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Objectives: The competency nursing personnel obtain could have a crucial effect to the quality of caring patients. The skill could also be helpful in not only retaining nursing personnel with respect of nursing profession, but also improving nursing staffs’ qualities and abilities, which could even affect their career development in the future. The purpose of the study is thus to understand how to apply Mini-clinical Evaluation Exercise (mini-CEX) to clinical nursing personnel, understand the clinical competency of nursing personnel in a certain medical center of Southern Taiwan, and find out the relevant factors.

Methods: The study was conducted with the cross-sectional study and correlation analysis design. 308 nursing employees from a certain medical center in Southern Taiwan had been selected as the subject of the study by the method of purposive sampling. The mini-CEX and 10 assessment items of operational instruction had been introduced into the study. The overall value of Cronbach's alpha was 0.94. The results had also been analyzed with SPSS/Window19.0; the method of the analysis had been proceed with descriptive statistics, as well as Pearson correlation coefficient.

Results: The point of nursing personnel’s overall performance was 7.23±1.23, and the points of the assessment items were separately listed as follows: 7.03±1.28 for the overall clinical competence, 6.98±1.33 for the humanistic qualities/professionalism, 6.91±1.31 for the medical interviewing skills, 6.89±1.32 for the organization/ efficiency, 6.88±1.36 for the counseling skills, 6.88±1.31 for the clinical judgment, and 6.82±1.34 for the physical examination skill. The point of the instructors’ satisfaction in the study was 7.29±1.07, and the point of the trainees’ satisfaction in the study was 7.30±1.15. There was no obvious difference while comparing the competence of nursing personnel with the instructors from different ranks and seniorities. An obvious difference was discovered while comparing the competence of nursing personnel with their seniorities and times of practicing the nursing skill. In addition, there was an obvious correlation between the competence of nursing personnel and the points of different assessment items.

Conclusion: The result of the study showed that the highest point was the nursing personnel’s overall performance, and the lowest point was the physical examination skill. The result could be provided as a reference when drafting in-service training program and service quality improvement program for nursing personnel.

References:

CAPACITY BUILDING FOR PERFORMANCE MANAGEMENT IN A UNIVERSITY MEDICAL CITY IN RIYADH

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Objectives: There is a reinforcing relationship between quality improvement and performance management (PM). PM is the regular collection of data to assess whether the correct processes are being performed and desired results are being achieved. A decision was taken in the institution inspired by its healthcare quality and safety movement to launch a project to develop and implement a PM system. The aim of this study at this stage was to assess the innovative learning experience based on a hybrid educational model and to improve the employees' skills and competencies through the PM starter training.

Methods: An educational intervention marked the launch of the PM project in the Medical City. This proposed hybrid training model included a pre-request reading list, traditional classroom lectures and an online e-learning component that included an additional reading list, forum discussion, action plan webinar and submission of a PowerPoint presentation and learning journal notes.

Results: The total number of participants was 175 from different specialties both from clinical and non-clinical areas (e.g. Surgery, Emergency Medicine, Medicine, Psychiatry, Family Medicine, Pediatrics, Human Resources, supportive services, etc.) from 60 different departments in King Saud University Medical City (KSUMC). A series of seven workshops were conducted over a period of one month. The scientific content of the workshop was developed into 2 levels. The categorization was based on the background experience and work related to PM and the expected future roles and responsibilities towards PM of the nominated staff. The first level of workshops included a two-day-training for 115 participants that received basic knowledge on PM. The participants perceived that the top 2 topics that were expected to be most useful and interesting were the 'KPI Selection' and 'KPI documentation and understanding'. Post-training evaluation and feedback from participants showed an average grade of (4.64) out of 5. The four training sections that were evaluated included; Training curriculum (TC) (4.54/5), Facilitator and facilitation activities (FFA) (4.69/5), Administration support (AS) (4.62/5) and General assessment (GA) (4.7/5).

The second level of workshops included 3 days that consisted of an advanced training for PM. A total number of 60 trainees participated. They perceived the topics of (KPI selection, KPI documentation and data visualization) to be most useful and interesting. The post evaluation revealed an overall grade of (4.5/5) and for the 4 separate sections: TC (4.52/5), FFA (4.60/5), AS (4.5/5) and GA (4.69/5).

The passing rate of the participants was 87% from the first trial. Participants who did not pass or who were delayed beyond the deadline for assignments were offered a second chance to enter the exam and/or submit their work. This trainee-friendly approach rendered the success rate to raise to 100% at the time of the hard deadline.

Conclusion: The proposed educational model was shown to be successful in advancing the knowledge and skills, and unifying the concepts and perceptions. It is expected to reduce the future resistance of staff especially those who participated in the training. The outcome of this study will be used as a baseline and guide for further development and implementation of the PM project in the Medical City.
EVALUATION OF PRETEST AND POSTTEST KNOWLEDGE AFTER CPR REVISION TRAINING PROGRAMME AMONG HEALTH CARE WORKERS IN RURAL AREA IN GUANGDONG CHINA

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Objectives: Introduction
Sudden cardiac arrest accounts for over 500 thousands deaths in China annually. Estimated survival rate is only 2%. Early effective CPR remains the key to enhance survival rate. In some rural area in China, not all health care workers have the chance to receive formal CPR training. To address the need, a series of volunteer services on conducting CPR revision training to health care workers in rural area in Guangdong was initiated by emergency nurses from Hong Kong in 2015.

Methods: Thirteen classes involving health care workers from village clinics or hospitals in rural area within Guangdong province has been conducted in 2015 & 2016. Doctors and nurses trained in western or traditional Chinese medicines (TCM) were both welcomed. A total of 418 data sets were available for analysis. A one-group pretest-posttest design was adopted. In the CPR revision classes, participants were given lectures on concepts of CPR, as well as practical sessions on doing CPR on manikins. They completed the same set of 10-questions questionnaire before and after the class, with a possible score from 0 to 10. Both scores were later on compared and evaluated, using paired t-test statistics in SPSS.

Results: The overall mean score of the pretest and posttest are 5.03 and 7.42 respectively. The calculated t value is -25.241 and a p-value <0.001. This suggested that there is a significant increase in participants' level of knowledge regarding concepts of CPR from pretest to posttest. Generally speaking, there were significant improvements in their level of knowledge regarding many specific areas, though weaknesses on their awareness of scene safety, concepts of CPR in patients with advanced airway, and the use of automatic external defibrillator (AED) were identified. Doctors trained in Western or traditional Chinese Medicines scored higher than nurses in both pretest and posttest. Pretest and posttest mean score of doctors were 5.06 and 7.50, while that of nurses were 4.83 and 7.14. Besides, participants received prior CPR training more than 3 years ago scored significantly lower than those who had CPR training within recent 3 years.

Conclusion: The CPR revision classes resulted in a statistically significant increase in the pretest to posttest scores. It can be concluded that the CPR revision classes significantly improve the level of knowledge regarding concepts and applications of CPR of village health care workers, regardless of their medical background and prior CPR training. Subsequence classes are expected to emphasize more in the weak areas identified. To maintain and update the CPR knowledge of village health care workers, CPR-related revision training should be considered implement on a regular basis. Further research is needed to broaden the study. While this evaluation focused on knowledge of CPR, evaluations on the actual skills of CPR could be included in the future studies.
ENHANCEMENT OF PATIENT-CONTROLLED ANALGESIA (PCA) SAFETY WITH EASE PROGRAM

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Objectives: To guarantee safe use of Patient-Controlled Analgesia (PCA) by
(1) Reinforcing nurses’ knowledge on PCA
(2) Enhancing completeness and correctness of PCA documentation
(3) Ensuring PCA-Related complications are identified and managed promptly

Methods: The 4 main elements of this program could be summarized as the mnemonic: EASE

Education: Education sessions were held by Pain Team to enhance nurses’ knowledge on PCA in which common misconceptions and frequently-made mistakes on PCA monitoring and management were emphasized. Also, PCA was included in the Mandatory Department Orientation Program for nursing students and new comers. In order to ensure that nurses were capable of monitoring the patient using PCA, all of them needed to pass an assessment before they were allowed to perform PCA observation.

Audit: Pain observation chart would be reviewed after patient discharge to assess nurses’ compliance on PCA monitoring. Focuses of the audit were to check if nurses are doing PCA observation completely and correctly and to check whether related complications are detected or managed promptly.

Supervision: Shift-in-charge or pain link-nurses would review patients using PCA and their PCA observation charts on each shift and would feedback directly to the corresponding colleagues once error was noted.

Evaluation: On-going review of nurses’ performance would be done. Strengths and weaknesses in PCA monitoring would be shared with colleagues quarterly by various means like email or duty handover.

Results: There was an incident of PCA-related morphine overdose happened in 2013. Therefore, this program was introduced in February 2014 to ensure safe use of PCA.
From March 2014 to May 2014, 47 cases were audited to obtain a baseline PCA monitoring compliance rate of 94.24%. After the implementation of program, from June 2014 to December 2014, 65 cases were studied. The compliance improved to 97.76%. The 3.52% improvement in compliance was statistically significant (P < 0.05). In 2015, the overall compliance rate maintained satisfactorily high (97.12%). At the same time, no more incident of PCA related morphine overdose incident happened again since the launch of this program.

Conclusion: Enhancement of PCA Safety with EASE Program is effective in improving nurses’ compliance in PCA monitoring and it ensure the safety of patients who use PCA.
AN INNOVATIVE PARTNERSHIP TO PROMOTE ANTIMICROBIAL STEWARDSHIP IN HOSPITALS
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Objectives: The objective was to develop an innovative online course to help Canadian hospitals implement antimicrobial stewardship programs. The course was to be based on adult learning principles and designed to minimize the challenges typically associated with e-learning, such as insufficient feedback, lack of human contact, and weak mechanisms to transfer knowledge to the workplace.

Methods: Antimicrobial stewardship is a critical intervention to reduce morbidity and mortality from health care-associated infections and preserve existing antimicrobials. In response, Accreditation Canada released new requirements for antimicrobial stewardship in 2013. Although hospitals may understand the importance of antimicrobial stewardship, there is a knowledge gap regarding the components of an effective antimicrobial stewardship program. Whereas other organizations have developed webinars, toolkits and guides to help hospitals understand antimicrobial stewardship, none combine real life learnings with accreditation requirements. Further, a program development approach is needed where local context and culture can be addressed to help hospitals anticipate and manage the challenges of implementation.

To address the needs of Canadian hospitals implementing antimicrobials stewardship programs, a strategic partnership was struck between Accreditation Canada and the Mount Sinai Hospital-University Health Network Antimicrobial Stewardship Program (MSH-UHN ASP). The online course consists of eight modules that take the learner through the necessary steps and requirements to implement a successful antimicrobial stewardship program, including organizational structure and accountability. The course includes the following learning activities: short videos to introduce key concepts; graphic animations to visually reinforce the key concepts; a series of interactive exercises that provide immediate feedback to learners; formative knowledge checks throughout the course; case studies to encourage transfer of knowledge accompanied by answers from the experts in the field. Two live events during the course provide an opportunity for learners to ask questions and discuss their challenges with the experts from the MSH-UHN ASP.

Results: The first course was launched in January 2015 and, due to positive feedback, has been repeated two times. A total of 80 individuals have participated, and the course took an average of 26 hours to complete. The results gathered through the satisfaction survey indicate that the format of the online course is effective for learners, with 94% of participants stating the course met their expectations. The success of the course can be attributed to the variety of learning activities used. Participants agreed that the following activities were effective or highly effective: graphic animations (94%), short video lectures (87%), interactive exercises (84%), and case studies with expert responses (72%).

Conclusion: Antimicrobial Stewardship in Hospitals showcases an innovative education partnership between an accrediting body and a hospital that supports the effective implementation of antimicrobial stewardship programs.
HARVESTING IDEAS BOTTOM UP, TO HARVEST BETTER OPERATIONAL EFFICIENCY BY PRACTICING LEAN MANAGEMENT IN PRIVATE HOSPITAL IN INDONESIA ADAPTING TO NATIONAL HEALTH COVERAGE ERA

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Objectives: Two years and counting, Indonesian hospitals facing changes in healthcare system, especially bundled payment using INACBG. This required paradigm shift about cost in healthcare. Especially private hospital, such as Pelni hospital, must adapt very quickly to be able to survive and thrive. We started at the end of 2013 with AvBOR 48% of 312 beds, liquid ratio 67%, high in patients and staffs complains.

Methods: Redefine vision, culture transformation program, empowering 1225 staffs with skills to map their business process and identify waste of process and using Kaizen as general framework for improvements. Various practical managerial tools, structured idea suggestion systems, daily coaching and periodically idea competitions were designed, as well as the Kaizen and Culture Promotion Office (KCPO) created to harvest and manage improvement activities.

Results: Since November 2014-December 2015 52 Kaizen teams were established across all units and even cross-functional teams based formed to do medium and big Kaizen. KCPO harvested 662 original ideas from medical and non-medical staffs; 349 ideas implemented and stabilized as standardized work. These tandem efforts saved 250.000 minutes of working hours, reduced patients complaints related to queue and physicians complains related to waiting time and scheduling to less than 5%. It makes Pelni Hospital financial health also better. Operational efficiency in 2014 was 13,78% and in 2015 was 19,97% compared to 2013. Pelni hospital liquid ratio in 2015 was 120%, with AvBOR 85% 511 beds. We also have the ability to complete our medical equipments and facilities such as MRI, MS CT, CathLab, new Endoscopy suite and New Inpatient building with 116 beds in the last 2 years.

Conclusion: Adapting to new national healthcare payment policy need future thinking and shifting paradigm. Pelni hospital took Lean approach to pursue affordable excellence by coming into our own strength of resources; our employees. Our efficiency is not cost cutting but cost savings by elimination of waste in process.

INITIAL STEPS TOWARDS A SAFETY CULTURE USING THE 5S PROGRAM FOR HOSPITAL-WIDE EMPLOYEE TRAINING

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Objectives: By use of the non-threatening 5S topics, cultivate a personal and cooperative work ethic in employees as a basis for advanced training in safety procedures. The program must be sustainable, with the following goals:
(1) Teach employees that procedures learned at work have universal application
(2) Empower employees to monitor and maintain their personal work environment
(3) Train employees to be active participants of a team
(4) For selected employees, gain experience in supervision and management of team activities
(5) For selected employees, undergo training to become trainers themselves

Methods: The program consists of a framework of training and drills of increasing scope and responsibility, designed to develop a work ethic based on a feeling of accomplishment. Bilingual certificates are issued as recognition of level achieved, and a website facilitates communication within and between hospitals. The levels and their core tenets are:
(a) Employee: all employees are empowered to manage their own work environment using the first three “S” of the 5S program. Training camps are held in January each year, and further personal development is by online classes. At this level, the employee is also expected to discuss how 5S is used in their daily life (apart from work).
(b) Unit "champion": all employees rotate through this position, which focuses on maintaining the work environment of their department by leading co-workers. Aspects of group interaction (later used in TRM/TeamSTEPPS) are introduced.
(c) Facilitator (hospital): an elective position, focusing on site inspections within the employee’s hospital. The basics of TRM are implemented, and the positive aspects of inspection emphasized. On a visit, each facilitator praises one item, and makes one suggestion for improvement. Reports are published on a website for all to see. No use of checklists or negative feedback is used. Up to 10 facilitators (selected annually) form a 5S committee for promotion activities within the hospital; they receive extra training in committee management to do so.
(d) Trainer: facilitators recommended because of their performance and interest. Training to become unit coach or hospital lecturer.

Results: Starting from a single hospital with around 300 employees in 1989, the scheme has expanded to a league of over 12 hospitals (2016), including 1 medical center, 5 district hospitals, and several regional hospitals. The first two years are limited to introducing the first two levels. By 2016, all hospitals now have many facilitators, a 5S committee (of accredited facilitators), on-going site visit programs, and their own teaching staff. The transition to specific patient safety programs (such as teamwork in advanced cardiac life support, TeamSTEPPS, reducing adverse events, clinical pathways) has improved, resulting in a hospital-wide safety culture replacing the previous closed hierarchy.
Because of the emphasis on positive reinforcement and personal satisfaction, and the absence of negative feedback, the program has spread from the initial hospital to more than 12 hospitals, and continues to grow as other hospitals join. It has a history of more than 20 years.

Conclusion: Hospital management is often by way of rules “ordered” by the leaders and “pushed” by the department heads. However, change of behavior responds poorly to this model. 5S programs are often introduced using this method, but hospitals find that after several months to two years, employees fall back into their old ways of doing things. We developed a program that has proven sustainable, modular, and effective in different hospital environments. It is augmented by inter-hospital visits, conferences, specialist columns on our website, certification, and praise of participants. It is an excellent pathway for a hospital to segue to a patient safety culture.
A HAND HYGIENE COMPLIANCE IMPROVEMENT PROGRAM FOR PHYSICIANS

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Objectives: Hand hygiene is among the simplest and most effective measures to prevent healthcare-associated infections, and a variety of intervention programs have been developed and implemented for this. However, many studies suggest that hand-hygiene compliance among healthcare workers is as low as 30–50%. In particular, among physicians, it is consistently 20–40% lower compared to overall compliance. We conducted a hand-hygiene-compliance improvement program for physicians using innovative, self-regulatory exercise tools promoted by the Seoul National University Bundang Hospital.

Methods: From March to August 2015, activities to improve physician hand-hygiene compliance were conducted under the leadership of pediatricians, hemato-oncologists, surgeons, and physiatrists who desired to improve their hand-hygiene compliance. After interviewing physicians, brainstorming, and performing direct observations, the main causes that influence hand-hygiene compliance were identified to be a lack of cultural awareness, education regarding hand hygiene and inappropriate environment, etc. We determined the direction of the improvement based on those key causes, then established and performed the detailed improvement activities after modifying the World Health Organization’s “multimodal hand-hygiene improvement strategy” specifically for physicians. The main activities involved monitoring hand-hygiene with reinforced feedback, developing and implementing educational resources for hand-hygiene compliance, various public campaigns towards hand hygiene, and so on.

Results: The hand-hygiene compliance rate improved from 57.2% to 72.0% after program completion. Intensive monitoring of hand-hygiene compliance among physicians revealed that the hand-hygiene compliance rate was less than 50% after the physician encountered inorganic environment adjacent to the patient. In addition, specialists performed higher hand-hygiene compliance than trainees (residents and interns). It was also confirmed that if the departmental professor actively participated in hand hygiene when making rounds, accompanying physicians and other staff would also comply with hand hygiene.

Conclusion: We analyzed the impeding factors of hand-hygiene compliance by implementing existing hand-hygiene interventions specific to physicians. We confirmed that improvement strategies used in the analysis were effective in improving hand-hygiene compliance among physicians. We are currently expanding our “Model for Improving Physician Hand-Hygiene Compliance” throughout the hospital to all departments that come in direct contact with patients and plan to manage it as a long-term evaluation index.
REDUCING THE INJURY RATE OF FALLS THROUGH APPLICATION OF PLURALISTIC EDUCATION.

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Objectives: Inpatients in Taiwanese medical centers often suffer a fall and sustained fall-related injuries. In 2014, the percentage/number of fall incidents reported by our impatient units was 0.02%, the injury rate of falls was 77.1%. Of these falls, 64.9% of victims had mild/minor injuries, while 9.7% accounted for severe injuries. The injury rate was higher than the average reported rate (48.8%) of fall injury by all medical centers in the nation. In hope to reduce the injury rate due to fall, we developed an innovative pluralistic education program. This study identified factors associated with injury severity may provide the information on reduction of severe fall injuries among inpatients.

Methods: By applying the Cause-Effect Diagram and Root Cause Analysis on the collected data, we identified that nurses’ underestimation of patients with dyskinesia fall risk, the use of sedatives at bedtime, foreign caregivers incomplete understanding instructions for care, and caregivers lack of fall risk were factors accounted for the higher rate of reported fall injuries in our center. We then used Decision Matrix Analysis to determine the most critical intervention which was to develop a series of health education program to maintain patient safety. There were six health education sessions provided in January, 2014, the content included the standardization of consulting process with rehabilitation physicians for exercise training and the development of health education tools about medication safety, making a fall prevention information leaflet for Indonesian caregivers in Indonesian language, we also broadcast multimedia nursing education to raise patients’ and caregivers’ awareness of fall. Additionally, booklets about fall prevention can be printed in multiple languages and carers and patients should raise an awareness of it by multimedia brocasing.

Results: After 1-year improvement, the descriptive statistics showed that reported the injury rate of falls among inpatients was 37.8%, decreasing from 77.1 percentage in 2014 to 37.8 percentage in 2015. Of this falls, the severe injury rate had dropped from 9.7% to 8.3%. The mild injury rate of fall was 48.6%.

Conclusion: Through the decision made by the quality improvement meeting, the goal of reduction of injury rate resulted from inpatients’ falls could possibly be achieved by increasing the exercises designed by multidisciplinary team and using the model of multimedia health program. Besides, care-receivers and caregivers should acquire knowledge of fall prevention about it should be easily accessible. In this way, positive influence can be provided by the fall prevention education.

References:
THE BENEFICIAL EFFECTS OF THE SUPPORT GROUP ON NURSING STAFFS
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Objectives: The stability of nursing manpower will affect the quality of care; therefore, how to keep nursing staff in their positions is the goal hospitals are striving toward worldwide. As it has been well documented that the nursing care is a highly stressed profession. This is especially true for the new coming nurses. It is therefore an important issue to help them to face and adjust stresses in order to reduce their leave intention. The aim of this study is therefore to explore the beneficial effects of the support group for the nursing staffs. Additionally, this study also wants to explore the sources of work stress and affected factors of professional commitment and organizational commitment.

Methods: This qualitative study would recruit volunteer nurses who had participated the support group by a purposive sampling from a teaching hospital located on south part of Taiwan. This study conducted a semi-structured interview and totally interviewed 84 nurses. Based on the participant time, the interview was done by the style of individual or group, and the period of interview is 30-60 minutes. 93.1% of participant is women; the major level of education is University (75.8%); the majority age is between 20 and 30; most participants (67.3%) have clinical experience before working is this hospital.

Results: The results indicated that the beneficial effects of the support group on the new nursing staffs including knowing surroundings and friends, sharing, supporting, encouraging, relieving work stress, self-understanding, and enhancing the value of nursing. The results also showed that the sources of work stress for nursing staffs including clinical care, work loading, offending professional, the complain of patients/families workplace bullying, work-family conflicts. The professional commitment for nurses would be affected by the factors such as rotation, work stress, work loading, the strained relationship between nurses and patients. Salary and benefits, the policies of hospital, work loading, and family could be the reasons for nursing staffs to intent to leave the organization.

Conclusion: It can consider extending the support group to all the wards of hospital in order to provide a place for nurses to relieve their work stress, to provide a communication and self-growth opportunity as it would improve the care quality. In addition, the course of support group for new nursing staffs can include the program to enhance the capability for clinical care to alleviate the work nervousness and stress for new nurses who have recently graduated. In order to retain the good nurses, this study suggests hospital can firstly, implementation of incentive salary and benefits; secondly, improvement of work loading for nurses; thirdly, implementation of the flexible working-hour; finally, reshaping the respect culture of workplace.
ATTITUDES OF RESIDENTS TOWARDS CLINICAL HANDOVER AND PATIENT SAFETY IN A SURGICAL DEPARTMENT
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Objectives: Clinical handover continues to be one of the most challenging procedures in clinical medicine. The Accreditation Council on Graduate Medical Education (ACGME) has included clinical handover as a core component of graduate medical education. Despite this, up to 80% of serious reportable events have been attributed to poor handover. We aim to assess the attitudes of junior residents towards clinical handover within a surgical department in a tertiary institution.

Methods: A questionnaire was sent to all junior residents within a surgical department of all levels including interns, residents and senior residents in a tertiary institution. Domains within the questionnaire included residents' attitudes towards education and training, quality of handovers and modality of choice for handovers.

Results: A total of 33 out of 58 eligible residents completed the questionnaire (56.9%), of which 54.5% were interns (n=18). 94% of respondents believed that clinical handover is important towards patient safety but only 45% felt that the current handover system is adequate. 79% of respondents felt that clinical handover is an important part of their clinical education and 64% felt that a formal training or orientation for standardized handover will benefit them. Interestingly, only 33% of residents preferred electronic means of handing over their patients while 73% of residents preferred calling or via phone.

Conclusion: The majority of residents regarded clinical handover as an important component of patient safety. More emphasis has to be placed on education and standardized reporting for clinical handover.
UTILIZATION OF MEDICAL SAFETY INFORMATION IN MEDICAL INSTITUTIONS
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Objectives: The Project to Collect Medical Near-miss/Adverse Event Information is a nationwide reporting system run by the Japan Council for Quality Healthcare (JQ). Based on the information collected in the project, Medical Safety Information has been published since 2006. It is provided to medical institutions participating the project and hospitals which have requested to receive the information by fax once a month. It is also posted on our website. In 2014, the number of medical institutions receiving this information by fax was 5,354. We conducted a questionnaire survey of medical institutions participating in the project to find out the use of Medical Safety Information and the evaluation of it. Furthermore, in order to expand the group of hospitals receiving Medical Safety Information, we contacted hospitals not receiving this information to find out their preferences to receive it by fax.

Methods: In 2014 June, we sent a questionnaire to 1,377 medical institutions participating in the Project to Collect Medical Near-miss/Adverse Event Information. The dead line for response was July 31. The safety manager of each medical institution responded the questionnaire anonymously. The survey was concerned with the basic information of medical institutions, the use of Medical Safety Information, and the evaluation of Medical Safety Information such as volume of information, frequency of its publication, and user-friendliness. We also asked if they agree to present their examples of utilizing Medical Safety Information. In addition, in 2015, we sent questionnaires to hospitals not receiving this information to ask about their preference to receive it by fax.

Results: We received responses from 735 of the 1,377 medical institutions that we asked to complete the survey. A response rate was 53.4%. The proportion of respondents stating that they “use” or “sometimes use” the Medical Safety Information was 95.5%. Methods of using Medical Safety Information included “distributed to all staff”, “distributed to the safety management committee for use as a resource”, and so on. The proportion of respondents stated that the volume of information provided in the Medical Safety Information was “appropriate” or “reasonably appropriate” was 96.6%. About the frequency of publication and the user-friendliness, the proportion of respondents stated “appropriate” or “reasonably appropriate” was 99.0% and 98.9% respectively. Some medical institutions agreed to present their examples of utilizing Medical Safety Information. They sent us the examples of their practical use of Medical Safety Information so that we placed them in “Collection of Medical Safety Information No.51-No.100” published in September 2015. In February 2016, the number of medical institutions receiving this information grew to 5,932, covering almost 70% of all hospitals in Japan.

Conclusion: Medical Safety Information is widely utilized among medical institutions in Japan. It is highly estimated in respect of the volume of information, the frequency of its publication and its user-friendliness.

MEDICATION SAFETY ENHANCEMENT WORKSHOP - USE OF INFUSION PUMP IN REHABILITATION HOSPITAL
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Objectives:
- To ensure fresh graduates are familiar with all models of infusion pumps used in TWEH
- To enhance nurses competency on the use of infusion pumps in clinical settings as well as to enhance patient safety in fluid therapy
- To standardize and promote safe practices of infusion pump handling
- To ensure correct drug infusion calculation and infusion rate set-up to prevent related medication incidents

Methods:
A series of simulated skill-based medication safety training workshops with emphasis on safe handling of different brands and model of infusion pumps used in TWEH were conducted from 4Q 2014 to 1Q 2016. In the training workshops, all fresh staff including new recruits and nursing graduates were required to undergone a series of training covering all functions of infusion pumps; compatible consumables and accessories such as infusion sets, syringe size; problem shooting; proper procedures of cleansing and decontamination; battery charging, and services maintenance. Trainees were required to return-demonstrate skills on the standardized safe practices of infusion pump handling with hands-on practices for each model of infusion pumps. They were asked to answer some drug calculation questions prior to receiving problem-solving training. They were then required to resolve various problem scenarios for drug calculation and different problems involving triggering the infusion pump alarm system within a reasonable time. Staff competency and compliance on the return-demonstration skills were assessed by using the standardized staff assessment checklist. Problem-solving techniques, timing and accuracy rate of the drug calculation were counted. Staff satisfaction survey questionnaire was used to collect feedback. Quick user guides and cue-cards were provided to enhance their problem-solving skills and techniques when the infusion pump alert system is activated. Besides, a colourful “Practical Tips for Drug Infusion Safety” poster was designed and posted in all clinical areas for staff alertness. Related training information with hands on practice video was uploaded onto relevant website for staff easy reference.

Results:
A total of 42 nursing staff from all clinical units attended the two training workshops held in 2014/15 and 2015/16. All staff demonstrated full compliance on the return-demonstration skills and the problem-solving techniques. Over 95% of staff received full mark on the medication calculation with infusion rate set-up. All participants expressed “agree” or “strongly agree” that the enhancement workshop had increased their confidence in handling different infusion pumps in their working areas.

Conclusion:
The training scheme was successful in strengthening nurses’ knowledge and skills, and their competency in handling infusion pumps in their daily work. It surely enhanced safe practices on administration of medication involving use of infusion pump and helped prevent occurrence of related medication incidents.

Implications:
The simulated skill-based medication safety training workshop should be conducted regularly for nursing staff in TWEH to prevent potential risk of infusion pump related medication incidents.
Objectives: Patient in sudden critical situation is the most stressful for healthcare providers, especially in cardiopulmonary-cerebral resuscitation (CPCR) condition. Most of the junior healthcare providers worried about their capabilities of life resuscitation, collaboration with team members, and leadership in critical situation. This study examined the effects of applying team resource management (TRM) in regularly simulation practice of emergent critical condition.

Methods: A longitudinal survey study was designed. The convenient samples’ data were collected by the instructors. Descriptive and inferential statistics were applied to the data analysis with SPSS/PC software. We designed different types of critical patient conditions, and prepared the simulation dummies for cardiac massage and intubation, and related equipment in the post emergency department acute care unit, in which medical and multi-trauma patients were cared. The participants need to practice the main skills of TRM model which include communication skills (call-out, ISBAR, checkback), leadership (decision making, task assignment), situation monitoring and mutual support to build up teamwork. This teaching activity was held twice a month by the ward director and the head nurse since July 2012 till June 2015. Four nurses and junior doctors (or nurse practitioner) were assigned to act as different roles in each training program. There was a 10-minute debrief guided by the instructors to share positive feedback instead of negative critique after 20-minute simulation practice. The OTTWA crisis resource management global rating scale was used to evaluate each team’s performances by instructors. The overall performance, leadership, problem solving, mistake awareness, resources applying, communication, and intubation, CPCR, mortality rates were evaluated.

Results: Fifty percent of nurses were under post-graduate 2 years, and the junior doctors take turns monthly. There were 72 simulation practices performed during study period of 3 years. There were 138 healthcare providers participated the CPR-TRM simulation role-play. Each nurse practiced 6.2(SD=3.8) times, and each doctor participated 1.9(SD=1.0) times. A total of 140 evaluations were collected. The results showed that average scores of overall performance, leadership, problem solving, mistake awareness, resources applying, and communication, as rated on a seven-point Likert Scale, were higher in second and third years than the first year (p<.05), but no significant difference in second and third year. There was better patient outcome in success rate of endotracheal tube intubation and CPCR from 2011 to 2014. The average rates of endotracheal tube intubation were 1.86‰, 1.20‰, 1.21‰, 0.99‰ in each year respectively; CPCR rates were 0.45‰, 0.38‰, 0.27‰, 0.12‰ respectively. Also, the mortality rates were decreased by time (2.21%, 2.52%, 1.90%, and 1.58% in each year respectively). Only CPCR rate had significant decreased (p=.000).

The main comments from staffs who participated in the CPCR simulation were all positive feedbacks as following: getting more confidence handling critical situation, quicker response and handling their tasks, much better leadership, stronger teamwork, clearer orders, less stress, and less chaos. Even the nurse students were all excited to have the opportunity to observe the simulation practices.

Conclusion: Findings from this study suggest that regularly thirty minutes CPCR and TRM skills practices can help healthcare providers to get positive energy to handle critical situation and build up better teamwork. Better teamwork might improve patient outcome and decrease mortality rate. Furthermore, we shared this successful experience to motivate other acute care units to improve clinical patient resuscitation quality together.
THE DEVELOPMENT OF TEACHING MATERIALS IN MANGA STYLE FOR SELF-LEARNING IN JAPAN WITH WHICH STUDENTS CAN LEARN TO TRANSFER PATIENTS INTO WHEEL-CHAIRS

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Objectives: The purpose of this study is to develop teaching materials in manga style for self-learning. They facilitate learning the skills to transfer into wheel-chairs patients with their right upper and lower limbs paralyzed.

Methods: Teaching materials for self-learning are designed on the basis of Instructional Design. They help learners acquire the skills of transferring patients into wheel-chairs.

The study involved 24 second-year or more senior nursing students who had already learned skills to support patients’ activities of daily living. The study period was from March to April 2014. To collect data, a pair of students played the roles of a patient and nurse alternately, in which one student playing a nurse assisted the other student, playing a patient who wore the simulators on their right upper and lower extremities and was in the seated position on the bed, in transferring to a wheelchair. All transfer assistance scenes were recorded and used for analysis.

Teaching materials to support self-learning were developed according to the following schedule.

1. Firstly, the following three things were sorted out; things which the subjects were able to do well, things which they managed to do, but were insufficient and the rests which they performed poorly.
2. It was considered how hints should be provided for the subjects on solving the problems which they had in common or the things which were uncompleted.
3. The teaching materials were devised in reference to the Keller’s ARCS model in order to enhance students’ learning motivation.

This study was conducted with the approval of the Ethics Committee of Seirei Christopher University and the Research Ethics Committee of Jichi Medical University.

Results: A total of 24 students, consisting of 8 second-year and 16 third-year students, participated in the study. Almost all students were inadequate in or perplexed about “wheelchair positioning,” “preparation of the patient for transfer to a wheelchair,” “transfer process to a wheelchair,” “use of resources,” etc., indicating that there were problems with safety and smooth transfer. These problems were classified into “understanding what learners can do or cannot do,” “understanding their supporting abilities correctly” and “preparation for their surroundings.” Thus, teaching materials for self-learning Ver.1 in manga style were complete.

Conclusion: In this study, our research team has developed teaching materials in manga style to support self-learning which help students seek the ways to transfer patients into wheel-chairs. Students have difficulties in acquiring the skills by taking only one practice initiated by instructors. What is important is to lead students to take interests in how safely and smoothly patients can be transferred, and consequently think about it for themselves. Therefore, teaching materials for self-learning should contain specific examples and factors to enhance students’ motivation for self-learning and promote their mutual-learning. Down the road, we intend to ask students to make use of these teaching materials and evaluate them in a comprehensive way.
PROTOCOL-DRIVEN RESPIRATORY REHABILITATION PROGRAM IN VENTILATOR DIFFICULT-TO-WEANED PATIENTS: A RESPIRATORY CARE UNIT EXPERIENCES

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Objectives: Respiratory care units (RCC) have been created to provide hemodynamic stabilized mechanical difficult-to-weaned ventilator patients for a trial of ventilator weaning. Early rehabilitation programs have been proved effectively in prevention of muscle weakness and mortality rate in intensive care units. However, the approaching of rehabilitation methods was diverse in its etiology of ventilator using. We designed a protocol-driven multidisciplinary personalized respiratory rehabilitation program to enhance ventilator weaning rate and patients' quality of life.

Methods: After obtained patients and their doctors' permission, the patients were categorized into 4 levels based on their conscious level and performance status. We applied a multidisciplinary protocol-driven rehabilitation program in a 24-bed respiratory care unit. Multidisciplinary protocol driven rehabilitation (PDR) program, including pulmonary physician global evaluation, respiratory therapist weaning assessment, patient-tailored rehabilitation plans, nursing caring education, pronunciation speaking valve training and physical activity mobilization team. A dedicated respiratory therapist was assigned to help the subject achieve the maximum physical activity for ventilator weaning assistance.

Results: At admission to RCC, nursing needs, disability, and autonomy differed based on the patients' condition. The rehabilitation program coverage rate significantly increased (41.4% to 93.7%). Compared to usual care, PDR were associated with a greater likelihood of achieving independent functional status, improved respiratory muscle strength, physical function, and patients' satisfaction. Mechanical ventilator weaning rate increased from 51.7% to 64.8%. PDR significantly resulted in cost reduction through decreased RCC length of stay, and duration of mechanical ventilation.

Conclusion: Applied the protocol-driven multidisciplinary rehabilitation program in difficult-to-weaned patients significantly augmented mechanical ventilator weaning, improved physical activity and associated with reduction of hospital costs via decreased RCC length of stay.
PROMOTION OF MEDIATION SKILLS TRAINING IN HOSPITAL AUTHORITY FOR EFFECTIVE CONFLICT RESOLUTION
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Objectives: Complaint management is never an easy task and healthcare complaint handling is the most difficult of all kinds. Since its establishment in 1991, the Hong Kong Hospital Authority (HA) which manages 42 public hospitals/institutions has established a 2-tier complaints system with the Public Complaints Committee of the Authority Board as the final appeal body for patient complaints.

Prevention is better than cure. It is well evidenced from the past two decades in HA that the best approach to complaint management is to prevent its occurrence. To tackle the problem at source and to avoid unnecessary escalation, disputes should be resolved as early as possible, and complaint management is everybody’s responsibility. Hence, local resolution at the point of care is much emphasized.

To better support and sharpen the skills of front-line healthcare workers in communication and complaint handling, a 2-pronged approach is adopted to provide the necessary training – (i) Applied Mediation Skills Training; and (ii) 40-hour Formal Mediation Training.

Methods: Mediation is a voluntary and non-adversarial process. The mediator will use different mediation skills to reach a “win-win situation” where common interests of the disputing parties are met. These skills include: active listening, empathy, anger management, questioning, paraphrasing, reframing, summarizing, facilitating options, breaking impasse, etc.

40-hour Mediation Training
Since 2011, over 400 healthcare workers were sponsored to attend 40-hour formal mediation training offered by accredited academic/professional bodies. Equipped with the knowledge and skills, these middle to senior level healthcare staff have effectively performed the role of an informal “mediator” and become role-model for application of mediation skills in complaint management. After the training, a pool of dedicated staff volunteered to become coaches and facilitators and helped in the production of training materials, role plays and videos on difficult scenarios (real life experience of communication breakdowns/difficult clinical interactions) for the Applied Mediation Skills Training Programme. The inculcating effect has, in turn, enhanced communication skills of their juniors.

Applied Mediation Skills Training Programmes
In 2013, the School of Public Health of a local university was commissioned to develop and deliver a custom-made 4 to 8-hour healthcare mediation skills training programme. As mentioned above, trained healthcare workers were engaged as coaches and facilitators in role plays/sharing of scenarios for juniors.

Results: 11 sessions of Applied Mediation Skills training were organized from November 2013 to May 2015. 821 healthcare workers had completed the training, and 624 of them filled out the training evaluation. Results revealed that the training had met majority of the respondents’ expectation. 96.6% of respondents rated that the training had effectively “imparted mediation skills/techniques” applicable in healthcare setting; and 94.7% considered that they had acquired the necessary mediation skills to “resolving healthcare conflicts and complaints”.

Conclusion: The results suggested that the participants were highly satisfied and motivated by the mediation skills training. The training objective of engaging and supporting healthcare workers to enhance patient communication and conflict resolution was achieved.

Given the huge volume of services (attendance/discharge in millions annually) provided by HA, mediation skills training would foster an amicable complaints management culture for effective prevention. Amidst the increasingly technology-driven healthcare environment, promotion of mediation skills training would enhance communication (with patients and among staff) in the provision of a patient-centred and compassionate care.
EXPLORATORY THE EFFECTS OF DIVERSIFIED TEACHING STRATEGIES IN PIG-TAIL DRAINAGE TUBE CARE OF NURSING POST GRADUATE YEAR 2 STUDENTS

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Objectives: To assess the effects of diversified teaching strategies for nursing post graduate year students in Pig-tail drainage tube care.

Methods: Quasi-experimental pre-and-post design conducted at medical center in northern Taiwan. A pilot study using purposive sampling conducted in these thirteen students. The diversified teaching strategies were including: (1) provide practical bio-mimetic exercises Module (Pig-tail drainage tube fixed method) and design easy memorize formulas to make students have deep impression in learning, (2) design teaching materials with digital video (Pig-tail fixed drainage tube care and instructional videos) to improve motivation of learning and enhance the knowledge and ability in nurse care, (3) to held a discussion with cross-cutting and the learning strategies of discussion is group interaction or problem discuss. The outcomes were scores of cognition, technical integrity, and the slip rate of pig-tail.

Results: There were no significant change in scores of cognition and the slip rate of pig-tail ($p>.05$). Meanwhile, the technical integrity was significant change ($p<.05$).

Conclusion: The diversified teaching strategies may not increase the cognition and decrease the slip rate of pig-tail, but could improve the technical integrity in clinical practice. Although the slip rate was 0, did not reach significant, we still thought the zero slip was the only goal. We suggest that we may use diversified teaching strategies in many kinds of clinical technical practice to help nursing post graduate year 2 students coping clinical practice.
PREPARING FOR THE COMMENCEMENT OF AN ALLOGENEIC STEM CELL TRANSPLANTATION SERVICE: BUILDING CAPACITY THROUGH EXPERIENTIAL LEARNING

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Objectives: Current models for nurse professional development and specialist training do not routinely include rotations or secondment opportunities to like units in different organisations resulting in specialist nurses being limited to the care/procedures that occur in their unit rather than their area of specialisation e.g. haematology. The overall aim was to create an experiential learning opportunity for nurses to facilitate the development of new, specialist knowledge through point-of-care observation at a well-established allogeneic stem cell transplant (SCT) in another hospital prior to commencing a like service in the haematology unit at Austin Health (AH).

Methods: Ten registered nurses (18% of the inpatient haematology workforce) attended a structured observation day. Participation involved the following key steps and objectives:
1 Expression of interest (EOI): All nurses working on the inpatient haematology ward interested in attending the observation day completed a written EOI
2 Selection of clinicians: Nurses with the ability to act as clinical champions were selected
3 Role of clinicians: All seconded nurses attended one full (8 hour) shift shadowing an experienced allograft nurse
4 Capacity building: Specific patient and care information was collected using a purposefully designed case study template to help the secondee synthesise learning, capture key illness, treatment and care trajectory of a patient undergoing an allogeneic SCT and facilitate the development of a case study. Processes and procedures were also reviewed to identify variation in practices and gaps between units
5 Dissemination of knowledge/experience: The presentation of patient case studies provided the platform for critical conversation and multidisciplinary team capacity building. All presentations were facilitated by one of two nurses with expertise in allogeneic SCT to allow more indepth discussion and enable comparisons to be made with illnesses, treatments and procedures that clinicians were already familiar with.

Results: The observation day was a successful strategy for building capacity. Motivation for learning was high for nurses who attended the observation day and clinicians who attended case study presentations. The secondees gained and shared knowledge that had a direct impact on multidisciplinary understanding of the daily care needs of patients undergoing an allogeneic SCT. The ten secondees helped build team confidence and the reflection component of the case study resulted in better translation of knowledge, assessment and optimal care practices to point-of-care clinicians. The secondees also identified new processes/procedures related to the care of allograft patients as well as differences in general practices between the wards. This informal benchmarking encouraged evidence-based practice conversations and enabled current (e.g. sepsis pathway) as well as new procedures (e.g. line set up for cyclosporin infusion and taking levels) to be reviewed, discussed and modified as appropriate as a group.

Conclusion: This was a successful, innovative approach for building the capacity of clinicians prior to commencing an allogeneic SCT. The overall success of this experiential learning suggests that exchange/seconndment opportunities, even short ones, should be considered for ongoing staff development so that knowledge of a specialty such as haematology is not limited to the unit that clinicians work on and also as a process for continuous quality improvement in like units at state, national and international levels. The relationship between the two units will continue and future collaborations will consider joint case studies, journal sessions, training and benchmarking. Benchmarking will be particularly important for comparing outcomes of patients treated at the high volume, well-established allograft unit with outcomes of patients at the low volume, new unit.
THE FACTORS WHICH MAY INFLUENCE THE EFFECTIVENESS OF RAPID RESPONSE TEAMS
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Objectives: The effectiveness of rapid response teams (RRT) was still uncertain. This study was designed to find any factors which may influence the improvement of mortality rate after RRT implementation.

Methods: This is a retrospective analysis of the preventable death from the documented verdicts of the criminal court in Taiwan from 2000 to 2010. Among 686 claims, 120 were declared to be guilty, in which 66 were preventable death. Seven not fit the early resuscitation criteria as the RRT requested, 2 neonatal deaths related with delivery and 1 forged data of vital signs were all excluded. In the fifty-six, all cases received autopsy or surgery thus the diagnosis was confirmed. The verdicts record the claims, the defenses, why they are malpractices and analysis on future death prevention. The duration between the onset of early warning signs and the change of refractory shock (may defined as the clinical Irreversible period) in each case was also studied.

Results: Eleven cases received advanced managements before the occurrence of early warning signs as RRT inquired, 55 at the same level; while 46 and 15 respectively advised from the courts. Forty-nine diagnosis errors comes from: 15 misinterpretation of symptoms, 9 neglected the life threatening secondary diseases, 4 delayed diagnosis of malignancies, 12 failed to apply indicated physical or laboratory tests, 9 failed to act on the tests. Twelve has errors in treatments, 9 with delayed or insufficient managements. The length time of irreversible period were : 2.2 +/- 1 hours in procedure related arterial bleeding, while 15 +/- 5 hrs after incomplete haemostasis; 3 +/- 1 hrs in progressive sepsis. While 18 +/- 6 hrs in pneumonia; 16.5 +/- 5 hrs in acute heart dysfunction; 29 +/- 12 hrs in the intracranial hemorrhage, while 3.1 +/- 1.3 hrs in the progressive neurological deterioration.

Conclusion: Some preventable deaths occurred while the patients received resuscitation nevertheless before the early warning signs. They may come from errors in diagnosis, treatment errors, insufficient or delayed treatments. The length time of irreversible period varied with the different disease category. Thus further study among the activating indications of RRT in different disease system must be considered to improve the outcome.

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ETHICS EDUCATION SUPPORTING PATIENT SAFETY AND QUALITY OF CARE: IMPROVING THE PROCESS AND DOCUMENTATION OF INFORMED CONSENT AT AN ALL MALE UROLOGY UNIT IN THE MIDDLE EAST

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Objectives: The main objectives of this educational intervention were to instruct on the legal requirements for obtaining consent for urological procedures in a governmental hospital in Kuwait and to provide a reflective educational environment through which adult learners in healthcare can critique their own practices and improve its quality and safety.

Methods: Fifteen urologists (all male, mainly senior staff members) took part in 3 interactive sessions of a hour workshops where Participants were first introduced to legal and organizational requirements of informed consent documentation and process by two medical students and the head of quality department in the hospital; were introduced to the underlying ethical and professional concerns and challenges of respecting patients autonomy and providing safe care by a clinical ethicist; and finally participant were invited to reflect on their own practices and expectations of patients and physicians in terms of communication skills and patient-physician relationships using most recent medico legal cases presented to the judicial system in the country. Following the first session, the participants were presented with the results of a consent forms audit identifying issues and concerns surrounding a randomly selected 150 cases from the department. During the final and third session, a departmental designed road map was created addressing the findings of the audit.

Results: In this educational intervention, serious shortcomings were reported. The main issues revealed by the audit were those related to the Form and Process of informed consent: in terms of the “form”, there were problems with some of the documented forms being expired, altered, incorrect, having missing or incorrect or unauthorized signatures, missing or incorrect dates, legally Authorized guardian unknown in terms of a minor, absences of witness (when required), form signed by unapproved signatories, evidence of corrected mistakes “striking out”, added text, consent form signed in the presence of a known language barrier.

Conclusion: Although verbally obtained consent is required, it is considered that written consent is the legal proof of documentation, discussion and interaction between the surgeon and the patient. Standardizing the process of consent and detailing potential complications not only reduce medical errors but also ensures patients understanding of the risks and benefits of a particular procedure as well as alternative therapy. This reflective educational intervention in Ethics and professionalism provided an opportunity to interact with a challenging work environment of adult learners within a male gender dominant, hierarchical authoritarian work place to evaluate and improve the current quality of the consent form and the process surrounds its obtainment in a secondary care hospital in a Middle Eastern country.
IMPROVING THE QUALITY OF CARE FOR BULLOUS PEMPHIGOID PATIENTS BY MULTIPLE NURSING STRATEGIES
H.-L. Chen

Objective: Bullous pemphigoid is a benign, systemic and generalized blistering disease. This paper mainly discussed the experience of caring a 32-year-old female. Skin injuries of the patient caused by bullous pemphigoid were up to 70% of the body surface area, and new skin injuries were often caused during dressing removal; serious pain, chills and other discomforts might occur at dressing change and medicated bath.

Methods: During the care from June 2 to July 3 in 2013, through practical care, observation, interview and physical assessment, the author confirmed the following health problems of patient, such as pain, impaired skin integrity and body image changes. The author applied Gordon 11 functional health patterns and multiple nursing strategies, using elastic web bandage and bandage instead of gauze and tape to fix the wound and ductus venous, giving analgesics 1 hour before dressing change, warming the medical liquid of medicated bath to 37℃ through water bath, changing the dressing when it was detached after bath, keeping warm with lamp.

Results: The author applied multiple nursing strategies to the patient based on the literature, such as using appropriate dressing and protecting blisters, giving analgesics, warming the medical liquid of medicated bath, changing the dressing when it was detached, using lamp, after which no new skin injuries due to dressing change occurred and the area of skin injuries also decreased from 70% to 25%. The pain score change decreased from 10 points to 3 points, and no chills occurred during the bath.

Conclusion: Hospitalization due to bullous pemphigoid is rare in clinical practice, thus nurses are not familiar with this disease and lack nursing experience. Through the experience share of nurses, appropriated nursing patterns developed according to the characteristics of patients can successfully reduce the pain and discomforts of patients at dressing change and improve the problems of skin injuries as well as physical and psychological changes of patients, so as to improve the quality of care.

THE EFFECT OF VENTILATOR WEANING PROGRAM AT THE SUB-ACUTE RESPIRATORY CARE WARD
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Objectives: In recent years, with the development and progress of medical technology, there are more and more advanced medical instruments and equipment available, allowing many patients with respiratory failure to survive. Moreover, with population ageing and the prevalence of chronic diseases, the number of long-term ventilator-dependent patients has gradually increased. Patients are often transferred to the sub-Acute Respiratory Care Ward, for continued care and further mechanical ventilator weaning.

Methods: This study was to investigate the factors related to respirator weaning in patients with prolonged-ventilator use. The weaning rate at the sub-Acute Respiratory Care Ward was 45%(2011) and the average length of stay in hospital was 30 days. The study was conducted on patients admitted to sRCW. Data analysis found that principal factors leading to poor weaning rate were: no standardized ventilator weaning protocols and nutrition care process, poor execution of pulmonary rehabilitation, lack appropriate education tools and multidisciplinary team meeting.

Results: The strategies included: revising procedure standards, developing an appropriate tool, and setting up on-job training programs, development standardization of the nutrition care process, attention to psychological and social problems, then using a Healthcare Matrix to assess patient care in the multidisciplinary team(Include physicians, nurses, dietitians and respiratory therapists and physiotherapists). After the program, the execution rate of pulmonary rehabilitation increased from 26% to 98-99%. The ventilator weaning rate increase from 45% to 75% (2012-2015), LOS decreased to 20 days.

Conclusion: Prolonged mechanical ventilation (PMV) places a large burden on patients, families, and health care resources. It is not only a medical, but also a social and economic problem. The project can strengthen the patient off the ventilator as soon as possible, and to reduce the length of hospital stay and costs, to improve patients' quality of life.
EFFECTS OF MUSIC LISTENING ON ANXIETY AND PHYSIOLOGICAL RESPONSE IN PATIENT'S UNDERGOING AWAKE CRANIOTOMY

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Objectives: To explore the effect of music listening on level of anxiety and physiological responses for awake craniotomy.

Methods: An experimental design with randomization was applied in this study. The participants were assigned into music experimental group (19 patients) or control group (19 patients). Participants in experimental group selected and listened music at their preferences in the waiting room and throughout the entire surgical procedure in addition to usual care while control group only gave usual care. State-Trait Anxiety Inventory (STAI), heartbeat, breathing, and blood pressure were collected for analysis.

Results: The results of this study showed that after music listening, there was significant decrease in the level of anxiety. The average score of STAI decreased to 65 (p < .001). The findings also showed that the music intervention significantly reduced heartbeat rate 84.5 (p <.004), systolic pressure 42 (p < .001), and diastolic pressure 38 (p < .001) over time.

Conclusion: We concluded that music listening is associated with a decreased level of anxiety and distress after awake craniotomy patients. The results of this study can provide perioperative nursing care in providing music listening when patients were in the waiting room to reduce the anxiety before surgery so as to reach the goal of humane care of and improve perioperative nursing care.

References:
A RISE IN FALL INCIDENCE? TACKLE IT RIGHT AWAY!
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Objectives: Preventing patient falls in ward settings has always been an elusive goal for hospitals. In our surgical admission ward, the high turnover rates, along with the acute change in conditions among patients, have posed us with greater challenges in preventing patient falls. Unfortunately, the incidence of in-patient falls has risen to 0.7 last year (the highest in 7 years) which is unsatisfying. What makes the situation more alarming is that on-going fall prevention interventions have already been carrying out. Therefore, a strategy with effective measures is desperately needed to tackle the problem right away.

By adopting a series of measures targeted on current loopholes in fall prevention, we aim to: (1) prevent patient fall to a minimum, & (2) increase awareness of ward staff to carrying out fall assessment and fall prevention interventions regularly and when necessary.

Methods: 1. The possible contributing factors of previous falls are analyzed and sharing is carried out among ward staff.
2. "Red-Flag system" is utilized in addition to the Morse Fall Scale in identifying patients at high risk of fall. (e.g., immediate post-operative patients, patients admitted for GI Bleeding, Head Injury...etc.)
3. The importance of re-assessing patients fall risks upon change of conditions is reinforced to ward nurses.
4. The information folder for fall prevention has been revised and refurbished.
5. The fall prevention pamphlet of the department has been revised and ward nurses are reinforced of its application. An English version of the pamphlet is made available by translating the revised Chinese version.

Results: After the implementation of the series of measures mentioned, the incidence of in-patient fall has dropped drastically from 0.741 to 0.250.

Conclusion: By adopting a strategy with measures targeted on current loopholes in fall prevention, incidence of in-patient fall can be reduced significantly. Costly sequel from falls including morbidity and mortality could thus be effectively avoided.
DELIRIUM PREVENTION FOR OLDER ADULTS IN A MEDICAL UNIT OF AN ACUTE CARE HOSPITAL: A QUALITY IMPROVEMENT PROJECT
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Objectives: Older adults who are admitted for acute medical illness are vulnerable to hospitalization and often associated with adverse events like delirium and functional decline. The prevalence of delirium at hospital admission ranges from 14-24%, and the incidence of delirium arising during hospitalization ranges from 6-56% among general hospital populations¹. This often increases the risk for restraint use, functional decline, injuries and falls as well as increased stress experienced by staff in handling patients with delirium. The objective is to describe a continuous quality improvement project to prevent, detect and manage delirium at an early stage.

Methods: The Hospital Elder Life Program (HELP)² protocol was adapted, localized and implemented to build into the daily process for hospitalized elderly in a medical unit. Elderly patients aged above 65 years old who have at least one risk factor of cognitive or functional impairment identified were included in this project. Nurses in the ward were trained on detection and prevention of delirium, and all interdisciplinary healthcare professionals were briefed on the project as this protocol involves interdisciplinary efforts. The second phase of implementation involved training and assignment of volunteers to support the HELP delirium prevention protocol. The following data were collected: number of patients who developed delirium during the implementation phase, length of delirium days for patients already with delirium on admission and daily adherence to the protocol was monitored.

Results: A total of n = 95 patients were identified to be at risk of developing delirium during their hospital stay from October to December 2015. After implementing the protocol, there was a significant reduction in delirium incidence developing during hospitalization (12.1% > 27.3% pre versus 2% - 6.6% post). There was also a reduction in the average length of delirium days for those who were admitted already with delirium, when the protocol was in place (6.7 days pre versus 4 days post). There was more efficient utilisation of nursing manpower as ward nurses were actively preventing patients at risk of developing delirium instead of spending time and effort in handling the consequences arising from delirium (e.g. restraints, closely supervised patients).

Conclusion: Implementation of delirium prevention protocol can decrease the incidences and adverse consequences of delirium in the acute care hospital. Evidence-based protocol can be incorporated into daily work processes of the interdisciplinary team and engaging volunteers to prevent delirium among the hospitalized older adults. Plans are currently underway to continue monitoring the sustainability and roll out the delirium prevention protocol to the rest of the hospital.

A NEW SERVICE MODEL TO HANDLE LONG STAY CASES IN HONG KONG ACUTE HOSPITAL
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Objectives: The discharge needs of patient admitted to acute care are no doubt complex, diverse and dynamic. Factors affecting patient discharge may include poor communication between patients or care givers and healthcare professionals, resulting in unmatched expectation to meet patient’s actual health needs. Insufficient documentation, communication and lack of post-discharge support are the confronting factors that hinder a smooth discharge. In Kowloon Central Cluster (KCC), the overall trend of patients stays more than 90 days were increased since Jan 2014. Prolonged hospitalization affected patients’ outcome, increased staff stress and induced adverse effect on bed capacity. Therefore, a new discharge planning model was piloted to bridge the existing service gap. And to ensure patients were discharged to right level of care at right time with adequate support.

Methods: An advanced practice nurse (APN) was designated to provide a proactive assessment for patients and provides early intervention for patient hospitalized more than 30 days. Through working closely with multi-disciplinary team and clinical department to facilitate an early, safe and effective discharge planning. APN would coordinate a weekly basis case conference with clinical staff and formulate an individualized discharge planning after discussed with carers as well. For difficult cases, systemic approach with hospital management support and liaison with stake holder such as social welfare department is required.

Results: From Feb to Aug. 2015, total 341 patients from SURG, NS and O&T departments were recruited into this project, and 259 patients were discharged. Primary outcome on their length of stay and unplanned readmission rate were measured. The distribution of length of stay was compared to those before the project. Since implementation of project in O&T, NS and SUR Departments, 91.1% of cases discharged < 90 days with 28% improvement. Patients were successfully discharged with LOS ≥ 90 days has been significantly reduced from 28.3% to 8.9% (relative reduction of 79%).

Conclusion: 1. Findings demonstrated the positive patient outcomes & shorten length of stay in acute hospital
2. Effective & efficient patient-centred discharge planning process can facilitate the transition from hospital to home, addressing the adverse event by post-discharge support
3. Essence of inter-disciplinary communication, system & structure redesign has enhanced the role of health-care teams in discharge planning
4. Nurses are uniquely positioned to identify barriers & opportunities in discharge planning process and contribute significantly to evidence based reform initiatives
In conclusion, early discharge planning will deliver better result on patients’ experience and should be adopt as good practice in all clinical settings.

References:
INCREASING PALLIATIVE CARE INPUT FOR PATIENTS WITH POOR PROGNOSIS IN NEUROSURGICAL INTENSIVE CARE UNIT (NICU)

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Objectives: There is increasing evidence that a well structured palliative care initiative in the form of an integrative or consultative or a combination of both into standard ICU care can provide important benefits for patients and families. Systemic reviews suggest that proactive palliative care in ICU decrease hospital and ICU length of stay. We wanted to see if this model of care would work in our Neurosurgical Intensive Care Unit, taking into account patient's heterogenous cultural and religious beliefs in Singapore.

Methods: We embarked on a project in Singapore to improve referral rate from baseline 30% to 100% to palliative care for patients with poor prognosis in Neurosurgical Intensive Care Unite(NICU) within a 6 month period. We formed a multidisciplinary team consisting of intensivists, palliative care physicians, ICU nurses, medical social workers, and neurosurgeons for this project. We define poor prognosis and a referral criteria to palliative medicine as patients who had one of the following:
1. Hypoxic Ischaemic Encephalopathy
2. Severe Head Injury with Poor neurological prognosis
3. Extensive Intracerebral/Subarachnoid Haemorrhage

Patients who met the above criteria were seen by the medical social worker as well as the palliative care team working in ICU. A multidisciplinary family conference consisting of intensivists, palliative care team, medical social worker and a nurse would be conducted to discuss care goals and treatment options with the family. A weekly ICU-Palliative round would be conducted every Thursday afternoons to debrief all referred patients and eventual outcome of patients. In addition, patient relatives were followed up by a telephone call by the team to see if there were bereavement issues, and if grief coping strategies were adequate.

Results: Using our predefined criteria for palliative care referral in NICU, our referral rate increased from a baseline of 30% to 100% within a six month period. All patients in NICU who met the above referral criteria was seen by palliative care and care goals and a treatment plan was mapped out for each individual patient. This included palliative extubation, home transfers and hospice care for patients. There was a reduction of length of stay in ICU of 1.3 days, with an associated cost reduction of $1194.70. Relatives surveyed expressed that honest communication about prognosis, end of life care issues, care goals and symptom control management for patients were top considerations for effective and honest communication with the care team. It was also reported that palliative input was important for relatives to make a informed decision about care.

Conclusion: Palliative Care input for poor prognosis patients in ICU is important. A multidisciplinary approach, with continual engagement of team is important to increase accessibility of service to the patients. This allows for an improvement of family emotional outcomes and a reduction in ICU length of stay and treatment intensity.

REDUCE THE PAIN INDEX OF PRESCHOOL CHILDREN RECEIVING INTRAVENOUS INJECTION IN EMERGENCY ROOM
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Objectives: There is 25% of pediatric patient visits in our emergency room, accounting for 75% preschooler and 73.3% of children revealed severe pain while receiving intravenous injection. The survey found that the reasons were: 1. lack of personnel communication, 2. insufficient sense of control, 3. dull treatment room design, 4. lack of therapeutic equipment which prolonged the injection time and caused resistance on children and complaints of families. Therefore, the purpose of this program was to reduce the pain index on preschool children receiving intravenous injection in emergency room and thereafter to enhance the satisfaction of children and their families.

Methods: Five plans were implemented in this program as follows: revision of pediatrics intravenous injection processes, planning continuing education, the propaganda poster "I am not afraid of needle", improvement of environmental and purchase of accessory equipment.

Results: Total of 42 preschoolers were collected for this program. The result revealed that the severe pain index decreased from 73.3% to 34.1%.

Conclusion: This project effectively reduced severe pain index of preschool children and promoted a positive experience in the treatment and proceeded to a friendly medical environment.

References:
FUTILE MEDICAL CARE FOR END OF LIFE CRITICAL CARE PATIENTS
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Objectives: The developments in critical care techniques and constant improvements in medical technology have lengthened the life span of critical care patients. An increasing number of end stage critical care patients receive care in intensive care units. However, when a disease is incurable and death in inevitable, does continued medical treatment prolong the patient’s life, or the process of death?
This study details a 70-year-old male patient who underwent CPR (cardiopulmonary resuscitation) and ECMO (extracorporeal membrane oxygenation) due to cardiogenic shock; however, he only had a mean pressure value and his entire body exhibited swelling and cyanosis. At this time, after the family had already signed a "do not resuscitate" (DNR) form, the attending physician still decided to insert a double lumen catheter for hemodialysis. However, the patient was still pronounced dead.

Methods: 1. Modulating collaborative relationship between nurses and physicians forms multidisciplinary care team
2. Regular arranging case for end of life continue discussion forum
3. Discussion each case for end of life situation of every multidisciplinary nurses and physicians team every week

Results: 1. Respect the family’s wishes and arrive at an internal medical consensus
2. Doctors in honest communication and negotiations with patients and families and understand that DNR is not a decision to give up on patients,

Conclusion: Although those who make medical decisions bear incredible stress, it is suggested that they respect the family’s wishes and arrive at an internal medical consensus. Doctors must engage in honest communication and negotiations with patients and families and understand that DNR is not a decision to give up on patients, but a clear treatment consensus. Finally, doctors should also consider the patient’s dignity and comfort.
SAFETY MANAGEMENT OF DISEASES IN PATIENTS WHO HAVE MENTAL DISORDERS AS CO-MORBIDITY

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Objectives: For safety management of diseases, we should note the state of co-morbidities as well as main disease, and among co-morbidities, mental disorders are liable to disturb safety by communication disorder and problem behavior. Since there are few reports on safety management of gynecologic diseases in patients who also have mental disorders, we investigated whether the inpatients in our hospital had any troubles during their hospitalization.

Methods: We checked the gynecologic inpatients who had mental disorders in our hospital in 2015, and investigated their gynecologic treatment, types of mental disorder, and state of communication and behavior by the medical records. Patients who could not understand their diseases were considered to have ‘communication disorder’. The behavior threatening patients’ safety, including offensive action and deviant behavior, was regarded as ‘problem behavior’.

Results: Twenty one cases were applicable, and the total number of hospitalization was 43. The total number of days of hospitalization was 903. Six cases experienced multiple hospitalizations, in which their main gynecologic disease and the state of their mental disorders did not change. The gynecologic diseases were cervical cancer (3 cases), endometrial cancer (4), ovarian cancer (2), CIN (2), uterine leiomyoma (2), endometrial polyp (1), ovarian cyst (4), prolapse of the uterus (1), and pyosalpinx (2). The mental disorders were schizophrenia (9 cases), mood disorder (3), dementia (3), autism (2), eating disorder (1), alcohol dependence (1), drug use in the past (1), and delirium without cause (1). All of them were mainly treated by gynecologists, and also examined by psychiatrists properly during their hospitalization. Six cases had communication disorder, whose mental disorders were schizophrenia (2 cases), dementia (2), and autism (2). In those cases, one of their family members made decisions on treatment instead of the patient. Problem behavior was observed in 6 cases; dementia (3 cases), schizophrenia, eating disorder, and delirium. All the cases of dementia had offensive action during their hospitalizations. Patients with dementia seemed to need a particular care. The case of schizophrenia had a problem of swallowing, which might be a risk of mis-swallowing. The patients with schizophrenia investigated in this study, whose number was largest, were mostly controlled well, and only one case had problem behavior. The case of delirium did self-removal of bladder catheter. The case of eating disorder took other patient’s meal while she was told not to eat. When patients had problem behavior, physical restraint was used for some cases, and medication was modified by psychiatrists in some cases. There was neither delay nor interruption of gynecologic treatment in the patients who had communication disorder or problem behavior, and therefore it seems that those patients’ diseases were safely managed.

Conclusion: When we treat patients who have mental disorders as co-morbidity, the intervention in communication disorder or problem behavior is thought to contribute to safety management of main disease.
MULTI-DISCIPLINARY TEAM (MDT) PATIENT-CENTERED APPROACH IN TREATING OESOPHAGEAL CANCER - A SINGLE CENTRE 5-YEARS REVIEW

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Objectives: Cancer of oesophagus is one of the most lethal cause of death among the world and it is the 10th commonest cause of cancer-related death in Hong Kong. Many of these patients are old age (70% older than 60 years old), malnutrition (50%) and smoker/ ex-smoker (80%). Multi-disciplinary team (MDT) approach is initiated to provide comprehensive and holistic care for oesophageal cancer patients. 5 years results, from 7/2010 to 6/2015, are reviewed.

Methods: MDT, including surgeons, specialist nurses, oncologists, anaesthesiologists, intensivists, physiotherapists, clinical psychologists, dietitians and social workers, was formed to manage patients with oesophageal cancer. Patients suffering from alarming symptoms, e.g. dysphagia, will have a fast track referral and assessment in the surgical specialist out-patients clinic. OGD (oesophago-gastro-duodenoscopy) will be arranged in the next available endoscopy session and pre-operative imaging, including endoscopy USG, CT +/- PET scan, is arranged as soon as possible. Dietitians and clinical psychologists will provide nutritional and psychological support. Referral to dietitians is made once there is endoscopic diagnosis. Social workers will also look into any financial/ social problems of these patients. Treatment plan is formulated in MDT clinic by surgeons and oncologists. Physiotherapists provide pre-operative education, post-operative chest physiotherapy and mobility training exercise. After surgery, patients are cared in the Intensive Care Unit. Bronchoscopy will be done on post-operative day 1 and when needed. Patients will be transferred back to general surgical wards once they are stable. After discharge, patients are reviewed in the MDT clinic again for the necessary of receiving adjuvant therapies or not. 5 years oesophagectomy results were reviewed.

Results: Around 1/3 oesophageal cancer patients received surgery. Others received supportive treatment due to poor pre-morbid status, patients’ wishes or advanced disease state. 50 patients received oesophagectomy from 7/2010 to 6/2015. 30-days mortality for oesophagectomy in this single center is 2.0%. Morbidity rate is 21.1% (Overall crude mortality and morbidity rate in Hong Kong public hospital after oesophagectomy are 2.5% and 57.3% respectively). Only one patient died within 30-days after operation due to sudden cardiac event. Overall results are compatible with international standard.

Conclusion: Multi-disciplinary team (MDT) approach is crucial in treating patients with oesophageal cancer. Different specialties participation are important to provide satisfactory results.
USING REGULAR PATIENT SATISFACTION QUESTIONNAIRES AND PDCA CYCLE TO CREATE A FRIENDLY MEDICAL ENVIRONMENT
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Objectives: In modern oncologic practice, establishing a patient-friendly medical environment is crucial for patient-center medicine. The present study was designed to test whether using regular patient-satisfaction surveys and then PDCA quality-improving cycle is useful to establish a patient-friendly medical environment.

Methods: For improving medical environment, two-stage convenience-sampling survey was used to collect satisfaction data from patients who received radiotherapy. First, 67 patients were allocated for initial condition analysis (2011). In this initial analysis, low-score questionnaire items were candidates for PDCA-improving cycles. After a PDCA cycle, the improved result was analyzed by using a second survey (n = 51; 2012). Independent sample t test was used for statistical analysis between the two surveys. Re-PDCA cycles were done thereafter. Data were regularly gained for further improving.

Results: After our first PDCA cycle, the mean score of overall satisfaction for our medical environment was improved from 4.32 to 4.53 (score range, 0-5). Of these, both ‘clean and comfort of treatment room’ and “clean and comfort of locker room” reached statistically significant differences (P < 0.05). Further improvement maintained high mean scores of overall satisfaction in the following three years (at least 4.6; 2013-2015).

Conclusion: Regularly applying patient-satisfaction surveys and then PDCA-quality-improving cycles is crucial to creating a patient-friendly medical environment in oncologic departments.
ACCIDENT & EMERGENCY ATTENDANCES AND EMERGENCY HOSPITAL ADMISSIONS FOR CASE MANAGED PATIENTS; A SINGLE CASE CROSS SECTIONAL STUDY
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Objectives: Debate exists surrounding the current restricted provision of primary and community care and the implications this has on the overuse of Accident & Emergency (A&E) services, particularly at evenings and weekends. Case management services in England are provided to patients with complex multiple long-term conditions with a history of hospitalisation and are typically delivered Monday to Friday, 8am to 6pm. The aim of this study was to understand the characteristics of case managed patients presenting at A&E and explore the distribution of their attendances and emergency admissions. The aim was met by achieving the following objectives: exploration of the demographic factors of case managed patients attending A&E and subsequently being admitted to hospital, an examination of A&E conversion rate for case managed patients and comparison to the provider/local area levels and determining predictive factors for admission to hospital including source of attendance, in/out-of hours A&E attendance, age, gender and ethnicity for patients of the case management population attending A&E.

Methods: A cross sectional observational study utilising routinely collected A&E attendance and hospital admission data of patients being case managed for a single acute hospital trust in the West Midlands region for the period 01.04.2010-31.08.2015. Data variables included; patient age, ethnicity, gender, referral source, primary diagnosis, primary investigation and attendance disposal. Data were compared to Hospital Episode Statistics for the year 2013/14 for the trust and region. Descriptive statistics were applied. Inferential statistics were conducted according to the data type; categorical data were subjected to chi squared and numerical continuous data were subjected to t-test. A binomial logistic regression was performed to determine predictive factors for being admitted to hospital.

Results: 9080 episodes representing 3355 patients were analysed. 84.76% of the case management patients attending A&E are 70 years and older and 52.92% are female (p<0.05). 84.89% of case managed patients arrive via emergency services, 76.99% are subsequently admitted to hospital and have an A&E conversion rate of 82.78% showing a statistically significant association (p<0.05). Sunday is the busiest day for admission from A&E. Binary logistic regression analysis demonstrated that only referral source made a significant contribution to the prediction of admission to hospital (p<0.005). Nagelkerke’s R² of 0.199 on a reduced variable model using only referral source indicated that there are other variables accountable for the majority of the variability in the data.

Conclusion: Case managed patients arrive at A&E via emergency services and are admitted to hospital more frequently than the organisational/area level populations. The high level of A&E conversion could indicate case management patients are presenting appropriately with acute clinical need. However, inadequate provision in the community could drive decisions for admitting vulnerable patients. A weekend effect may be present in this elderly populace corroborating previously published research. Variables responsible for predicting admission were incomplete and better quality data collection, along with integration of acute and community services is required for further research to extrapolate the findings and predict if they are replicable nationwide

SUSTAINED HEALTH CARE QUALITY AND BIO-PSYCHOSOCIAL (BPS) APPROACH ON COST-EFFECTIVENESS OF CANCER PATIENT’S TREATMENT: PRELIMINARY RESULTS OF A SMALL OUTPATIENT CLINIC

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Objectives: Our activity was started on 1998 committed to the mission of a comprehensive care for cancer patients. The intervention should contemplate the best standard treatment given by a trained interdisciplinary team. Soon we would observe that this objective was not enough. Under the patients critical view this was supposed to be the minimal qualification required for an outpatient cancer care unit. Patient’s unconsciousness expectance was far beyond. He or She was looking for a complete health recovery and a brief returning to the previous life style. Consequently, we immediately adopted a sharing decision process. We spent all the time that would be necessary to better understand the patient and family needs. We made all the efforts to clear communicate the diagnosis, prognosis and necessary interventions in a very precise, but also in a gentle and humanized way. These simple attitudes would facilitate the patient’s treatment adherence and a mutual compromised follow-up. Cancer mythical view was disclosed and a new sense of reality was achieved, integrating the disease and treatment’s needs into the patient’s daily life style. Those were the first steps toward a BPS approach. Despite the universal well-recognized importance of the BPS approach, most of the reviews showed an intrinsically methodological difficulty to evaluate the intervention.

Methods: We proposed a BPS approach, which required a human changing management directed both to the patients and to the clinic staff. After several consensual meetings we sequentially adopted seven BPS interventions: Removing self-protection, improving the sense of belonging, applying to a tutorial, creating a virtuous wheel, promoting collective intelligence, producing a realistic scenario and developing self-management of an open clouding computing IT patient’s file. We critically reviewed the deaths and evaluated the overall survival of 35 metastatic cancer patients who were subjected to at least three BPS interventions. Patients were categorized according to the tumor anatomical site, pathologic, molecular and immunohistochemical characteristics, clinical stage and treatment. The observed survival (OS) in each case was paired with the median expected survival (ES) previously reported on prospective randomised trials that better fit both group of patients into the same prognostic factors. The treatment cost of each patient was converted in American dollars in a daily exchange basis and the cost of the treatment periods were compared with those analyzed by Avalere Health which was commissioned by Community Oncology Alliance to evaluate chemotherapy cost in four large USA commercial managed care plans.

Results: Our results showed a 55% increase in in median survival and a 40% decrease in cost, conducting to an impact benefit of 95% in cost-effectiveness.

Conclusion: Despite the small number of patients, this is the first study, which could prospectively indicate a cost-effectiveness advantage obtained with BPS approach, supporting a low-cost standard treatment of metastatic cancer patients through behavioral changes.
IMPROVING THE ADMINISTRATION OF ORAL NUTRITION SUPPLEMENTS TO MALNOURISHED PATIENTS ACCORDING TO PRESCRIPTIONS

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Objectives: Malnutrition is prevalent in institutionalised older adults and it predicts adverse clinical outcomes such as mortality. The use of oral nutrition supplements (ONS) is an evidence-based approach to prevent and manage malnutrition in hospitalised older adults to improve clinical outcomes. This clinical practice improvement programme project aimed to increase the compliance of ONS served, consumed and documented according to dietitians’ prescriptions in a geriatric subacute ward within 6 months.

Methods: A project team comprising dietitians, nurse clinician, staff nurse, assistant nurse, healthcare assistant and pharmacist from the ward was formed. A macro and micro flow for the process of serving ONS to patients were mapped out. Possible reasons for the problem were brainstormed and categorized in an affinity diagram. Root cause analysis was completed using a Ishikawa (fishbone) diagram. Multi-voting was conducted by the team and plotted into a Pareto chart to identify the vital few root causes. Intervention strategies were identified to address the prioritised root causes. The intervention strategies were implemented using a PDSA (plan-do-study-act) cycles. An ONS administration chart was developed to enable the monitoring of data pre and post intervention. The ONS administration compliance was measured as a percentage of the frequency of ONS served, over the total prescribed ONS opportunities of all patients in the ward per week. Baseline and post intervention data were maintained using a run chart during the project period.

Results: The compliance for administering ONS was found to be 14% through an observational audit conducted in the ward. The root causes identified were: i) knowledge deficits of nursing staff on the importance of nutrition and the role of ONS; ii) mealtimes and ONS serving times were too close; iii) lack of standard care protocol and visual cue for serving ONS; iv) competing roles and responsibilities of nursing staff. Prior to the interventions, an orange coloured chart was introduced to monitor the data administering ONS and that consumed by patients. Following the use of the chart, the compliance increased to 60%. A series of interventions: i) experiential training sessions on nutrition and ONS conducted by dietitian for nursing staff; ii) development of standard practice for serving ONS through application of visual cues such as using bedside coloured charts and transparent measuring cups; iii) involvement of healthcare attendants to assist with pouring ONS for patients were subsequently implemented. These resulted in the further improvement of compliance to be achieved and maintained at 80%.

Conclusion: The improvement in the compliance of administering ONS in this project demonstrated the effective impact of visual cues and the enhanced accountability of nursing staff in serving ONS. Heightened awareness on the role of ONS and appropriate task prioritisations are fundamental to this change in clinical practice. With the improved ONS serving compliance and corresponding increased oral intake for patients, it is projected that the development and deterioration of malnutrition can be minimised. This will potentially reduce the utilisation of resources with shorter hospital length of stay, decreasing the cost to patients and hospital.
THE IMPLICATION OF MEDICAL CARE COLLABORATION TO REDUCE TUBE THORACOSTOMY COMPLICATIONS IN THORACIC SURGICAL PATIENTS
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Objectives:
Tube thoracostomy are a widespread intervention to remove abnormal accumulations of fluid or air between pleura in patients admitted to acute respiratory or cardio-thoracic surgery care units. Caring for patients with chest tube required knowledge and skill to ensure patient safety. However, there is limited information regarding the best care methods on patient after procedure. In this article, we introduced a prospectively standardized approach by medical care collaboration to avoid mismanagement of chest drains and reduced procedure-related complication consequentially.

Methods: A checklist of standardized care was developed by multidisciplinary meeting and routinely used since July 2014. All procedure knowledge was introduced for nurse by two hour training session and for patient’s caregivers by a 20 minutes video. Clinical data and procedure related complication are collected before (Phase I, January to December 2013) and after (Phase II, July 2014 to May 2015) the implication of the checklist.

Results: There were 249 patients who received tube thoracostomy in Phase I and 344 patients in Phase II. Complications occurred for 21 patients (8.4%) in Phase I and 3 patients (0.9%) in Phase II (P < 0.01). There were no procedure-related deaths. After introducing the checklist and medical care collaboration, the migration or dislodge of chest tube was never happened.

Conclusion: The collaboration of nurse and patient’s caregiver and the implication of standardized checklist could reduce complication rate and further avoid chest tube dislodge or migration. Our results may help promote safety while taking care of these patients.
THE ILLNESS PERCEPTION AND SELF-CARE BEHAVIOR OF PATIENTS WITH HEART FAILURE

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**Objectives:** The study was based on self-regulation model and aimed to investigate the relationship between illness perception and self-care behaviors of patients with heart failure. The purposes of the study were to (1) describe the illness perception (illness identity, illness representations, and cause) and self-care behaviors of patients with heart failure, (2) examine the relationship between illness identity and self-care behaviors, (3) analyze the relationship between illness representations and self-care behaviors, (4) analyze the relationship between cause and self-care behaviors, and (5) identify important predictors of illness perception and self-care behaviors patients heart with failure.

**Methods:** This study used a descriptive correlational design. The study subjects were patients with heart failure from a teaching hospital in northern Taiwan. Three questionnaires including the illness perception questionnaire revised (IPQ-R), the heart failure symptoms experience questionnaire, and the self-care behaviors questionnaire were administered to the study participants. Independent t-test, Pearson’s correlation and hierarchical regression were used to analyze the results.

**Results:** Univariate analyses revealed that age \((r = .34, p < .001)\), education level \((F = 4.93, p = .009)\), and NYHA functional class \((F = 4.93, p = .009)\) are significant correlates of IPQ-R subscales. Hierarchical regression analyses showed that personal control in the illness representations significantly predicted self-care behaviors.

**Conclusion:** Patients’ illness representations impact self-care behaviors. They believed that the personal control of heart failure. Patients will show a better self-care behavior if they can recognize the signs of heart failure. Results of the study suggest that development of an individuality heart failure disease health education or intervention program is required.
POSTTRAUMATIC STRESS DISORDER AND RESILIENCE FOR LUNG CANCER PATIENTS
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Objectives: Cancer patients undergo tremendous pressure, including physical, social and economic burden. These multiple conditions might induce further psychological disturbances. The purpose of this study was to explore the possible stressor after PTSD and how patients resilience from cancer in lung cancer patients.

Methods: A cross-sectional research design with convenience sampling was conducted. Patients eligible criteria were at least 20 years old or more and diagnosed with lung carcinoma. Participants were asked to complete a demographics and disease characteristics, the Posttraumatic Stress Reaction Index-Short Form (PTSRI-SF, consists of 16 items in 4-point Likert scale), and Pressure Resilience scale-Chinese Version (PRS, 29 items in 1-7 points). SPSS 17.0 Inc. was used for analysis including mean, standard deviation, ratio, maximum, minimum values. Mann-Whitney U test, ruskal-Wallis H test Spearman correlation, a p value < .05 considered statistically significant.

Results: The majority of participants were men (63.16%, n=12), with a mean age of 53.8 years. They graduated from high school (42.11%). The majority of participants (52.64%) diagnosed with lung cancer at least 6 months or more, 31.58% (n=6) with diagnosed lung cancer less than three months. More than half (57.9%) diagnosed with squamous cell lung cancer (SCLS), with stage IV of disease (63.16%). Most participants (57.9%) received multiple anti-cancer treatments (e.g., surgery, chemotherapy, radiotherapy and so on). The study showed that they reported a lower level of PTSD (Mean=0.6, SD=0.8) and moderate to higher level of pressure resilience (Mean=152.3, SD=27.2). Top three scores of subscales on pressure resilience were “social resource”, “social activities”, and “personal strength”.

The results of this study showed that participants who diagnosed with Non-small cell lung cancer and stage IV of disease reported higher scores of PTSD than ones with SCLC and stage I to III (p<0.05). Patients who received multiple anti-cancer treatments and had a length disease trajectory also had higher levels of PTSD than ones receiving the signal cancer treatment and currently diagnosed with disease (p<0.05). The result showed that participants who received repeatedly examination, or surgery, or other relevant images had decrease recovery from disease (Spearman Correlation Coefficients -.52, p < .02).

Conclusion: This study showed that there was a lower level of PTSD and moderate to high level of pressure resilience on lung cancer patients. However, there were difference on PTSD by disease stage and length lived with cancer. It is similar to previous studies. Lanius et al. (2013) reported that perceived stress disorder increase alertness and self-posttraumatic environment. Ouyang (2013) reported that patients who had dissociative symptoms with recurrent episodes of similar events presented hyper alertness and would be hard to concentrate.

The result showed that participants who received repeatedly examination, or surgery, or other relevant images had decrease recovery from disease. Lee (2003) reported that cancer patients in the process of life adaptation have ten resilience factors, in particular social support. It is similar to Chen (2010) study, in which the main source of patients' resilience was personal beliefs, and social support.

This study added more knowledge of PTSD and pressure resilience on lung cancer patients. It is important to early provide the intervention of psychological and social supports for improving their quality of life.
EXPLORING BOWEL DYSFUNCTION, SELF-CARE NEEDS AND DEPRESSION OF PATIENTS FOLLOWING COLORECTAL SURGERY
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Objectives: Colorectal cancer accounted for the first incidence of cancer in Taiwan, and surgery is the main treatment. When the patient received anterior resection, low anterior resection, or anal sphincter-saving operation, about 90% suffered bowel dysfunction. Studies have shown that about 20-25% of cancer patients suffer from depression and affect their daily life. Therefore, the main purpose of this study is to investigate:
(I) bowel dysfunction, self-care needs and the change of depression degree in post-surgery patients of colorectal cancer.
(II) The difference among demographic variables, disease characteristics and bowel dysfunction, self-care needs and depression.
(III) The correlation among bowel dysfunction, self-care needs and depression.

Methods: This was a prospective tracking-survey study, and total of 38 cases of first-time surgery colorectal cancer patient were received as samples. Research tools include demographic data, disease characteristics information, "low anterior resection syndrome scale (LARS score)," "Beck Depression Inventory BDI-II Chinese version" and "self-care needs score", were using respectively, before the patient is discharged, one week, one month and three months after discharge to gather information.

Results: (I) Basic information: male 23 (60.5%), female 15 (39.5%), the average age 59.24 ± 10.09 years, receiving AR 4 (10.5%), LAR 11 (28.9%), ISR 13 (34.2%), ISR with diverting stoma 9 (23.7%), APR 1 (2.6%). In the disease treatment plan, OP 7 (18.4%), CCRT-OP / T 22 (57.9%), OP / T 9 (23.7%).
(II) Self-care needs level (86.68±11.81, 80.26±14.52, 79.50±19.74, 75.79±19.50), p= .01. The demands significantly reduce while time increase. Both depression degree (p=.69) and the degree of bowel dysfunction (p=.38) showed no significant differences for the time increase.
(III) Disease characteristics: for the degree of bowel dysfunction, there was a significant difference (p <.05) in both different surgery and different treatment plan.
(IV) Demographic variables: gender, age, education, religion showed no significant difference in the degree of bowel dysfunction, self-care needs and depression (p> .05). Married showed higher degree of depression than singles (p <.05).
(V) In a week after discharge, the degree of bowel dysfunction and depression level showed significantly positive correlation (r = .50, p = .01); while self-care needs and the degree of depression have significant positive correlation (r = .36, p = .03) before discharge.

Conclusion: The post-surgery bowel dysfunction showed the highest level one month after discharge, and it showed downward trend as time goes by. Forty percent of the patients suffer major LARS three months after discharge. After surgery, self-care demand shows the highest level before discharge, and it significantly decreases while time goes by; however, post-surgery emotional demand shows no different over time. After surgery, the degree of depression shows the highest level before discharge, and it gradually declines over time. Three months post surgery, depression cases are about 10%.
IMPACT OF PHARMACY EDUCATION AND COUNSELING SERVICE ON CHEMOTHERAPY PATIENTS
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Objectives: Chemotherapy is a powerful weapon for destroying and/or limiting the growth of tumor cells, it is also a double-edged sword. Chemotherapy has elicited fear in cancer patients because this treatment could cause unpleasant side effects. People who do not have sufficient knowledge about preventing or managing side effects may cause extra medical cost. In order to enhance patient understanding and to secure the safety of treatment and minimizing medical cost, pharmacy service for cancer patient was piloted in a breast surgeon’s clinic since September 2014. This study aimed to explore the impact of pharmacy service on chemotherapy patients.

Methods: Pharmacy service incorporated education and counseling about drug information, adverse effects prevention and management. Patients would have an appointment with pharmacist ahead of chemotherapy, and they would get a booklet designed according to their treatment protocol. We conducted a retrospective descriptive analysis comparing 10 months before and after implementation of pharmacist service to cancer patients. People who were chemotherapy naïve and had stable disease would be included in analysis. The primary outcome was medication cost for managing the side effects after each cycle of chemotherapy. The secondary outcome were frequency of dose reduction of antineoplastic due to side effects, scheduled chemotherapy delay due to side effects, emergency room visit, admission rate, degree of patient-reported side effects.

Results: Seventy-nine and seventy-eight patients were included in the interventional group and control group, respectively. Age, the Eastern Cooperative Oncology Group Performance Status, breast cancer stage, chemotherapy regimen, and dose of chemotherapy of intervention group and control group were similar. The average medication cost for managing side effects after each chemotherapy cycle in interventional group was NT$4,030, which was significantly lower than NT$6,276 from historical control group (p< 0.001). There were 77 (97.5%) patients in the interventional group remained in their original chemotherapy protocol without dose reduction, significantly more than 61 (78%) in the control group (p< 0.001). In the self-reported side effects, pharmacy service effectively alleviate diarrhea problem in chemotherapy patients (p=0.04). There were no difference in the frequency of chemotherapy delay, emergency room visit and hospitalization.

Conclusion: During the intervention period, there was 36% cost-saving in medication prescribed for treating side effects per chemotherapy cycle, and most patients received their chemotherapy regimen without dose reduction. The pharmacy education and counseling service is beneficial for chemotherapy patients. We will expand this practice to patients with other cancer types and evaluate the clinical value continually.
REDUCED THE UNPLANNED CANCELLATIONS OF SURGICAL OPERATIONS BY ESTABLISHMENT THE STANDARDIZED MANAGEMENT PROCESS

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Objectives: Cancellation of operation schedule might impose inappropriate use of hospital resources, reduced efficiency and additional financial and psychological stress to the patients, resulting in less satisfaction. As an efficient operation scheduling system is essential, the hospital should also better manage operation cancellations, and this was considered related to better patient-centred care, satisfaction, timeliness and patient safety. This work was performed at a university-affiliated medical centre in Taiwan. We found that the cancellation rate in 2011 was 3.75%, while in 8.4% of those cancellations the surgeons did not report the reason. Complaints about inadequate explanations for the reason for cancellation were also reported in 2011. We considered the unawareness of the importance of patient management during the cancellation process and the lack of standardized process were the main causes for the undesired performance.

Methods: Leader from the surgical committee and clinical departments proposed action plans for a 2-year time frame, we established standardized process for cancellation of surgical operations including: 1) IT-supported enforced reporting of the reason for cancellations. 2) Development of standardized process applied for cancelled operations to assure that the patients be informed of the reasons, the expected time to perform surgery and alternatives, and documented in the medical records. A total of 20 education activities to announce the policy and procedure were given in 2012, and this was followed by the establishment of medical record review process to assess the compliance of the surgeons. 3) Continuously monitoring the cancellation rate and reason with information feedback to the surgeons, and reporting with discussion at the surgical committee meetings.

Results: A total of 74,753 surgeries were scheduled during January 2012 through December 2013. The primary outcome surgery cancellation rate decrease significantly from 3.75% in the year 2011 to 3.41% in the year 2013 (p=0.023). The control chart result of the primary outcome variable cancellation rate. In addition, the number of operations cancelled due to hospital factor also markedly reduced from 0.25% in the year 2011 to 0.14% in the year 2013 (p=0.001). The top 3 reasons for unplanned cancellation due to hospital factor are also reduced: 1) “Surgeons’ personal reason” reduced from 36(2.3%) to 20(1.6%); 2) “Exceeding the working time of operating room” reduced from 34(2.1%) to 23(1.8%); 3) “Equipment and instruments” reduced from 20(1.3%) to 14(1.1%). The failure rate of reporting cancellation reasons was reduced to 0%. The auditing pass rate increased from 92.66% to 92.71% in 2013. Moreover, the numbers of complaints decreased from 1 case to 0.

Conclusion: Operation scheduling reflects the hospital resource utilization. With the implementation of our programme can be learned, improving the awareness of the importance of patient management during the cancellation process and establishing the standardized process for cancellation of surgical operations might improve care timeliness, with better further operation management of patients and better patient-centred care.

References:
A QUALITATIVE ANALYSIS OF THE CONCEPT OF SUCCESSFUL AGING AMONG THE OLDEST OLD IN JAPANESE SOCIETY; RE-EXAMINING THE CONCEPT THROUGH THE ADAPTATION PROCESS TO AGING

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Objectives: The increasing lifespan of Japan’s oldest old population has forced society to rethink the notion of what constitutes as “successful aging.” We can conclude that “successful aging” is no longer defined by the ability of the elderly individual to support oneself and contribute to society, especially given how the average life span has increased. Through this research, we intend to re-examine the concept of “successful aging” in terms of what it means to the oldest old elderly ages 80 and above. This abstract is a part of article titled ‘Concept of successful ageing among the community-dwelling oldest old in Japan’ published from British Journal of Community Nursing in 2015 [1].

Methods: Research was based on semi-structured interviews with men and women over the age of 80. A total of 15 participants (7 men and 8 women) from the age of 81 to 98 were chosen from several local groups and institutions in City A. Each subject was called in for an hour-long semi-structured interview, in which they discussed their everyday life, hobbies and hardships, and their views on mortality. A grounded theory approach was employed to analyze the data.

Results: Successful aging for the oldest old was grouped into six categories; [Conflict over declining function], [Relationship with the aging body], [Reflection on self], [Reflection on daily life], [Reflection on society], and [Reflection on life and preparation for death]. Within these categories we discovered the structure of successful aging, which synthesizes ideas from the adaptation process with those of physical and cognitive decreased function, as well as spirituality.

Conclusion: The characteristics of successful aging for the oldest old in Japan that were revealed through this research were as follows.

- **The process of accepting function decline**
The oldest old struggle with the decline of their physical and cognitive functions, and eventually learn to cope with their bodies. It is necessary to observe that successful aging of the oldest old elderly is not defined by the ability to avoid negative issues and maintain a high level of function, but instead by the ability to face these declining functions head-on.

- **The “daily thought process” behind making resolutions**
It is certainly difficult for the oldest old to lead their lives without confronting function decline. However, by paying gratitude to their everyday lives and thinking about their community, it is possible for them to pave their own path in life, disregarding the concerns mentioned above.

- **The spirituality of oldest old elderly exhibited in their [Reflection on life and preparation for death]**
The oldest old looked back on their life in the time frame leading up to their eventual death, and contemplated the meaning of life and death on their own terms. This category relates to the spirituality of the oldest old elderly, and is thought to be a vital component of successful aging. To the oldest old, spirituality itself is a necessary part of successful aging, as it helps to give meaning to their lives.
The oldest old in Japan work to arrive at a conclusion with their lives, all the while coping with the drawbacks of aging, such as the decline of their physical and cognitive functions. This resilient and flexible way of life makes their form of aging an equally “successful” one.

INVIGORATING REGISTRATION OF HIGH-PASS CARD SERVICE FOR PATIENTS
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Objectives: To improve the satisfaction of patients, we invigorated the use of high pass pre-registered card system. Our hospital have 1,800 beds, more than 10,000 numbers per day outpatient clinic, 1,600 numbers per day in patients. The traditional hospital payment system was post payment system after every procedures and treatments in hospital and it causes to delay waiting time at the cashier's desk. We found the problems of complicated registration system of high pass card, limitation of account desk and lack of advertisement of high pass card to patients of our hospital. Before qualitative improvement activities June, 2015 yr, just 20~30 cases high pass card registration per day and accumulation cases are 8,400 cases.

Methods: We did active advertisement activities for increasing perception about high pass card to patients including SMS message sending by mobile, making banner, sticker, leaflet, electronic display, compensating the system of registration and providing incentive to cashier staffs of registration. Especially we compensate the convinence of registration system.

Results: The registration numbers of high pass card increases up to 10 times before activities average 130 cases per day, accumulation cases 24,500 from July 2015 yr to now 2015 December 31st. The satisfaction about waiting time and payment increased.

Conclusion: For improving the patient satisfaction and convenience, hospital payment method should be compensated continuously in hospital. It will contribute the efficiency of hospital administration focused on person.

SYSTEMATIZED FOLLOW-UP MANAGEMENT OF PCA (PATIENT CONTROLLED ANALGESIA)

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Objectives: One of the anxiety and fear commonly experienced by many patients ahead of surgery is a fear of pain that can occur after surgery. Effective acute pain management after surgery can promote the recovery of the patient with an expectation on the improvement of satisfaction on medical service, thus in order to solve these pain problems, PCA (Patient Controlled Analgesia) is commonly applied. However, after the end of surgery, inadequate pain management of the patient was experienced due to the lack of systemized post management of PCA for the patients who had moved to the ward or ICU. Therefore, a satisfaction on the medical services related to surgery had decreased and problems that cause various complications according to the use of PCA were discovered. Thus this activity was carried out.

Methods: We have performed the QI activity by applying the Plan - Do - Check - Act (PDCA) method. For the first phase, as a result of collecting the data through a questionnaire targeting 30 patients applied with PCA and 49 nurses in the ward where PCA patients were hospitalized from 2015.4.10 to 2015.4.20, Fro the knowledge of nurses and patients related to PCA, the scores were 61.3 points and 35.8 points respectively, and the level of satisfaction was 2.2 points and 2.3 points, where the goal after the future activities were set to 90 points for the knowledge of nurses and patients related to PCA and the satisfaction of PCA was established as 3.2 points out of 4 points using a Likert Scale.

In the second phase, the post management status of PCA of the 3 places was investigated by benchmarking other hospitals where patient educational leaflets were produced and placed at outpatient, ward and surgery preparation room. PCA education for ward nurses was provided and the operating plan for 'Ilsan Hospital's e-PASS team' who are the post-PCA professional team consisting of anesthesia room nurses and anesthesiology doctors was established.

Results: After performing the above improvement activities, as a result of performing the follow-up investigation using the same condition as the previous survey from 2015.8.20 to 2015.9.1 in the third ‘Check’ phase, the knowledge of nurses and patients related to PCA has shown 84.9 points and 74.3 points respectively and the level of satisfaction was 3.0 points and 3.6 points each. Compared to the previous survey, the knowledge was improved by 23.4 points for nurses and 38.5 points for patients, and the level of satisfaction was improved by 0.8 points for nurses and 1.3 points for patients. Although the goal for patient satisfaction was achieved compared to the goal, the knowledge point of nurses and patients and the level of satisfaction of nurses were not achieved with statistically significant results, thus we were able to verify that it was improved using the QI activities.

Conclusion: Through this activity, knowledge and the level of satisfaction on the PCA for patients applied with PCA and the nurses in ward was both increased. However, based on the current PCA management method that is operated based on the PCA treatment service on the day of surgery rather than PCA post management, an improvement of satisfaction and early detection of complications which occur to the patient due to PCA cannot be expected. Therefore, as seen in other hospital practices, a strategy of providing effective pain management by configuring the 'Ilsan Hospital e-PASS team' who are the post-PCA professional management team for the post-surgery acute pain management should be maintained.
WHEN TEAM CONFLICTS THREATEN QUALITY OF CARE: A QUALITATIVE STUDY OF HEALTHCARE PROVIDERS’ EXPERIENCES AND PERCEPTIONS
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Objectives: Conflicts between healthcare providers can threaten quality and safety of care. The objective was to explore providers’ experiences of team conflicts and their perceptions of how these conflicts could impact patient care.

Methods: In-depth interviews were conducted with eighty-one physicians, nurses, and nursing auxiliaries working in four departments (internal medicine, community medicine, paediatrics, and surgical units) at the Geneva University Hospitals, Switzerland. Interviewees were asked to describe one or two conflicts they had experienced or observed, how conflicts were handled, and to discuss how these conflicts might have affected patient care. All interviews were transcribed verbatim. We performed a content analysis on our data and, in complement to the content analysis, we used the six dimensions (safe, effective, patient-centred, timely, efficient, equitable) of quality of care (Institute of Medicine, “Crossing the Quality Chasm”, Washington, 2001) to describe the impacts of conflicts on patient care.

Results: Conflicts were intra-, interprofessional and/or involving various hierarchical levels; they were caused by disagreements pertaining to relationships, tasks, team processes, structural processes, as well as to social representations of group identity (e.g. between professional groups, or between different hierarchical levels within the same group). Strategies for handling conflicts were diverse, notably depending on whether or not supervisors were involved in conflict resolution. Overall, participants acknowledged that conflicts had had an impact on patient care in approximately half the cases they discussed. Our preliminary analysis using the six dimensions of quality of care indicates that among the latter cases, most impacts on patient care resulted in care not being provided in a timely manner to patients (delays, longer hospitalization) and in care not being patient-centred (patients – and/or family – needs not fully met). In some situations, conflicts resulted in less efficient (degraded communication with medical orders and counter-orders) and less effective care (surgical intervention provided by an inexperienced and unsupervised surgeon, underuse of the best available techniques). In terms of safety, some participants described environments in which errors and mishaps had occurred (or were more likely to occur) because of conflicts. Whereas most participants described situations where conflicts resulted in deterioration of patient care quality (conflicts=>$\text{poor quality of care}$), the opposite (poor quality of care=>$\text{conflicts}$) was also mentioned, although more rarely.

Conclusion: Team conflicts are diverse both in their causes and management strategies. Based on participants’ self-assessment, conflicts had an impact on patient care in one case out of two, with the most common impacts being failure to provide care in both a timely and a patient-centred manner. During the interviews, some participants had difficulties in evaluating a conflict’s impact on patient care. The next stage of our analysis will be to evaluate whether situations where participants did not identify any impact on patient care affected healthcare in indirect ways. Following that, we will seek to understand the link between impacts of conflicts on patient care and different causes of conflicts.

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PERSON CENTRED CARE: MANAGEMENT OF ACUTE POSTOPERATIVE PAIN IN ARTHROPLASTY SURGERY
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Objectives: Pain after surgery is a major worldwide health problem, it is common, unnecessary and prolongs hospital stay. For the management of pain there are evidence-based guidelines and effective drugs for pain control but 40% to 63% of the European hospital inpatients continue to have pain and up to 70% of patients report moderate to severe postoperative pain. The JCAHO requires in its standards of quality that all patients are assessed for pain and that this assessment results in an appropriate treatment. The American Pain Society considers pain as the fifth vital sign to be detected at each step of the treatment of a patient.

In total joint arthroplasty, the postoperative pain management is still frequently suboptimal, even if effective protocols are currently available. In our project of gaining a pain free hospital, we have reorganized an orthopedic department for the management of a comprehensive pain management strategy of postoperative acute pain and for the measurement of pain management effectiveness in patients with total joint replacement.

Methods: Set up an informal interdisciplinary working group for: technical advice, implementation, pain evaluation, management practice and identification of improvement opportunities.

Prepare a plan for the formation, information and awareness in order to train medical and nursing staff to the pain problem.

Choose scales for the auto-evaluation of pain and for the sedation value.

Give to patients an information/formation document on the problem of the pain control, with explanation of the objectives (pain control to reduce the negative clinical outcomes) and of the related risks caused by therapies for the suppression of pain (expiratory depression, vomit, hypotension and bradycardia, pruritus and inhibition of bowel function).

Construct an organizational model for the pain control in the department.

Construct a survey card to measure the patient satisfaction for the control of pain.

Set up a “therapeutic strategy” to correctly face pain in patients with total joint replacement.

Results: We have chosen two pain evaluation scales to be inserted as document in the hospital chart: a numeric one (NRS) and a numeric visual one (VAS) rating 0–10.

Patients self-report their pain rate on the two scales.

Nurses report their evaluation of the patient’s pain on NRS and VAS scales.

The evaluation of pain is conduct at the initial encounter before surgical intervention and periodically at least twice a day in postoperative period, or as suggested by clinical situation.

We have chosen to treat patients from a value of pain of 3–10.

The VAS has resulted preferable both by nurses and patients.

Nurses assessments of pain severity were lower than the patients rate and poorly agree with the patients pain evaluation.

The evaluation of pain control made by patients assessed on Likert Scales (0–6) points out a postoperative good pain control.

The patient satisfaction degree (measured with a satisfaction score) was significantly increased (P<0.05) and it was better in patients who received the document on the control of the pain problems.

The preoperative clinical conditions and the intensity of the pain before the surgical intervention both influence the postoperative pain control.

Conclusion: From the patients’ point of view, efficient pain management reflects the quality of health care, therefore the evaluation and the management of the severity of pain experienced by patients is very important. This protocol implements the procedure of pain control in all patients and has demonstrated improvements in patient satisfaction.
THE EFFECTIVENESS OF POST-ACUTE CARE MODEL ON A PATIENT WITH ACUTE STROKE

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Objectives: The aim of this report is to discuss Post-Acute Care (PAC) model in a self-living patient losing ability of self-care after left hemiplegia caused by acute stroke.

Methods: Roy's adaptation model (RAM) was utilized with information collected from open meetings, observations, physical assessment, and shared caring model. This study was qualitative research with a patient purposively sampled from acute stroke cases diagnosed by a medical center.

Results: The 62-year-old male patient suffered from left hemiplegia caused by acute stroke which resulted in loss of mobility for daily routines. His serious anxiety occurred from the worry of being uncared-for. Major health problems were identified as following: dysfunction of physical activity, self-care deficit, and anxiety. During the nursing period, active caring was performed to understand patient's requirement and individualized nursing for specific health condition was also provided by the author. Under the criteria of Post-Acute Care - Cerebrovascular Diseases (PAC-CVD), Ministry of Health and Welfare, the patient was successfully discharged to PAC-CVD-governed rehabilitation hospital and recovered to the best remaining physical functionality.

Conclusion: PAC-CVD is a fresh prospect for patients in post-acute stroke care which increases the potential of rehabilitation during golden time window after stroke, reduces the level of dysfunction and strain on caregivers. PAC model also eases the congestion in medical centers with more bed vacancy and transfers patients to regional or local hospitals which often have less and can be seamlessly integrated with future long-term care. PAC model requires proactive cooperation from different levels of medical organization, comprehensive promotion from authorities, and complementary measures. The benefits are not only lowered risks for long-term dysfunction of patients but also diminished burden of National Health Insurance, families and the society.
OBJECTIVES: A "Tokyo Olympics 2018" is coming. Prior to the Olympics games, a tremendous number of people from overseas will come here. In Japan, even around the Tokyo city, we do not fully prepare for the foreigners in an aspect of language. Ordinary Japanese adults cannot speak English, despite of high educational standards in Japan. Naturally, almost all the hospitals in Tokyo also are not in good preparation for patients that are unable to speak Japanese. Now in our hospital, National Center for Global Health and Medicine (NCGM), staffs are engaged in dealing with a support for people from overseas. In this study, the current language support system in NCGM were evaluated to discuss how to improve the quality of medical care for foreigners that are involved in a disease or injury.

METHODS: A retrospective observational design was utilized. Data from records of 64 patients with language barriers across 12 months were analyzed. The period was from February 2015 to January 2016.

RESULTS: Among 64 cases, 7 cases (10.9%) reported that official interpreters were used. 5 of them were Chinese speakers, the others were Korean and Vietnamese. 18 cases (28.1%) of 64 reported use of a family member or friend as ad hoc interpreter. 38 cases (59.3%) reported that the physician spoke in English and managed to communicate, these cases were the most common. One left case had no record about the way of communicating.

High frequency country the patients came from were China(23 cases), Nepal(9 cases), Vietnam(4 cases), Korea(3 cases), Thailand(3 cases), Myanmar(2 cases), France(2 cases), Phillipine(2 cases), India(2 cases), USA(2 cases).

As for the official interpreter service, available language were limited to only 5 languages, English, Korean, Chinese, Spanish and Portuguese, which restricts use of official interpreter. On the other hand, even preparing Chinese official translation system, only 5 cases of 23 Chinese patients used the service. Of the rest of 18 cases, 9 patients used a family or friend as a temporary interpreter, which was undesirable way because it was difficult for unprofessional person to translate accurately.

CONCLUSION: In summary, this observation showed that our language support system functions imperfectly. Hospital staffs in Japan may be unfamiliar with medical care by using foreign languages and handling in interpreter system, and therefore, should not make the language support system unused.
REDUCING CANCER PATIENTS’ MISCONCEPTIONS OF OPIATE ANALGESICS AND INCREASING SATISFACTION WITH PAIN CONTROL
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Objectives: Pain is one of the most common cancer symptoms, and the most dreadful experience for cancer patients. However, over 70% of cancer patients in Taiwan suffer from different levels of pain (Chen, Sun, Liao, Li, Zhang, 2011). Survey of cancer patients taking opiate analgesics for no less than three days using the Brief Pain Inventory revealed that only 60.5% of patients were satisfied with the pain control provided, 73.3% opted to endure the pain and not take the opiates, and 25% were unwilling to notify medical personnel of their pain. The main reasons given for this included concerns regarding addiction, side effects, the drugs remaining in their system, and the absence of better alternatives. As these patients had poor pain control, they also experienced emotional distress and sleep disorders. Therefore, this study used complete and effective measures to improve patients’ impressions of opiate analgesics in order to increase cancer patients’ satisfaction with pain control.

Methods: Posters and pamphlets on common misconceptions of morphine were designed in this study. Between 4/1/2015 and 8/31/2015, the posters were displayed on bulletin boards throughout the hospital and the pamphlets were distributed to patients upon admission to explain the uses and side effects of opiate analgesics. Participants’ levels of pain, emotional state, and any side effects were evaluated daily. The participants were encouraged to freely express their thoughts or anxieties regarding the analgesics. The participants were also introduced to past patients and discussed previous experiences with analgesics in order to dissolve any misconceptions held regarding opiate analgesics so that patients would have a greater understanding of these drugs and greater satisfaction toward pain control.

Results: Fifty cancer patients who had taken opiate analgesics for no less than three days were surveyed from 9/1/2015 to 12/31/2015. The results indicated that patients’ satisfaction with pain control increased from 60.5% to 80.5%. The percentage of patients who opted to endure the pain and not take the opiates reduced from 73.3% to 6.6%. The percentage of patients who were unwilling to notify medical personnel of their pain reduced from 25% to 9%.

Conclusion: Encountering patients receiving opioids to managing cancer pain, health professionals should provide comprehensive information relevant to opioids and dealing with side effects of opioids to increase the patient’s opioid-taking self-efficacy; therefore, a better emotional state and quality of life could thus be achieved.

Objectives: Successfully weaning patients from ventilators is strongly related to the nutritional status of patients. However, nutritional care guidelines for ventilated patients are not well established in Taiwan. The aim of this study was to develop clinical nutritional care guidelines according to evidence-based medicine.

Methods: There were three stages in this study. At the first stage, we conducted a systematic review of 8 databases and 4 websites to search the relevant literature for clinical guidelines reported from 2001 to 2013. At the second stage, we held focus group meetings after inviting 10 experts with substantial nursing experience in respiratory care and nutritionists to modify the drafted guidelines. At the third stage, we conducted a questionnaire survey to evaluate the feasibility of the clinical nursing care guidelines.

Results: Eleven studies met our inclusion criteria and were used to draft clinical nutritional care guidelines for ventilated patients; the draft featured 45 items. The items were reduced to 34 at the final stage; 6 were related to nutritional nursing assessment, 18 were related to intervention, 5 were related to nursing evaluation, and 5 were related to care in the event of complications. The items were scored, and 33 were Grade A and 1 was Grade B.

Conclusion: The results suggested that nutritional assessment capability and sensitivity of nurses can be improved by implementing in-service education. Strengthening skills to implement nutritional care measures can support the weaning of patients from ventilator and can enhance the quality of care.
PATIENT DRIVEN GOAL SETTING; HOW CAN WE DO IT BETTER?

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Objectives: Engaging patients in the goal setting process is widely considered to be integral to rehabilitation and a key aspect of patient driven care. This study investigated whether allied health workers (social workers, speech pathologists, physiotherapists and occupational therapists) involve rehabilitation patients in a goal-setting process, to what extent and using what strategies. In addition, the barriers and challenges that influence the quality of patient driven goal setting were explored.

Methods: A qualitative study was undertaken in which goal setting interviews, conducted by allied health professionals with rehabilitation patients, were audio recorded. Interview data was transcribed and thematically analysed together with related documentation from the medical record. Patient and health worker participants rated their perceptions of satisfaction and level of engagement with the process. Informant feedback from health worker participants via a focus group was used to increase validity of the themes developed.

Results: Participants included 18 allied health workers and 17 rehabilitation patients. Allied health workers represented a range of experience and grade levels. The practice of patient driven goal setting varied considerably between clinicians. Overall, health workers who demonstrated respect for the patient and developed rapport were more likely to achieve greater engagement with the patient in the goal setting process. The behaviours that were identified as contributing to this included asking and listening, responding to patients’ immediate needs and health worker self-awareness. Constraints to the goal setting process included the model of care, achievability of goal set, the environment and time frames for goal achievement.

Conclusion: Findings from this study provide insight into how rehabilitation teams currently practice patient driven care. The themes identified point to ways clinicians can better engage with patients at the goal setting stage and throughout their journey in rehabilitation. It is anticipated this will drive the development of protocols and training to better meet the expectation of patient driven goal setting.
IMPLEMENTATION OF A DEDICATED FAST TRACK SYSTEM REDUCES ANTIBIOTICS DOOR-TO-NEEDLE (DTN) TIME IN SUSPECTED CHEMOTHERAPY INDUCED FEBRILE NEUTROPENIA

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Objectives: To assess the efficacy of a dedicated fast track system (FTS) that aimed to shorten the DTN time for antibiotics in suspected febrile neutropenia (FN) after chemotherapy.

Methods: This is a two-staged retrospective audit in a tertiary cancer center in Hong Kong. The first stage was conducted in early 2015 to determine the DTN time for antibiotics in admissions with diagnosis of FN between Jan 2013 and Dec 2014. DTN time was defined as the time of triage to the time of antibiotic injection. The causes of delay in DTN time were identified. Correlation of DTN time and clinical outcomes were analyzed. The 1st audit showed that the DTN time fell short of international recommendations.1-2 A task group was therefore formed to devise a dedicated FTS to streamline the service provision in suspected FN. Alert cards were issued to patients on chemotherapy to facilitate early recognition of suspected FN at emergency (AED) or out-patient departments (SOPD). Patient after accelerated triage were managed in a standard joint-departments protocol to enable a timely delivery of empirical big-gun antibiotics. The second stage audit was repeated on subjects presenting with fever after chemotherapy between March and December 2015 in order to assess the efficacy of the FTS and identify the causes leading to outliers.

Results: The first audit consisted of 39 evaluable episodes of NF, out of a total of 43. The mean DTN time was 249 minutes (range 20-550). No significant difference in DTN time was noted regarding the setting of presentation (AED Vs. SOPD) and timing of presentation (office hours Vs. non-office hours). The DTN time correlated linearly with the length of stay (Pearson correlation coefficient of 0.33, p=0.043), but not survival. The mortality rate was 7% and bacteraemia was confirmed in 9.3% patients. Common causes of long DTN time included long waiting time in AED or SOPD, delays in transferal from clinic to ward and delays in injection after drug prescription. Nine months after implementing the FTS, a second audit was repeated in early 2016. Forty out of 45 episodes of post-chemotherapy fever were managed under the FTS. The FTS shortened the mean DTN time from 249 to 58 minutes (range 22-141), and 90% patients received antibiotics <100 minutes after triage. Bacteraemia was detected in 7.5% patients but none died of sepsis. Delay in antibiotics injection after doctors’ assessment was the major bottle-neck in outliers under the FTS. The delay could be multifactorial but it cannot be identified readily in this audit. Regular feedbacks to SOPD and AED for outliers were recommended.

Conclusion: Implementation of a dedicated FTS successfully reduced the mean DTN time for antibiotics by 77% in suspected FN.

References:
EFFECTIVENESS OF DIETITIAN INTERVENTIONS ON NUTRITIONAL CARE QUALITY STATUS IN HOME HEALTH CARE

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Objectives: The rapidly growing elderly population in Taiwan has led to a continuous rise in the demand for home health care services, i.e. integrated multidisciplinary services delivered to the homes of elderly, disabled and other needy people. As an essential part of home health care, nutritional interventions by dietitian provide patients with the assessments and interventions of nutritional status capable of improving the quality of life to the patients. Nutritional status of the patients was known to be associated with those functional status, physical illness and psychological disease, and the improvement of the nutritional status resulted in better quality of life. We thus aimed to clarify the effectiveness of dietitian interventions on nutritional status in home health care patients.

Methods: This interventional study enrolled 278 subjects who received home health care services of E-Da Hospital between January 1, 2013 and December 31, 2014. After excluding the subjects with the score of mini nutritional assessment is more than 11, a total of 133 subjects were included for final analysis. Nutritional interventions containing assessment and recommendation of daily caloric and protein intake, food preparation and selection were performed in the first time home visit and follow up with phone interview every week for 4 month. Several indicators, measured in first time home visit and 4 months later, were used to represent as poor nutritional status including abnormal daily caloric intake was defined as less than 75% of the recommended daily caloric intake, abnormal daily protein intake as less than the recommended daily protein intake, anemia as serum hemoglobin level lower than 13 g/dL in male and 12 g/dL in female, hypoalbuminemia as serum albumin level lower than 3.5 g/dL, abnormal sodium levels as serum sodium levels lower than 135 mEq/L or more than 145 mEq/L and abnormal potassium levels as serum potassium levels lower than 3.5 mEq/L or more than 5 mEq/L.

Results: Of 133 participants, there were 38.8% (52/133) males and the mean age is 80.5±11.4 years. The mean body mass index is 22.6±6.4 kg/m2. Four months dietitian interventions significantly decreased the prevalence of abnormal daily caloric intake (80.5% to 72.7%, P=0.035), abnormal daily protein intake (33.1% to 17.3%, P<0.001), anemia (41.4% to 27.1%, P<0.001), abnormal sodium levels (62.4% to 51.1%, P=0.017), abnormal potassium levels (75.9% to 69.2%, P=0.022), but not significantly changed in hypoalbuminemia (67.7% to 64.7%, P=0.523).

Conclusion: Because this study clarify four months dietitian interventions can significantly improve nutritional care quality in home health care patients, routinely dietitian interventions can be performed for the patients with the score of mini nutritional assessment less than or equal to 11 in home health care. Further studies can evaluate the long-term effects of routinely dietitian interventions in home health care.
THE EFFECTIVENESS OF SHARED DECISION MAKING MODEL ON IMPROVING DECISIONAL CONFLICT IN A PATIENT WITH RECURRENT ASPIRATION PNEUMONIA FACING
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Objectives: The purpose of this case report is to study the application of Shared Decision Making (SDM) model to a patient with recurrent aspiration pneumonia, and the effectiveness on improving decisional conflict.

Methods: In the nursing period from the 3rd to the 19th of April 2014, Gordon’s 11 Functional Health Patterns was applied for holistic nursing assessment. Motivational interviewing, observations, and physical assessment were also used for evaluation in regard of physical, mental, and social conditions. Decisional conflict was identified through literature review and an improvement measure was formulated by utilization of SDM model. A qualitative research was performed with purposive sampling involving a male patient diagnosed aspiration pneumonia by a medical center.

Results: The major health and clinical issues were identified as ineffective airway clearance, dysphagia, and conflict in decision making after treatments and evaluations. The decisional conflict originated from lack of information and knowledge for conditions and treatments leading to misunderstanding and the concern of changed physical appearance which influences social status. As a result, the patient had doubts and uncertainty of making clinical decisions. During nursing process, a trust nurse-patient relationship was established with good psychological support. The patient was treated with individualized thoracic care to maintain airway clearance, and was taught skills preventing choking while feeding. The medical team employed SDM model which actively involved patient and his family in medical decision making and provided sufficient clinical and evidence-based information. The patient decided to receive tracheotomy following thorough explanations of his concerns and engagement in the process.

Conclusion: With the development of patient-centered and shared caring model, effective clinical decisions require extreme considerations and careful examinations in view of health interests. SDM model can results in the most beneficial outcome by including and harmonizing opinions, and matching the expectation of physicians, patients and the family. Trust can be gained when the patient’s hesitations and issues are resolved forming positive feedback which leads to closely corresponding medical-patient relationship. Accordingly, nurses in SDM model play a critical role in coordination of communications bridging the gap between patients and physicians. Once the barrier of interaction is eliminated, the level of confusions and conflicts are reduced, the quality of nursing will be significantly improved.
PROMOTING ‘SCRUB THE HUB’ BUNDLED STRATEGIES IN PREVENTING MRSA BACTEREMIA IN PATIENTS HAVING CENTRAL VENOUS CATHETER UNDERGOING HEMODIALYSIS

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Objectives: Methicillin-resistant Staphylococcus aureus (MRSA) is a horrible agent causing catheter-related bloodstream infection (CRBSI) in patients on hemodialysis using central venous catheter (CVC). MRSA CRBSI leads to prolonged hospitalization, as well as increased morbidity and mortality. In addition, it may contribute to financial burden to the healthcare system. Therefore, the implementation of multifaceted strategies in prevention of CRBSI among hemodialysis patients is the utmost importance. In particular catheter hub care is also a significant issue to address. Hub contamination was a risk factor of CRBSI especially bacteremia without signs of infection at the catheter entry site. To prevent the hub contamination, a ‘Scrub the Hub’ bundled strategy before approaching catheter was employed. The objective of this study is to evaluate the efficacy of ‘Scrub the Hub’ bundled strategies in prevention of MRSA bacteremia in patients with CVC undergoing hemodialysis.

Methods: From January 2015 to December 2015, the ‘Scrub the Hub’ bundled strategies were implemented to patients with end stage renal disease (ESRD) having CVC for hemodialysis. These include:
1. Education and training of healthcare personnel
2. Emphasizing hand hygiene
3. Wearing mask and sterile gloves before accessing the CVC
4. Using 70% Isopropyl alcohol pad with friction (twisting motion) to disinfect the catheter hub for 15 seconds to remove the residue of the hub before accessing the catheter. Each hub was scrubbed for 15 seconds for 3 times
5. Remove the gloves and perform hand hygiene after procedure.

Besides the ‘Scrub the Hub’ bundled strategies, routine bundled strategies in prevention of CRBSI were employed including screening and mupirocin decolonization for Staphylococcus aureus in the hemodialysis population, maximal sterile barrier precautions during CVC insertion, using 2% chlorhexidine in 70% alcohol for skin disinfection, applying 2% chlorhexidine in aqueous for catheter exit site care. Patient education on personal hygiene and home catheter care were stressed. Assessment on staff compliance to guidelines was performed periodically. Feedback of the clinical outcome to the staff was carried out regularly.

Results: From January 2015 to December 2015, there were 217 patients with ESRD having CVC for hemodialysis. After implementing the ‘Scrub the Hub’ bundled strategies, the number of MRSA bacteremia had been reduced from 12 to 4 episodes in 2014 and 2015 respectively. The infection rate dropped from 0.95 episodes / 1000 catheter days in 2014 to 0.2 episodes / 1000 catheter days in 2015. The MRSA bacteremia was significantly reduced by 79 % comparing with 2014. No new case was reported for consecutive 6 months.

Conclusion: ‘Scrub the Hub’ bundled strategies are inexpensive but effectively reduce the CRBSI rate. Catheter hub care signifies a fundamental intervention in preventing MRSA bacteremia. Continuous effort is required in order to maintain sustainable desirable outcome. Ongoing surveillance program needs to be implemented to detect and prevent the spread of MRSA bacteremia.

References:
TRENDS IN QUALITY OF POST-STROKE CARE AT PRIMARY CARE CLINICS IN SINGAPORE: A 7-YEAR REVIEW USING THE “STROKE BUNDLE”

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Objectives: The National Healthcare Group (NHG) provides public-sector healthcare delivery through a tertiary hospital, one psychiatric hospital and 9 primary care clinics (PCCs) in Singapore. NHG has developed a chronic disease register which contains clinical records of patients with stroke. This study aimed to measure the quality of post-stroke care at ambulatory primary care clinics using the “Stroke Bundle” and compare the trend from 2009 to 2015.

Methods: This is a retrospective cross-sectional analysis of data obtained from the NHG Stroke Registry from 2009 to 2015. All patients who were diagnosed with stroke on regular follow-up at the 9 NHG PCCs from 2009 to 2015 were included. Quality of care was assessed by 3 process indicators: blood pressure (BP) measurement (once in 6 months), annual serum cholesterol (LDL-C) test and annual thromboembolism risk assessment. The 2 intermediate outcome indicators include BP < 130/80 mmHg and LDL-cholesterol < 2.6 mmol/L. Scores were given according the number of process and outcome indicators met during the bundle period, ranging from 0 to 5.

Results: From 2009 to 2015, there was a physical growth in number of post-stroke patients who received care at NHG Polyclinics from 11,948 at 2009 to 16,126 at 2015. Mean age of stroke patients was about 69 years in each of the year. Gender and ethnic composition among stroke patients were the same across the years. There was an increase in percentage of patients who had at least two blood pressure measurements annually (82% in 2009 to 99% in 2015). Rates for LDL-cholesterol test was increased from 92% to 94% while thromboembolism risk assessment reduced from 87% to 66% throughout 7 years. More patients achieved optimal BP (<130/90 mmHg; 30% to 37%, <140/90 mmHg: 56% to 70%) and LDL-cholesterol control (<2.6 mmol/L: 51% to 67%, <3.4 mmol/L: 80% to 87%) over the 7 years. Overall, percentage of stroke patients who achieved at least 3 points out of 5 stroke care bundle measure rose from 85% to 89%. However those of patients who met all 5 stroke bundle measures was decreased from 23% to 20% from 2009 to 2015.

Conclusion: To conclude, the “Stroke Bundle” is a useful tool to measure ambulatory post-stroke care at primary care setting. The quality of post-stroke care at NHG Polyclinics was improved from 2009 to 2015 with higher proportion of patients achieving ideal BP and LDL-c control. There is still ample opportunity to improve process indicators and optimize intermediate outcomes of stroke survivors to prevent the recurrence of stroke.
ETHICS REGARDING MAXIMIZING THE BENEFITS FOR END-OF-LIFE PATIENTS
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Objectives: The patient was an 80-year-old female, who was admitted due to fever and shortness of breath, and was diagnosed with pneumonia in right middle lobe. On June 28th, an endotracheal tube was inserted and the patient was admitted into the Intensive Care Unit for further treatment. On July 2nd, the endotracheal tube was removed based on physician’s clinical judgment, but acute carbon dioxide retention ensued, and the patient’s consciousness level dropped from stupor to coma. After discussions with the patient’s family, it was decided to re-insert the endotracheal tube on the same day.

Methods: The patient’s condition deteriorated with time during hospitalization. On July 4th, chest X ray showed pleural effusion on the right lobe, and drainage was subsequently performed. On July 5th, the follow-up chest CT indicated pleural empyema and pneumothorax. After consultation with the thoracic surgeon, it was recommended to replace the chest tube and conduct thoracoscopy. However, the family decided not to let the patient suffer by undergoing more procedures; they requested that the patient be discharged against advice and be allowed to have a natural death.

Results: Upon learning of the family’s decision, the attending physician, in dismay, informed that family that he could not remove the chest tube for an Against Advice Discharge patient, and instructed the care team not to remove the chest tube for the patient. This created additional concern for the family as they would not be able to remove the chest tube on their own after the patient died at home. On July 29, the family decided to have the patient discharged against advice.

Conclusion: According to Chapter Two, Article 7 of the Taiwan Medical Association Code of Ethics, “a physician shall regard protecting the patient’s health interests as his or her top priority and shall not allow anything against the patient’s best interest to interfere with his or her professional judgment.” It is therefore recommended that the care team should discuss with the patient’s family to identify options that maximize the patient’s health benefits. The physician shall not make decisions for the family based on his or her own preferences or emotions. Rather, the physician shall respect the concerns of the family and create a win-win situation in the patient-physician relationship.
OBJECTIVES: A Do Not Resuscitate (DNR) order is a formal and legal form which may have a great impact on people when they have to make a critical decision for their families, especially to those who may be unfamiliar with their families' wishes and values. They may deny the fact that they are going to lose their loved ones and hesitate to sign this form. We guide them into terminal scenario with "End-of-Life Decision Making Instruction sheet", relieve tension when facing the critical situation and explain what they can do for the patient.

Our aim is to investigate the connection between DNR order and "End-of-Life Decision Making Instruction sheet". We assume that families are more likely to sign DNR form after this communication process.

METHODS: When a patient is diagnosed by 2 attending physicians, he/she is approaching death because of some irreversible conditions, such as brain death or multiple organ failure. Surgical intensive care unit (SICU) attending physicians will communicate with the patient's families with "End-of-Life Decision Making Instruction sheet". This sheet works as a medium that helps families try to accept the situation smoothly and gradually instead of facing a legal DNR form directly. If the family members decided not to have any aggressive and invasive unnecessary interventions, then, they would be asked to sign a legal form.

Data was collected in a 20-bed Surgical Intensive Care Unit at a medical center in New Taipei city, Taiwan. We reviewed all hospital records of the patients who died in the ICU from 2014/01-2015/12. Descriptive statistics was used to analyse data including patient demographics, APACHE (Acute Physiology and Chronic Health Evaluation) score, length of stay (LOS) in SICU, and expected death. Non-parametric statistic chi-square was performed to compare "signed DNR form" group and "unsigned DNR form" group.

RESULTS: A total of 148 patients died in SICU from 2014/01-2015/12. Their mean age was 63 years old, and most of them were male (68%). Nearly 55 percent were ER patients. Most patients (72%) had accepted surgery. The majority were from general surgery (41.3%), neurosurgery (24.9%) and trauma patients (11.3%). The average APACHE II score was 23.3 (SD 7.9). They had a mean ICU LOS of 13 days. Most patients (86%) were declared death in SICU, only few patients (12.7%) chose to discharge from hospital and pass away at home.

The majority of all deaths are expected (90%), around 77% patients signed "End-of-Life Decision Making Instruction sheet". People who realized disease progression and signed the sheet tended to sign DNR form (P< 0.05).

CONCLUSION: With understanding the condition clearly, almost every patient who was expected to die shortly could pass away peacefully without CPR. It also means that "End-of-Life Decision Making Instruction sheet" helps the communication process. When families of terminal patients have less psychological stress, decisions making will be a lot easier.
ARTERIOVENOUS FISTULA (AVF) CREATED BEFORE STARTING DIALYSIS MINIMIZED HOSPITALIZATION TO IMPROVE QUALITY OF INITIATION

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Objectives: Taiwan has the highest incidence and prevalence of end-stage renal disease based on international comparisons of theUSRDS report. The burden of chronic kidney disease (CKD) continues to increase by aging population, high prevalence of diabetes, and hypertension gradually. The introducing Multidisciplinary education program (MEP) for CKD patients starts since June 2002, the safety and high quality vascular access for initiation of hemodialysis (HD) is crucial in pre-dialysis patients. The aim of this study was to emphasize the creation of vascular access before HD could minimized hospitalization and comorbidity.

Methods: We retrospectively analyzed 8026 CKD patients in our MEP from June 2002 to December 2015, we enrolled 3913 patients (48.8%) received renal replacement therapy, exclude lost to follow-up (5.7%) and keeping MEP (45.6%). There were 995 patients received HD to have available data for analysis.

Results: However, early AVF creation to allow adequate time for the fistula maturation prior to dialysis is strongly suggested in our MEP, only 546 (54.9%) patients choose it at first. Most early AVF creation group was safe and effective to starte HD through out-patient clinic (265, 61.6%) directly, but those without creation needed hospitalization through energy room in 258 patients (58.9%) and out-patient clinic in 132 patients (30.1%, P<0.001). The duration of hospitalization was 3.2 ± 8.6 days in early AVF creation group significantly less than 18.6± 8.6 days in those without (P<0.001). The prolonged admission was related to temporary catheter infection, poor function of temporary catheter and surgical complications. Suprisingly, there was not significant difference in the duration in MEP period between groups.

Conclusion: Our data disclose AVF created before starting dialysis might safely and effectively initiate HD in predialysis patients, even could be less hospitalization and state duration. Further research to analyze the cost implications and treatment quality for patients need to be done, thus we could convince our predialysis CKD patients, even the whole MEP team to early AVF creation in our daily practice.

BUILDING A METROPOLITAN SERVICE MODEL FOR INTEGRATING HEALTH CARE, ESTABLISHING A “COMMUNITY HOSPICE TRANS-DISCIPLINARY TEAM”

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Objectives: The purpose of this study was to investigate the construction of a hospice home care model for chronic patients in the terminal stage from the aspects of professionals, patients and family members, and to enhance the quality of life and holistic care of the patients and family members accordingly.

Methods: At the beginning of this project, our hospital did not provide community hospice service because of the lack of a trans-disciplinary team, the complex hospital administrative process, and lack of communication between community hospice service unit and emergency care unit. We conducted literature review and proposed a “Trans-disciplinary Metropolitan Community Hospice Team”. We designed 13 sets of community hospice record forms and “hospice card”, prepared a quality improvement and incentive plan, provided physician house call service for the cases, developed a care quality monitoring system and single window service scheme for easy and efficient holistic care.

Results: A total of 190 cases received community hospice care during the study period (90 cancer patients and 100 non-cancer patients). The patients who signed DNR increased from less than 100 cases to 627 cases. The patients who had a score ≥ 6 in palliative care needs assessment increased to 183 cases, accounting for 29.19% of 627 cases. The service quality was also improved, evident from the service satisfaction of 98%.

Conclusion: The well trained trans-disciplinary health care team has provided the end-of-life chronic disease patients a holistic and individualized care through the pluralistic community hospice service.
ADD VALUE OF COMMUNITY SERVICES WITH BREAST IMAGING AND PAP SMEAR TEST
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Objectives: Tungs’ Taichung MetroHarbor Hospital as a health guardian to the community provides a best healthcare service to the middle of Taiwan. The woman’s cancer screening is one of our special preventive services. Particularly, the breast cancer screening and Pap smears are performed by female technologists and OG/GY doctors, respectively. During the screening, the physician teaches participants about Kegel pelvic muscle exercise and the nurse demonstrates how to use a ball in practice. In addition to reach cancer screening, women participants may have higher quality of life as improvement of urinary incontinence.

Methods: We apply and combine many medical sources from Health Promotion Administration, Ministry of Health and Welfare and Health Bureau of Taichung City Government as well as local community developmental center to hold many community activities in order to promote the information of breast examination and Pap smear as well as Kegel pelvic muscle exercise. We wish that everyone can understand the important of these examinations.

Results: The numbers of breast cancer screening and cervical cancer screening community activities have increased from 329 to 625 and 351 to 624 respectively within 3 years period from 2011 to 2014. In 2011, the amount of participants in breast and cervical cancer screening are less than 7500 and 4500 respectively, but increasing rapidly more than 25000 people have accepted these screening examinations in 2014.

Conclusion: As with the efforts of application and combination of many medical sources and hard work of the team, the number of women participants has increased more than 100% from 2011 to 2014. But the more important is that participants may have higher quality of life as improvement of urinary incontinence, besides the early detection of breast and cervical cancers.
NURSING EXPERIENCE OF A HEPATOCELLULAR CARCINOMA PATIENT WHO FIRST TIME RECEIVED TRANSCATHETER ARTERIAL CHEMOEMBOLIZATION

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Objectives: This is an article that describes the nursing experience of caring a hepatocellular carcinoma patient who first time received transcatheater arterial chemoembolization (TACE). Because the patient had to face the disease, did not understand the treatment and had previous experience of death from important family with this similar situation, resulting in great physical and psychological impacts. The nursing process included the assistance to alleviate the physical discomfort and to promote the psychological adjustment of the patient.

Methods: Nursing care was given during 2012/12/28 to 2013/1/24. Gordon's 11 functional health patterns were used as a tool to provide a holistic assessment. The author utilized observation, interview and physical assessment techniques to gather information.

Results: The main health problems that were diagnosed from this case included: acute pain, hyperthermia and anxiety. During nursing process, the author observed the breathing pattern, facial expression and body language of the patient, and utilized physical assessment skills and numeric rating scale to evaluate the intensity of pain. The encouragement of lying in a comfortable position, listening to favorite music, massage acupoints et al assisted therapies had been adopted to relieve pain. Also nursing profession and physical methods were utilized to reduce the body temperature and relieve discomfort. Continual nursing care was provided and expression of feelings was encouraged. In order to provide holistic care, the collaboration with radiologists, hospice nurses and religious members etc. were included in the multidisciplinary team. Combining religion and spirituality which enabled the patient to have a positive attitude towards the disease treatment and experience of death from important family, then decrease anxiety and overcome difficulties.

Conclusion: Assist patients face the impact of the cancer, can adapt disease as soon as possible and cooperate with treatment, then achieve the physical, mind, and spirit of comfort, strengthen the quality of clinical care. Hopefully by sharing this nursing experience, spiritual care may also be provided as guidance for clinical nurses to enhance the quality of care.

THE QUALITY OF BABY-FRIENDLY CARE IN A REGIONAL HOSPITAL IN NORTHERN TAIWAN
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Objectives: The purpose of this research is to establish the procedure of obstetrics and newborn care which is maternal-centered, so we can improve the rate of pure breastfeeding and rooming-in during hospitalization of mother after normal spontaneous delivery.

Methods: The study was divided into two parts, the first one is to learn the experience of six Baby-Friendly hospitals in northern part by visit and phone interview. We reach a consensus on interdisciplinary team with doctors and nurses of obstetrics and pediatrics, and then we change the procedure of mother and baby care by instantly skin-to skin contact at delivery table and delayed umbilical, moreover we renew assessment of Initial latch on behavior of newborn, and we produced creative slogans about neonatal safety, in the end, we product and implement system of quality control. The second part is to remodel the team curriculum of health education before giving birth and in-service education of nursing staff.

Results: We have promoted the new obstetric and neonatal care procedure from February 1, 2015, and kept monitoring for quality and improving valuation index. The result is that the Breastfeeding rate is elevated from 10.9% to 39.5% during hospitalization of mother after normal spontaneous delivery, and Rooming-in rate is also improved from 18.7% to 36.6%.

Conclusion: The research has verified that the implementation of immediate early postnatal exposure and prolonged skin-to skin contact time impact on the quality of Baby-Friendly services. The execution of maternal skin-contact in the past was just only model to be popularized, but it does not achieve implementation of the essence. The medical workers are afraid to change old habits and mode of operation in the early stage, the new process which is mother-centered was popularized at full steam, doctors and nurses utilize communication and negotiation to reach a consensus, it does very big help to get the full support of the doctors of obstetrics and pediatrics. The limitation of this study is that the breast-feeding and Rooming-in rate is impact due to fatigue of postpartum mothers. We will explore the improvement of Baby-Friendly care continuously, and work towards to elevate the quality of Baby-Friendly care service.
ADDRESSING THE MINORITY: THE USE OF HYPERBARIC OXYGEN THERAPY IN PYNEH

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Objectives: Introduction: Hyperbaric oxygen therapy (HBOT) is a medical treatment that involves breathing 100% oxygen in a pressurized room (multichamber) or tube (monochamber). It increases the amount of oxygen carrying in the blood. With an increase in blood oxygen, it helps restoring the normal levels of blood gases and tissue function to fight infection and promote healing. HBOT has been used for century in treating the decompression illness (DCI), and for decades on skin and bone infection, wound care and the others.

Objectives: To evaluate the usage of HBOT in Pamela Youde Nethersole Eastern Hospital (PYNEH) and Hong Kong Fire Service Department (HKFSD) from 2006 to 2015

Methods: Retrospective retrieved data from Clinical Data Analysis and Reporting System on the use of HBOT in PYNEH from the year 2006 to 2015 and asked the Senior Fire Officer of HKFSD at the Stonecutter Island for the information of HBOT usage at the captioned period. Special attentions were paid on the diagnosis and outcome of clients.

Results: There were 36 cases received HBOT in PYNEH from 2006 to 2015: 15 from the year 2006 to 2010 and 21 from 2011 to 2015. Majority of them were presented with the diagnosis of DCI and carbon monoxide (CO) poisoning, with the ratio of 2 to 13 in the former and 1 to 20 in the latter. All were able to be discharged.

In HKFSD, although the actual numbers of cases were not obtained from the official, it was reported that there were 20 to 25 cases per year from 2006 to 2010 and 25 to 30 per year from 2011 to 2015. All presented with the same diagnosis of DCI and CO poisoning, however the ratio of the two was 2 to 1. All were either discharged or transferred back to hospitals for further case management.

Discussion: There were two things in common in the results: an increasing trend of using HBOT and the limited diagnosis or indications for HBOT. Relatively large proportions of cases in PYNEH were CO poisoning in comparison to DCI in HKFSD. It was interesting noted that HKFSD received direct calls from professional or recreational divers at their doorway.

Conclusion: At present, the service is provided by the HKFSD and all the cases needed to be screened by the Occupational and Safety Division of the Labour Department, the usage was limited to CO poisoning and DCI, the rest of the U.S. Food and Drug Administration listed indications were excluded.

Implication to practice: In expanding the scope of clients that would benefit to the HBOT, there is a need to develop the service in Hospital Authority of Hong Kong and run it in hospitals.
IMPLEMENTING AND FACILITATING PERSON CENTERED CARE IN GERIATRIC SETTING
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Objectives: Aging population is a global concern and a challenging situation in health care. Dementia has a high prevalence rate worldwide and is putting the hospitalized elders more vulnerable. Many impeding factors had hampered the care provided and it is important to implement and facilitate person centered care in an elderly friendly care providing environment.

Methods: Two Ward Managers underwent intensive training on dementia related care and acted as facilitators to put the idea of person centered care into practice. Eighteen qualified staff including Advanced Practice Nurses and Registered Nurses were recruited in a comprehensive training program on best practice of dementia since August 2015. The team based on interactive simulating of real clinical experience and reflective learning. Besides, general education on recognition and management of dementia was also provided to most of the nursing and supporting staff in the department. Pre and post knowledge test were assessed in both programs. The programs aimed at promoting and focusing on the concept of person-centered care. Upon completion of the programs, the eighteen qualified staff acted as the change agents for initiating a cultural change, acted as clinical advisors and role models. Ward routine in five geriatric wards were reengineered and structuralized to accomplish the implementation of person centered care. The structuralized routine with focus on acute care for the elderly was implemented in clinical settings, incorporated with elements of patient and family engagement, in order to facilitate and sustain the change.

Results: 55% of nursing and 72% of supporting staff in the Department of Geriatrics have completed the training. Supporting staff showed a higher increase of knowledge gain as compared with that of nursing staff. Over 70% of them agreed that the training was practical in workplace. Of the eighteen trained “change agents”, they rated themselves with higher sense of competency in providing and implementing person centered care in clinical setting. Different health care professions including physicians and allied health professions provided positive feedback on staff’s knowledge and competency on clinical services. Patients and relatives also rated a higher satisfaction score on the care that they received.

Conclusion: The implementation was initiated in August 2015 and it was an ongoing process to sustain and retain the concept of person centered care. The effectiveness, quality and holism of care would be incorporated with patients and family engagement.
THREE YEARS EVOLUTION OF PATIENT COMPLAINTS IN A EUROPEAN EMERGENCY DEPARTMENT

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Objectives: The objective of this study was to describe and analyze factors involved in the occurrence of patient complaints in the ED.

Methods: This is a retrospective study from 01.01.2009 to 07.31.2012. During night shift and Week End (WE), 50% of the medical team are residents and attendees from other departments. The Ethics Committee of the Hospital approved the study and there was no conflict of interest. Variables analyzed were: person who send the letter, sex and age, date and time of arrival, day of week, month, length of stay (LOS), patient census on day of visit, type of complaint (medical, surgical, eg.), ED diagnosis, type of professional toward whom the complaint is directed, and outcomes (death, legal issue). Type of complaints was: communication problem, LOS, comfort and privacy issues, diagnostic error, issues of pain management, inappropriate treatment, billing problem, disposition (admission, discharge), and delay of care. Qualitative and quantitative variables were compared with Chi2 and Student tests, respectively.

Results: 85 patient complaints (172,092 total ED visits). The incidence was 4.8 complaints per 10,000 ED visits (n=28, 0.06% in 2009, n=21, 0.045% in 2010, n=25, 0.051% in 2011, n=11, 0.038 in 2012). 66% of patients were women. The delay between the ED visit and the complaint was 46.3 ± 91 days and the delay of the response to the complaint was 75.8 ± 68.7 days. The complaint letter was sent by family (n=53, 62%), patient (n=29, 34%), attorney (n=1, 1%), or other (n=1, 1%). Type of complaint was: communication problem (n=26, 30%), LOS (n=24, 28%), diagnostic error (n=21, 24%), comfort and privacy issues (n=7, 8%), pain management (n=6, 7%), inappropriate treatment (n=6, 7%), delay of care (n=3, 4%), billing (n=3, 4%). Professionals involved were: doctor (n=44, 52%), nurse (n=9, 10%), clerk at triage (n=12, 14%), and unspecified (n=20, 24%). The number of visits per day was different in the complaints group as compared to the group without complaints (137 vs 132, p=0.03). Complaints were more frequent on Monday, Saturday, and Sunday and during December and January (p<0.001). 71% of complaints were related to care during the night shift and 42% during the WE. When it was related to a surgical problem, the main patient’s complaint was diagnosis error (41% vs 4.8), LOS (3% vs 33%), and communication (14% vs 30%). LOS was the main complaint in 54% of patients who were admitted (19h) and communication problem was found in 68% of discharged patients. The number of complaints related to a diagnosis error was 5 (6%) in 2009, 8 in 2010, 5 (6%) in 2011 and 3 (4%) in 2012. Diagnostic errors occurred when residents managed patients (25% vs 13% by attendees). 76% of diagnosis error complaints were found in group of patients who were discharged and in young patients (average age = 41 years old). In the group of diagnostic error complaints, the error was related to neurology (n=1), trauma (n=13), abdominal pain (n=6), and torsion of spermatic cord (n=1). Three patients (4%) died. In 98%, the dispute was resolved without legal action. Three cases resulted in financial compensation.

Conclusion: This study showed that patient complaints are rare and that legal issues were even more rare. Communication and LOS are the most frequent complaints. Human error is the third most likely cause of complaint. Our results suggest that improved communication with patients, resolving system issues that lead to slow care and adequate staffing and supervision of trainees may decrease complaints and improve care.
CARE IN ONCOLOGY: INTEGRATION BETWEEN EDUCATION AND ASSISTANCE IN PHYSICAL THERAPY
ACTIVITIES
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Objectives: To describe the operation of a clinic that integrates care and education actions in the physical therapy of cancer patients at the University Hospital of Brasilia (HUB).

Methods: A descriptive study, based on the operation of the physiotherapy service in Hub oncology in 2015.

Results: The patient attended the High Complexity in Oncology Center (CACON) HUB is accompanied by a multidisciplinary team that includes doctors, physiotherapists, nutritionists, psychologists, occupational therapists, dentists, nurses, speech therapists and social workers, who performs the host and patient screening weekly. The physiotherapy service in Hub oncology serves cancer patients individually and personalized, lasting about an hour. They are attended on average ten patients per day, with most diagnosed with breast cancer and head and neck cancer. During the assistance is carried out assessment (history, physical examination, treatment and management goals) as oncological history and complaints of patients, aiming to prevent and treat functional changes caused by the disease itself, the effects of treatment, or both. The main functional alterations found in these patients are restricted range of motion, muscle weakness, pain and circulatory changes (edema and lymphedema). The techniques used for rehabilitation include joint mobilization, myofascial release, complex decongestive physical therapy, strengthening exercises and muscle stretching, prescribed according to the assessment for functional improvement of the patient. Trends and behaviors are recorded in computerized and electronic system common to the whole hospital. Every patient care is reevaluated as complaints and parameters such as range of motion, muscle function, circle members, performing daily tasks and labor, used to define the high point. The high is performed programmatically through guidance and activities to be performed in the home environment to maintain the achieved goals and prevent possible complications. The methodology used in the service is based on the humanization, the appreciation of the patient in his rehabilitation process and guidance to enable a co-responsibility of treatment.

After the service, the patient's case is discussed with undergraduate students and residents, physical therapists responsible for service and teachers, allowing the exchange of knowledge and improvement of knowledge. The electronic system of patient outcomes allows the trainee perform an interim progress which is only released into the system after this case discussion. The clinic provides the opportunity to highlight experiences, develop skills and competencies expected in the profile of a graduate in physiotherapy and especially contemplate the role of a university hospital regarding the inseparability of care and education.

Conclusion: The humanized and centered care patient, the use of a computerized evolution, multi-professional and academic environment are factors that support the constant improvement in the quality of physiotherapy service at the HUB.
STUDY OF HIGH RISK OF METABOLIC SYNDROME ON NURSES' EXERCISE BEHAVIOR, THE STAGES OF CHANGE MODEL, AND RELATED FACTORS

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Objectives: The purposes of the present study were to investigate among the nurses at high risk for metabolic syndrome about their exercise behavior change which based on the stages of change model.

Methods: A cross-sectional survey study was conducted in a medical center in Taoyuan County, Taiwan. Stratified cluster sampling was adopted to include 320 participants. The instruments included demographics, stages of exercise behavior change, Perceived Exercise Benefits Scale, Perceived Exercise Barriers Scale, and Exercise Self-Efficacy Scale.

Results: The results showed that most participants (n=101; 32%) were at contemplation stage of exercise behavior change. The stage of exercise behavior change was significantly related to age of youngest child, body mass index (BMI) and perceived health status. The perceived exercise benefit was significantly related to marriage status, living pattern, occupational title, shift duties and BMI. The perceived exercise barrier was significantly related to marriage status, age of youngest child, living pattern, work department, shift duties, BMI and perceived health status. The exercise self-efficacy was significantly related to level of education, age of youngest child, shift duties, BMI and perceived health status. Logistic regression analysis showed that nurses with no shift duties were more likely to engage in regular exercise (odds ratio of pre-contemplation and contemplation group versus reference group were 0.938 and 0.415); nurses with higher perceived exercise benefits were less likely to stay at pre-contemplation stage (odds ratio of pre-contemplation group versus reference group was 0.935); nurses with higher perceived exercise barriers were more likely to stay at pre-contemplation or contemplation stage (odds ratio of pre-contemplation and contemplation group versus reference group were 1.108 and 1.069); and nurses with higher exercise self-efficacy were more likely to engage in regular exercise (odds ratio of pre-contemplation, contemplation and preparation group versus reference group were 0.804, 0.840 and 0.872).

Conclusion: We suggest that the development of health promotion exercise program should take into account the stages of exercise behavior change to increase exercise engagement among the nurses. A variety of health exercise promotion strategies could be adopted to reduce perceived exercise barriers, strengthen motivation to exercise and improve exercise self-efficacy among the nurses, such as the hospital signing a cooperative arrangement with nearby fitness clubs to provide discounts to hospital employees, or enhancing exercise convenience and practicality by providing exercise equipment and space inside the hospital. We hope the results of the study provide references for hospital management decision makers and nurse administrators on the development of health promotion exercise program, the design of stage-matched exercise intervention and the application of the predictors into practice to reach the goal of promoting exercise engagement among the nurses and thus further improve their quality of work and the health of the patients.

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Objectives: Timely management of patients visiting the Emergency Department (ED) is an important indicator of quality in emergency care. Most hospitals apply the triage algorithm to prioritize the order of patient visits, but in some patients the severity of acute illness might progress during the waiting period. To cope with the dynamic condition of illness severity of patients visiting ED, we implemented a secondary triage process to further prioritize access to timely and appropriate medical treatment.

Methods: Based on the regulations by the authority, a five-level ED triage was implemented in 2010 that provided clinically relevant stratification of patients into five levels from least to most urgent based on patient acuity and resource needs. The suggested waiting time for the five severity levels were immediate, 10 minutes, 30 minutes, 60 minutes, and 120 minutes based on triage. We found that the level-2 patients had an excessive waiting time that less than 40% were managed within 10 minutes. Since 2013, a new strategy was implemented that separated the level-2 and level-3 patients into different locations at the ED. The ED nurses re-visited the level-2 patients every 5 minutes to focused on their vital signs and general condition as well as symptoms. Those who had rapidly aggravating condition were moved to the Critical Area of the ED, while those whose condition became less urgent were under close observation before the ED physicians visited the patients, while the physicians were also timely reminded about the number and urgent condition of the waiting patients.

Results: The waiting time for the level-2 patients was reduced that the percentage of patients managed within 10 minutes after triage increased from 39.67% in January 2012 to 48.81% in December 2012. The implementation of secondary triage since 2013 further increased the timely management to 77.35% in January 2015, which was similar, compared to peer hospitals in Taiwan.

Conclusion: The implementation of a standardized triage algorithm and the secondary triage strategy improved the timeliness of patient visits and management in patients with more severe condition at the ED. Our improvement experience suggest the importance of dynamic process for monitoring the patients at the ED, who have the probability of progression of acute illness.
IMPLEMENTATION OF THE PHARMA CLOUD SYSTEM IN A PHARMACIST-LED MEDICATION RECONCILIATION PROGRAM IN HOSPITAL INTEGRATED AMBULATORY CARE

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Objectives: Given the rapid increase in elderly population in Taiwan, polypharmacy has become a more common issue. Older adults with multiple medical conditions, such as hypertension and diabetes, are at risk of taking too many medications prescribed by multiple healthcare providers. Inappropriate polypharmacy are associated with more drug-drug interactions, adverse drug reactions, treatment non-adherence and greater healthcare costs. However, easy access to healthcare and more than 99% population coverage of National Health Insurance (NHI) in Taiwan, have contributed to increased risk of polypharmacy among the older population. To improve the quality of prescribing and patient safety, the NHI Administration launched a patient-centered medication information system based on cloud computing technology, known as "PharmaCloud system". Authorized healthcare providers in NHI-contracted healthcare institutions are able to access the patient’s NHI medication profile in recent 3 months and take it into account when prescribing. The objective of this study is to present the development and outcome of the PharmaCloud System driven medication reconciliation program.

Methods: We conducted a prospective cohort study at an integrated ambulatory setting in a regional hospital. Pharmaceutical care note documentation was developed. The program is provided by clinical pharmacists completed at least 2 years of post-graduate training and advanced clinical practice training. Pharmacists screened the patients using PharmaCloud System and identified duplicated medications, drug combinations causing hazardous interactions, unnecessary medications and other medication-related problems. Recommendations were made to discontinue inappropriate polypharmacy and adequate counseling was provided to each patient.

Results: A total of 5,469 patient visits were enrolled from 1 January 2015 to 31 December 2015, in which 58 patients with medication-related problems were identified (1.1%). Of these 58 patients, the prevalence of hypertension is 34.5%, hyperlipidemia 37.9%, diabetes 53.4%, and triple-H 13.8%. The main medication-related problem category was duplicated medication (55.2%) and renewal of a prescription too soon (43.1%). We found 2 cases (3.4%) of medication without proper indication, 2 cases (3.4%) of inadequate dosing, and prevented 1 case (1.7%) from hazardous drug combinations. The final cost saving was $371 and an average cost saving of $6.4 per intervention. The majority (96.6%) of the recommendations were agreed by the physician.

Conclusion: Pharmacists have an important role in the risk reduction of polypharmacy and cost saving in ambulatory setting. The implementation of PharmaCloud System to access the medication profile throughout most hospitals in Taiwan enhances the medication reconciliation process and will help to improve patient safety and ambulatory care outcome. (43.1%). We found 2 cases (3.4%) of medication without proper indication, 2 cases (3.4%) of inadequate dosing, and prevented 1 case (1.7%) from hazardous drug combinations. The final cost saving was $371 and an average cost saving of $6.4 per intervention. The majority (96.6%) of the recommendations were agreed by the physician.
PERSON-CENTRED DECISION SUPPORT TOOLS FOR TERMINAL, PROGRESSIVE NEUROLOGICAL DISEASE: A STUDY PROTOCOL

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Objectives: Progressive neurological conditions such as motor neurone disease (MND) are challenging to well-timed and effective patient decision-making. Our aim is to create decision tools to support patients, families and health professionals through symptom management and quality of life choices.

Methods: The study is being conducted June 2015 to May 2016, using a modified Delphi process. Rounds of iterative consultation with participants will be used to arrive at consensus on decision tool content and format.

Results: A seven-step process is being used to develop the decision support tools. Participants will form expert panels, to provide feedback on which the development and validation of the tools will be based. Panel members will be drawn from MND patients, family carers and health professionals, support association workers, peak body representatives, and MND clinical researchers and decision tool researchers. The tools will be developed according to the International Patient Decision Aid Standards criteria. They will draw on MND evidence-based research, best practice guidelines and user-centred design principles.

Topics to be considered by the expert panels include: disease-slowing medication; secretion management options; assisted ventilation; artificial nutrition and hydration; advance care planning; genetic testing; and voice banking.

Completed tools will provide information on the benefits, risks, costs and legal issues for each option, and incorporate patients’ personal values and family wishes into their decision.

Conclusion: The decision tools will provide a useful and informative package to clarify patients’ preferences, and assist patients to make difficult decisions in a timely way. Moreover, the process used to develop the decision support tools will provide insight into the benefits and challenges of co-production with patients, carers and health professionals as tool users. Person-centred care is promoted by the inclusion of tool users and tool designers on the expert panels, and the consultative process used to develop the tools will ensure they are useful and feasible for clinical care.

By enhancing engagement between patients, families and health professionals, patients will be assisted to make complex and confronting decisions in a timely way. Patients and families will be informed of the consequences of pursuing, and of declining, available medications, procedures, services and equipment. This is expected to lead to improved coordination of care throughout the disease trajectory, and prevention of avoidable emergency hospital admissions.

Besides supporting decision making in MND, the tools, and their process of development, could have wider clinical application for a range of degenerative neurological conditions, and have potential to be expanded to countries and language groups beyond the initial study.
NURSING EXPERIENCE OF PERIPARTUM CARDIOMYOPATHY (PPCM) IN PATIENTS.
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Objectives: Peripartum cardiomyopathy (PPCM) is a dilated cardiomyopathy defined as systolic cardiac heart failure. PPCM is often delayed because its symptoms closely resemble those within the normal spectrum of pregnancy and the postpartum period. When PPCM is misdiagnosed or its diagnosis is delayed, the consequences for patients are deadly: The disorder carries a high mortality rate. This case report describes a 40-year-old woman presented at hospital, 7 days after giving birth to twins, with signs and symptoms of acute decompensated heart failure. Her body weight gained 24 Kgs during her pregnancy. Four months before delivery, she began to notice edema in the lower extremities and also developed symptoms of dyspnea and orthopnea in recent two months, that worsen over time, and eventually had to sleep almost upright in a chair. Her symptoms persisted after caesarean section. Thus, she was referred to intensive care unit for heart failure treatment.

Methods: During the nursing period from January 01 to January 08, 2015, the author gathered data through observation, interview, physical assessment, medical records and applied Gordon's functional health patterns as an evaluation tool and collated inductive analysis to establish its problems.

Results: Through observation, physical examination, and interview, three major nursing diagnoses were identified, including impaired gas exchange, wound pain and anxiety. At the intensive care unit, the interventions for treating respiratory distress were intensive chest care therapy and effective airway clearance method. Also, the individualized care plan was carried out, which included performing continuous pain assessment and management, maintaining body alignment and comfort, identifying patient's spiritual needs, meeting the needs of affections for the children, offering appropriate assurance, helping to establish the expectations of living with her family. Moreover, approaches like active caring, listening, and accompanying were adopted to build a trustful nurse-patient relationship which may have positive effect on the patient's physiology and psychology and reduce her discomforts and anxiety.

Conclusion: PPCM is a potentially life-threatening illness which usually arises shortly after delivery. Early diagnosis is prognostically important in these women. In the past three decades, an increasing proportion of women have delayed childbearing for educational, social, and economic reasons. There are a good number of studies that show that pregnancy at advanced maternal age may cause a number of problems for both the mother and the fetus, including low birth weight, pre-term birth, stillbirth, unexplained fetal death, and increased rates of Caesarean section. Through individual nursing intervention, the author helped the case to face the progress of the illness condition. This nursing experience can provide as a reference for nursing personnel caring for patients with similar situation and improve the medical care quality.

DISPARITIES IN NEEDS OF CANCER CARE AMONG CANCER PATIENTS, CAREGIVERS, AND HEALTHCARE PROVIDERS

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Objectives: To provide optimal patient-centered care, health care providers have to address the needs of cancer care for their patients and caregivers. However, patients, caregivers, and their healthcare providers have disparate perspectives on cancer care needs. This study aims to examine these disparities.

Methods: We conducted cross sectional survey of 380 cancer patients, 179 caregivers, and 185 health care providers registered at a university cancer hospital in South Korea. They completed a self-report questionnaire measuring the degree of which their needs were satisfied in 11 contents. Since three groups did not satisfy the normality on all variables from normality test, the comparison was analyzed by using nonparametric test such as Kruskal Wallis Test, Wilcoxon rank sum test, and Wilcoxon signed rank test. All the analyses were conducted using SPSS 22.0, and the statistical significance was specified when the p-values were less than 0.05.

Results: 1. Within 7 of the 11 contents which measured the type of need on caring, there were significant disparities among patients, caregivers, and healthcare providers. Patients and caregivers’ need for prognosis and metastasis information (p<.001), screening information of secondary cancer (p<.001), and proper type of exercise (p=.005) were higher than the perceived need by healthcare providers. Conversely, need for symptom management information on chemo-induced side effects that healthcare providers answered was higher than patients and caregivers’ answered need (p<.001).
2. Among all of the need contents in cancer care, the need score and satisfaction score were significantly different in each of patient (p<.001) and caregiver groups (p<.001).
3. In patient group, there was significant difference in cancer care need between ongoing treatment group and follow up state group (p=.002). Patients who are receiving treatment answered in higher degree of need scale than that of follow up care stated patients in all of the contents, and there were statistically significant differences in 9 contents of all 11 types of need contents. While no disparity existed for caregivers in needs of cancer care in total (p=.476) and in each content of the needs no matter whether their patients were on treatment.

Conclusion: Many disparities in needs of cancer care among cancer patients, caregivers, and healthcare providers were remarkably identified in this study. In order to provide cancer patients with optimal care, it is critical that the needs of cancer patients and their caregivers are met in the treatment process. The cancer care system should account for these disparities by understanding patients and caregivers’ cancer care needs to provide optimal care.

TO EXPLORE THE EFFECTIVENESS OF CONSTRUCTING HEALTH DATABASE SYSTEM IN PHYSICAL DISEASE CARE OF CHRONIC PSYCHIATRIC PATIENTS

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Objectives:
Chronic mental illness patients usually also have some physical diseases. Otherwise, the physical disease of mental illness patients not only have earlier onset than usually population, but also even decrease life average about 10 years of mental illness patients. In Taiwan, we could provide good quality of care for mental illness in psychiatric hospitals. Theoretically, the patients stay in the hospitals should also have good care of physical disease. However, most psychiatric hospitals do not have medical physician. In our hospital, we have more than 800 patients in chronic psychiatric wards. 52.73% patients stay in hospital more than 5 years. The Average age is 51 years old. As our survey, the patients need additional medical care of other general hospital or clinic about 4000 times per year. Besides, nurses will arrange the exam schedule by orders. Even so, we still could not care their physical problems regular. Although we would like to improve this problem, but the nurses had arrange patients exam by manual calculation and that would spent about 1 hours per time and usually get some missing. Therefore, pay attentions for physical disease care of mental illness patients in our hospital is very important and necessary. The purpose of this program was as follows:
1. Construct the chronic physical disease database of mental illness patients of the chronic psychiatric wards.
2. Analyze the major chronic physical diseases and current care situation of mental illness patients.
3. Establish the care routine of major chronic physical disease to promote the care quality of patients.

Methods:
1. Establish a core team to develop and construct health database system. The members include psychiatric physician, head nurses, pharmacist, social worker, and software engineer.
2. Discuss and define the category, items, and follow up frequency of these major physical diseases.
3. Construct these items as a health database system and give it on trial.
4. Revise the system according to the results of trial.
5. Promote the system in other chronic wards.
6. Collect and analyze the database to find out current major physical problems and care situation.
7. Establish the care routine of major physical disease.
8. Develop and implement the physical disease care procedure.

Results:
1. Construct the health database system and implement in 15 chronic wards. Nurses spent 10 mins for arrange the exam schedule per time. The exam schedule also more integrated without missing.
2. Database analyze:
   (1) The database have logged in 799 patients information.
   (2) The major chronic physical disease are diabetes, hepatitis type B (n=64), hepatitis type C (n=15), Both B and C hepatitis (n=4), and hyper lipid (n=18).
   (3) Only 50.6% hepatitis patients had follow up regular, and 1.1% never had any exam in past one year.
   (4) Only 61.1% hyper lipids patients had follow up regular, and 5.5% patients never had any exam in past one year.
   (5) Although all of the diabetes patients had follow up their blood sugar in past one year, but some patients never follow up HbA1c. Some patients had exam HbA1c, but not regular.
3. Establish the care routine of major physical disease.
   (1) The major diseases include diabetes, hyper lipid, hypertension, hepatitis.
   (2) Establish the regular exam program of every patient per year for health promotion.

Conclusion:
1. Manage physical problems of chronic psychiatric patients is necessary and very important that could promote patients health.
2. Define the physical disease care routine could improve care physical disease regularly and more comprehensive.
3. Implement the physical disease caring could early find problem and get earlier intervention.
THE PERSPECTIVES OF FORMER RECIPIENTS AND EXPERTS ON STIGMATIZATION RELATED TO ECT IN DENMARK. A FOCUS GROUP STUDY.

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Objectives: Although fast working and potentially life-saving, electroconvulsive therapy (ECT) is regarded as a strongly controversial treatment, and stigmatization, a well-known phenomenon within mental illnesses, is frequently mentioned in relation to it. However, no systematic research in this area has taken place so far. The aim was to explore the experiences and attitudes of former recipients of ECT and of experts professionally involved with ECT in order to identify potential stigmatization.

Methods: This was a qualitative exploratory study that used a source- and researcher-triangulated component design and was based on semi-structured focus group interviews. Criterion sampling was employed, and two focus groups, one comprising four recipients of ECT and the other seven professional experts, were conducted. Data were analyzed using a theory and data-driven framework-analysis.

Results: The analysis yielded three major themes for the first focus group interview: ‘ambivalent attitudes’, ‘discrediting and exclusion’ and ‘survival strategies’ and three major themes for the second focus group interview: ‘dramatic depictions of ECT’, ‘an overlooked and rare treatment’ and ‘anti-stigmatization strategies’.

Conclusion: Stigmatizing attitudes and behaviors in relation to ECT are closely related to one’s personal and factual knowledge, and there is a great need for multi-faceted approaches if social acceptance and recognition are to be achieved. In relation to uncovering and increasing awareness of important issues for a patient group at risk of being overlooked, this study contributes with new knowledge in a scarcely explored field and provides a suitable method for the anti-stigmatization and empowerment of minority groups.
ASSOCIATION BETWEEN INDIVIDUAL GUIDELINE-RECOMMENDED PROCESSES OF CARE AND 1 YEAR MORTALITY AMONG PATIENTS WITH INCIDENT HEART FAILURE IN DENMARK

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Objectives: Patient education is associated with lower 1-year mortality among patients with incident heart failure.

Methods: We used data from the Danish Heart Failure Registry (DHFR), a quality improvement initiative with participation of all Danish hospital departments caring for patients with heart failure. Data are prospectively collected by the clinicians responsible for the care of the individual patients and include detailed information on compliance with clinical guidelines recommendations. We identified 24,308 patients with incident heart failure from 2003 to 2010. Patient education have focus on the following themes: diet, physical training, understanding own disease, understanding the need of medication, understanding risk factors for own disease. It is possible for the partner to take part in the education. The education sessions can be combined with physical training by a nurse and physiotherapist.

Results: A total of 9,774 patients received patient education following admission with incident heart failure. Patient education was associated with a substantially lower 1 year mortality (crude Hazard Ratio (HR): 0.30, 95 % Confidence Interval (CI) 0.28-0.33). Adjusting for age, sex, left ventricular ejection fraction, New York Heart Association, acute myocardial infarction, stroke, Chronic obstructive pulmonary disease, hypertension, diabetes, alcohol intake, smoking habits, marital status, income, Charlson Comorbidity Index, calendar year and drug use during follow-up as well as in quality of hospital-based heart failure weakened the association somewhat, but it remained substantial (adjusted HR 0.58, 95 % CI: (0.58-0.64)).

Conclusion: Although widely used, there is only spare documentation for the effect of patient education on clinical outcomes among patients with heart failure. We found patient education to be associated with a substantially lower mortality in a large scale nationwide study of patients with incident heart failure in Denmark, which provides support for continued emphasis on ensuring patient education to all relevant patient with heart failure.
AN EXPLORATION FOR FAMILY MEMBERS OF INTENSIVE CARE UNIT PATIENTS ON THEIR KNOWLEDGE, ATTITUDE AND WILLINGNESS OF ORGAN DONATION

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Objectives: The imbalance of supply and demand of organ donation is an important social issue around the world. In Taiwan, even after someone has already signed consent or registered for organ donation, ethically, the hospital still requires a family member's written consent before the organ donation can be processed. As a result, the family member rather than the patient makes the final decision. This study investigated the knowledge, attitude, willingness, organ donation of family members of intensive care units (ICU) patients.

Methods: This cross-sectional study included 110 subjects who were recruited through convenience sampling. The study subjects were the family members of patients in intensive care units of a medical center in southern Taiwan. To be included in the study, the patient had to be admitted to the hospital for at least 24 hours and be in a stable condition. The family member had to be 20 years old and was the patient's spouse or first-degree or second-degree relative. The data was collected from April 2014 to October 2014. All data were analyzed using SPSS 18.0 statistical package.

Results: The study found that the family members’ organ donation behavioral knowledge belongs to the high level, scoring an average of 7.29. In terms of attitudes on organ donation, the average score is 81.84, illustrating the research subjects’ attitudes on organ donation tend to be positive. In terms of the willingness to sign consents for organ donation, 79.1% is willing to donate their own organs. When signing consent for willingness to donate organs on the health insurance card, 76.4% would consider family's opinions, followed by deciding on their own (70.9%). In terms of the viewpoints on organ donation or decision this criteria, 82.7% never discussed it with family. 64.5% 's family would be willing to sign consent for organ donation when the life of their family cannot be saved, which is lower than those willing to donate their own organs (79.1%). Therefore, it is relatively difficult to do the major medical decision of organ donation for their own family.

Conclusion: The study suggests that in order to successfully recruit organ donors, nurses and social workers need to consider family support and educate families on organ donation.
INTERDISCIPLINARY PERSON AND FAMILY CENTERED CARE GOVERNANCE STRUCTURE STRATEGIC PLANNING IN GREENFIELD WOMEN’S AND CHILDREN’S TERTIARY CARE HOSPITAL IN MIDDLE EAST

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Objectives: A review of literature demonstrates there is lack of evidence to guide Greenfield hospitals to plan and incorporate interdisciplinary person and family centered care in the Middle East. Our Objective is to contribute to limited literature evidence on strategic plan development and identifying barriers during development of Interdisciplinary Person and Family Centered Care (PFCC) governance structure in a Greenfield women’s and children’s tertiary care hospital in Middle East.

Methods: Strategic plan development for Interdisciplinary PFCC governance structure in Greenfield Women’s and Children’s hospital included the following steps. We started with organization of interdisciplinary PFCC taskforce responsible to develop strategic plan. The first step this group did was to create a business plan for development of Interdisciplinary PFCC taskforce to get the buy in from administrative leadership. The business plan included mission statement, internationally accepted PFCC definition, PFCC core concepts, addressing cost concerns, taskforce’s strategic action plan, staff (including leadership) education and finally evaluation of the program and it’s performance.

Interdisciplinary PFCC taskforce’s Strategic Plan focused on main areas of organization structure for implementation of person and family centered health care in Sidra Medical and Research Center. Assure completion of policies and procedures build related to person and family centered health care. Develop staff educational modules for orientation time prior to the initial outpatient opening and latter for inpatient services. Develop person and family educational tools related to person and family centered health care, to assure they understand their rights and expectations. Review practices to assure we continue to follow same global standards of person and family centered health care and develop a feedback system for staff. Innovation by developing educational and clinical research projects related to person and family centered health care in Qatar (important part for an academic center). Barriers identified during the process of strategic planning include lack of vision and strategic plan for PFCC across the organization to enable us to pull together, variable understanding of PFCC and its core concepts due to international staff with variable training and experience, patients and families are not recognized as partners across the organization, attitudes, lack of accountability within what we do in relation to PFCC.

Results: Our research project would contribute to literature guiding future Greenfield health organizations across the world in establishing PFCC governance structure along with identifying and ways to mitigate barriers in Greenfield Women’s and Children’s Tertiary Care Hospital.

Conclusion: There is enough literature evidence to support the importance of establishing a culture and philosophy of person and family centered health care system. The implication of the establishing Interdisciplinary Person and Family Centered Care (PFCC) governance structure in a Greenfield women’s and children’s tertiary care hospital include benefits of improved patient quality and safety, improve patient outcomes, respond to Joint Commission International (JCI) standards, increased employee satisfaction and retention, improved financial performance and enhance market share and competitiveness. Our Taskforce continues modifying the strategic planning adapting to the ongoing environment change. Barriers identified and mitigated during the process of strategic planning execution. This work would continue until this institution is well established in full capacity.
OBJECTIVES: Catheter associated urinary tract infections (CA-UTIs) have received little attention compared to many of the other types of healthcare associated Infections (HAIs). The CA-UTI It is one of the most common health care- associated infections in critical care setting. This study investigates the effect of bundle care on the rate of catheter-associated urinary tract infection (CA-UTIs) and other healthcare-associated infections (HAIs).

METHODS: After retrospective analysis of the status of CA-UTIs in a surgical intensive care unit of a northern Taiwan teaching hospital, in May 2013, we introduced evidence-based bundle cares to reduce the rate of CA-UTIs. Explaining why the infections are important. Share evidence supporting the interventions. Design an intervention toolkit. And regularly assess performance measures and unintended consequences. The bundle care intervention including hand hygiene, ensuring the indications for urinary catheter insertion, use of aseptic technique by trained healthcare providers, maintenance of a sterile closed drainage system, keeping the drainage bag below the level of bladder, daily review the indications for the urinary catheter, and early removal of unnecessary catheters.

RESULTS: After implementation of the bundle care, the rate of CA-UTIs significantly decreased from 3.46 per mille during the pre-intervention period to 1.21 per mille during the post-intervention period. At the same time, the rates of central line-associated bloodstream infections were reduced from 2.51 per mille to 1.78 per mille, and the rate of HAIs was also reduced from5.39 per mille to 2.52 per mille.

CONCLUSION: The implementation of bundle care can effectively reduce the rate of CA-UTIs and other HAIs.

REDUCING DAY-OF-SURGERY ELECTIVE CASE CANCELLATIONS THROUGH WORKFLOW RE-DESIGN AND IMPROVED PATIENT COMMUNICATION

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Objectives: Cancellation of elective operations on day of surgery causes patient inconvenience and reduces operating theatre productivity. Previous audit performed at our tertiary women's hospital found the rate of elective case cancellation to be as high as 15.9%. A workgroup was tasked to reduce the high cancellation rate by decreasing the causes of cancellation that were deemed ‘avoidable’.

Methods: Reasons for cancellation within 24 hours of listed time of surgery were prospectively studied over a three-month period. Each reason was further determined to be ‘avoidable’ or ‘unavoidable’. Acute medical conditions, patient no-show and re-scheduling of surgery by patients that was not reflected in the theatre booking system were found to be predominant reasons for case cancellation. Using a plan-do-study-act approach, initiatives to reduce ‘avoidable’ cancellations were implemented, including the reinforcement of outpatient referral for preanaesthesia assessment, re-design of workflow for scheduling and improved communication with patients via phone calls and SMS text reminders.

Results: The rate of elective case cancellation was reduced significantly from 15.9% to 11.0%, in just four months after implementation of new initiatives. To ensure sustainability of care, an operating theatre dashboard was created to provide ongoing data to stimulate further patient-centric initiatives.

Conclusion: Through re-design of workflow and improved patient communication, we successfully reduced day-of-surgery elective case cancellations from 15.9% to 11.0% in just four months.
MEDICAL CARE OVERUSE AMONG KOREAN PATIENTS WITH LOW-BACK PAIN: THE EFFECT OF SHARED DECISION MAKING
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Objectives: Current literature consistently reports the positive effects of shared decision making in the course of treatment on reducing medical care overuse. However, understandings of this association are limited in Korean literature. Thus, by focusing on patients with low-back pain who have been reported as representative sample of medical care overuse, this study aimed to a) explore the levels of experiences of medical care overuse and shared decision making in medical care utilization and b) examine the association.

Methods: 192 Korean low-back pain patients (> 20 years old) who were hospitalized in three university hospitals in 2015 were included in the study from the face-to-face survey designed to examine the experiences of medical care use and shared decision making in medical care utilization. Medical care overuse, a dependent variable of this study, is operationalized as an experience of patients having more tests, treatments, and/or surgeries than they expected (1=yes, 0=no). A concept of shared decision making is consisted of four variables: a) patients’ experience of choosing treatment options (1=yes, 0=no), b) the perceived level of doctor-patient communication (Likert type scale, ranged 1 to 3), c) the perceived level of patients’ understanding of treatment-related information (Likert type scale ranged 1 to 4), and d) the perceived level of trust in doctors (Likert type scale ranged 1 to 4). A binary logistic analysis was performed to examine the association between the shared decision making and medical care overuse among Korean patients with low-back pain, controlling for individual sociodemographic characteristics and health status.

Results: Of 192 patients with low-back pain, 41 patients (21.58%) reported the experience of the medical care overuse. With regard to the shared decision making, 35.45% of patients (n=67) reported the experience of choosing their treatment options and 67.57% of patients (n=125) perceived that they had enough doctor-patient communication during the treatment. Additionally, 31.05% of patients (n=59) reported that doctors’ explanation was easy to understand and 57.67% of patients (n=109) reported the highest levels of trust in doctors. From the binary logistic analysis, we could find the perceived level of doctor-patient communication was significantly associated with the medical care overuse among Korean patients with low-back pain. Specifically, patients who reported higher levels of doctor-patient communication were less likely to experience medical care overuse (OR=0.37, 95% C.I. = 0.17-0.78). We also found patient’s age (OR=1.05, 95% C.I. = 1.00-1.09) and the duration after the first diagnosis (OR=1.08, 95% C.I. = 1.00-1.16) were significant factors for the experience of medical care overuse.

Conclusion: Findings highlight the importance of shared decision making in the course of treatment on reducing the medical care overuse among Korean patients with low-back pain, especially the doctor-patient communication, supporting the need for enhancing patient centered approach in treatment setting.
A PATIENT INFORMATION ‘SMORGASBOARD’ – WORKING WITH CONSUMERS TO BUILD A PATIENT INFORMATION FRAMEWORK THAT MEETS THEIR INDIVIDUAL NEEDS AND PREFERENCES
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Objectives: To measure patient and staff preferences for the provision of mandatory health care information in a large state wide tertiary health service in Melbourne, Victoria, Australia. Further to this was the aim of identifying the most useful information supporting a safe healthcare experience as indicated by patients. The large volume of written information provided in Victorian hospitals is directed by Federal and State health policy and includes the Australian Charter of Healthcare Rights in Victoria and other key safety information such as privacy and confidentiality. Patients and families report little interest in this type of information, and have indicated through a range of feedback processes that they feel overwhelmed by this and other clinical or health related written material because of the large volume and the inconvenient time of provision. A process to hear from patients, consumers and healthcare staff was coordinated to determine the relevance of this information and what patients actually want.

Methods: Seven focus groups with current patients, consumers and staff were facilitated across all three hospital campuses over a period of two months in mid 2015. Approximately 100 participants were identified through an expression of interest process and contributed to the collation of over 800 documented items which were themed and analysed. From this data, the most common information requirements for patients and families accessing health services were identified. A service wide audit of locally produced patient information identified over 1000 brochures, fact sheets and documents for distribution to patients to assist with their hospital visit or health condition. There were even more external publications from peak bodies being accessed and given to patients and families by staff. Other audit data revealed less than 40% of patients remember receiving the patient charter or other information about the health service, such as the patient information handbook.

Results: Mandatory information such as the Charter of Rights and privacy and confidentiality documentation, were not identified as key priorities by focus group participants. More practical information about what to bring to hospital, parking and transport, costs, who will be providing care and how to be involved, food and communication support including access to interpreter services were considered vital. More specific information around clinical conditions and selfcare were not considered as significant. A preference for provision of this information as part of a verbal discussion with staff or direction to recommended peak body websites and resources was identified. The ability for patients to access information at a time, frequency and modality of their choice was strong. It was suggested that digital information could more easily support patients with specific communication needs and should be provided as a phone App, recommended websites, via hospital television systems as well as other digital resources that facilitate patients to ‘opt in’ as desired.

Conclusion: The development of a modular patient information system using a range of modalities with a focus on the needs of patients and families is currently in progress. Practical information as recommended by patients is available as a smaller hard copy written guide. It is being built for mobile devices and will be available on the health service website. It will also be translated in the predominant non English languages and available online. A suite of patient information videos welcomes and introduces patients and families while reinforcing the charter of rights and key safety messages, such as privacy, in a more relatable style via the hospital television network. A new website is being developed, using feedback from patients, consumers and staff, including a new patient information section enabling easy access to a range of patient publications that can be selected by the patient when and as often as required.
NOVEL 3-STAGE PROGRAM FOR REDUCING THE HYPNOTICS RE-PRESCRIBING RATE IN ACUTE PSYCHIATRIC INPATIENT WARDS DURING MIDNIGHT
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Objectives: More than 90% psychiatric patients in the acute stage have sleep related problems. In acute psychiatric inpatient wards, patients with poor sleep condition could lead to daytime sleepiness, worse treatment response, and risk of falling down injury. The aim of this program was to improve the sleep quality during midnight in psychiatric patients with acute condition. We established several novel strategies to cope with this problem and evaluate our results by measuring “hypnotics re-prescribing rate during midnight”.

Methods: Our team (Dark Circle) was composed by psychiatrists, nurses, a clinical psychologist, a social worker, an occupational therapist, and a case manager. All decisions were made by sufficient discussion. Several tools as Cause and Effects chart, Pareto diagram, check list, Stratification, Histogram, and Statistical Chart were used to manage our project. We performed a pre-test survey, as whenever a hospitalized psychiatric patient went to nursing station for requesting further hypnotic during midnight, the nurse would carefully evaluate the possible risks of sleep disturbance by the check list we made. After 4-week evaluation, “lying in bed during daytime” and “few activities during daytime” were considered the two major reasons related to sleep disturbance. Then, we figured out a novel 3-stage program as follows to deal with the problem: the stage 1 program focused on improving the communication between doctors and the staffs; the stage 2 program concentrated on improving our facilities and managing individual patient’s inappropriate behaviors; the stage 3 program was absorbed in enhancing individual patient’s motivation in improving their sleep quality. Each stage had been executed for one month, then we would review the whole course before starting new stage. The countermeasures of previous stage will keep being executed unless we found no positive results. Furthermore, we used “hypnotics re-prescribing rate during midnight” to evaluate the effects. (The definition of re-prescribing rate means that the total number of requesting further hypnotics during midnight divided by the total number of hospitalized patients)

Results: Before we start the countermeasures, the value of “hypnotics re-prescribing rate during midnight” is 18.99%. The target value is 11.21% and challenging value is 8.10%. The results of each period goes as follows: Stage 1: 108.1%; improved rate, 44.27%; Stage 1&2: 80.46%; improved rate, 32.96%; Stage 1&2&3: 120.82%; improved rate, 49.50%; Maintenance phase: 111.95%; improved rate, 45.87%. The improvement in patients with mood disorders was from 22.45% to 9.83%. The change in psychotic patients was from 12.95% to 9.84%. In the Pareto diagram, two major factors as “lying in bed during daytime” and “few activities during the daytime” were shifted to the 3rd and 4th major factors in maintenance phase.

Conclusion: Novel 3-stage program not only provides patient-centered care but also connects with each staff. The program can improve the sleep quality and reduce hypnotics re-prescribing rate of acute psychiatric patients.
APPROACHES FOR TARGET POPULATION INVOLVEMENT IN JAPANESE CLINICAL PRACTICE GUIDELINES

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Objectives: Japan Council for Quality Health Care (JQ) has managed evidence-based medicine promoting project on consignment from Ministry of Health, Labor and Welfare (MHLW) since April 2011. Clinical practice guidelines (CPGs) have important role to support shared decision-making between patient and physician in medical setting. To fulfill the role effectively, CPGs developer should introduce the target population perspective in CPG’s development process, however, little is known about their efforts. The purpose of this study is to clarify the approaches of target population involvement in Japanese CPGs.

Methods: In fiscal 2011, we started to conduct an exhaustive search targeted Japanese CPGs using ten major databases. We evaluated identified CPGs from the aspect of methodological quality by AGREE II (The Appraisal of Guidelines for Research & Evaluation II) Instrument. In this study, we focused on the scoring points of the second domain-Stakeholder Involvement and the fifth item of AGREE II which were valuable components to gauge the guideline development group’s approaches to information gathering of the target population. In addition to scoring points of AGREE II, we performed the content analysis concerning how to involve the target population in CPGs development process based on the appraiser's comments.

Results: After searching and screening process, we evaluated 415 CPGs using the AGREE II from September 2011 to November 2015. The domain score of Stakeholder Involvement in evaluated CPGs was 45.8%. Other domain scores of AGREE II were as follows: Scope and Purpose, 62.9%; Rigor of Development, 39.1%; Clarity of Presentation, 57.6%; Applicability, 44.1%; Editorial Independence, 33.9%. Of evaluated CPGs, 18 (4.3%) CPGs had a score of 80% and above in the domain of Stakeholder Involvement. The mean score of the fifth item was 5.6 point (range1-7) in these high-scoring CPGs. The descriptive contents of target population involvement in high-scoring CPGs were as follows: patient representative involvement in guideline development group, 50%; getting feedback from target population in advance of publication, 16.7%; considering the views and preferences of target population in making recommendation, 16.7%; and conducting preliminary studies with target population, 11.1%.

Conclusion: The results obtained in this study suggest that a small but significant minority of guideline development groups incorporate target population involvement into CPGs development process. Further study on CPGs development policy would clarify the barriers for target population involvement.

THE EXPERIENCE AND OUTCOMES OF IMPLEMENTING SHOCK TREATMENT AND RESUSCITATION TEAM (START) IN ONE TERTIARY HOSPITAL IN TAIWAN

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Objectives: According to the summary data of sentinel events reviewed by the Joint Commission, from 2004 through 3Q 2015, the total incidents reviewed were 9,376. Among this, the delay in treatment events were 1,035, accounting for 11% of all incidents, and was the third place of sentinel event type. Evidence has shown clinical instability 6 hours prior to arrest, and the literature identifies physiological criteria to assist healthcare givers in early detection of deteriorating patients. In 2010, for the purpose of reducing cardiopulmonary arrests and patient mortality, Changhua Christian Hospital developed a systematic approach for early recognition and intervention of patients whose condition is deteriorating by setting up a primary-team based Shock Treatment and Resuscitation Team (START). This system is well known as Rapid Respond Team (RRT) in the US. This study reveals the experience and outcomes of the START mechanism.

Methods: The START system in the sample hospital was launched in 2010, and the operation is organized by the START committee. The chairman of the START committee is medical vice superintendent; other members include physicians of intensive care unit, physicians of internal medicine, physicians of surgery department, senior nurses, a pharmacist, an information technology engineer, a quality improvement administrator, and a data analyst. The algorithm of START operation was developed collaboratively in the committee, and the physiological criteria for early detection of deteriorating patients, such as blood pressure, heart rate, breathing (e.g. respiratory rate, blood gas), and neurological changes were cited from the literature. The START members in every specialty are made up of senior resident physicians, senior nurses, and acute care nurse practitioners who have received intensive care training. Once the healthcare givers (e.g. physicians or duty nurses) recognize the early warning signs of patients, they can activate the START through computer system. The START members will be informed the emergent condition by cell phones immediately, and will soon arrive at the location to help the patients. In addition, patients’ families can activate the START also when consider the need or when there is a breakdown in how care is being given. Chi-square test was used to calculate the trends of unexpected CPR rate and hospital mortality rate. Multiple cox proportional-hazards regression was used to calculate hazard ratio for START activation.

Results: After 5 years of START intervention in the sample hospital, the monthly activations were around 50. The unexpected CPR rate was reduced from 0.40% in 2010 to 0.20% in 2015 (P<0.001), with a decreased rate of 50%. The hospital mortality rate (patients with cancer diseases and patients who had signed the agreement of "do not resuscitate" were excluded) was reduced from 1.67% in 2010 to 0.46% in 2015 (P<0.001), with a decreased rate of 72%, and the multiple cox proportional-hazards regression analysis of mortality shows the hazard ratio was 0.883 (P<0.001) in START activation. Moreover, none of the medical disputes happened in the activated cases.

Conclusion: Early recognition and intervention of deteriorating patients by introducing the START mechanism has shown the outcomes of reducing unexpected CPR rate and hospital mortality rate in the sample hospital. However, there is always a concern whether clinical staff who do not work in critical care areas have adequate knowledge and training to assess patients with critical conditions. Relative education and training about the recognition of the early warning signs and the standard operating procedures of activating the START are required to all healthcare givers to ensure the patient safety.
TO ESTABLISH THE CONSENSUS OF STANDARD DISPOSAL PROCESSES FOR HEMODIALYSIS PATIENTS WITH ARTERIOVENOUS FISTULA/GRAFT OCCLUSION

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Objectives: Although percutaneous transluminal angioplasty (PTA) of occlusion has been advocated as the main management for A-V fistula/graft occlusion in hemodialysis (HD) patient, the management of A-V fistula/graft occlusion remains complex and lacks consensus of standard disposal process. The aim of this study is to establish group call information systems and standard operation procedures for A-V fistula/graft occlusion and improve HD patients' satisfaction.

Methods: We set up D2P (Door To PTA) program by group team meeting consisting of cardiovascular surgeon, anesthesiologist, emergency physician, nephrologist and the nurses of hemodialysis and operation room. We prospectively analyze the fact and data finding and calculate the waiting time to treat the A-V fistula/graft occlusion using the Cause and Effects diagram, Check List, Satisfaction Survey, Statistical Chart, Root Cause Analysis and Verification, and 5 Why Analysis. The average waiting time to PTA was 315 minutes prior to D2P program. The major root causes included anesthesia methods, lacking local anesthesia room, no consensus in operation room or standard disposal processes to manage A-V fistula/graft occlusion. Our program selected the permanent correct actions: selecting local anesthesia as the first choice, adjusting operation room regulation, and setting up the consensus of standard disposal processes since January 2014. The detailed actions include organizing an interdisciplinary team, multi-disciplinary discussions, setting D2P group call information systems to communicate with each other between physicians and health care workers, educating patient about knowledge of A-V fistula/graft occlusion, and performing consensus test.

Results: The countermeasures effects are to rise the local anesthesia ratio to 26.1% and the medical consensus test score to 84.4 and implementation of cardiovascular surgeon consultation rate to 74%. The effectiveness has been verified by shortening waiting time to 162 minutes till June, 2014, and the waiting time still can be kept to about 180 minutes in the following four months. Meanwhile patient’s satisfaction rate rose up from 76% to 82 %. Additional effect includes reducing health spend and the loading of health care nursing staff. The feasible new measures were approved and subsumed in standard disposal process of our hospital.

Conclusion: To establish group consensus and group call information systems for A-V fistula/graft occlusion can improve the health care process and patient’s satisfaction.
CULTURE OF PSYCHIATRIC CARE: CHANGE BY INSPIRATION AND EXPERIENCE STUDY
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Objectives: Introduction
There has been increasing trend of changing the traditional mental care to the new model of Recovery Oriented Care in Hong Kong. The core elements of Recovery Oriented Care are to induce recovery hope, explore the needs and strengths of a patient which can promote own recovery process, patient participation in the care plan formulation.

Learning from the overseas experience and literature, it is crucial to identify the organizational culture and then provide staff training accordingly before implementing the Recovery Oriented Care. Therefore, a series of promotional strategies have been set in our department. Nurses take the responsibility of developing the recovery plan for patients; it would be good to develop nurses in the first phase.

Objectives:
1) To screen the organizational culture, acceptance and concerns on Recovery-oriented care
2) To strength staff understanding on the needs and expectations of patients’ recovery
3) To provide a series of staff training to enhance their competency in Recovery care
4) To develop a resource kit to support their clinical practice

Methods: A survey on self-assessment on Recovery-Oriented Care was conducted to all staff of our department. After analyzing the data, a series of briefing sessions and intensive training was designed and implemented. Focus groups of different service users and providers were also arranged to get a comprehensive view of the needs and expectations of patients with mental illness especially for those with repeated relapse.

Results: Based on their voice in the focus group, a set of Recovery Log book with five booklets has been worked out to facilitate the communication among patients, carers, and all health professionals. A standardized Needs and Risk Assessment is now using in all psychiatric units. To strength staff confidence and competency on applying their learned knowledge and skills into clinical practice, a resource kit is under developing. Furthermore, evaluation on the intensive training has been done with very positive feedback.

Conclusion: It is crucial to conduct the self evaluation on staff view on Recovery oriented care and design a tailor made in-service staff training programme. These are main success factors of promoting the Recovery Oriented Care. Moreover, a tool to facilitate the clinical application is also important.
CARING BEHAVIORS OF INDWELLING CATHETER-RELATED URINARY TRACT INFECTION IN NEUROLOGICAL WARD

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Objectives: To understand the clinical nursing care for indwelling catheters, improve quality of care, thereby reducing indwelling catheter-related urinary tract infection in neurological ward.

Methods: After the investigators refer to self-care behaviors indwelling catheter structured questionnaires of 11 questions, by three experts validity was 86%. During May 1 to 31 in 2014 the questionnaires were given to twenty-two nurses.

Results: They were average age of 26 years, men were two and women were twenty. The results that nurses implementate five top caring behaviors: catheter placement indications (90.0%), the bag located below the bladder and no hit the ground(90.0%), every 8 hours or urine more than two-thirds of the bag emptying the bag (90.0%), the need to maintain the closed catheter system(88.0%) and assess whether the continued placement of the catheter(86.0%). Not really Executive-top four caring behaviors: failing five hand hygiene and hand washing(74.0%), did not fold before moving the bag to avoid urinary countercurrent (66.0%), when poured the urine bag was touched the urinal(60.0%) and daily the nurses did not rinse out the urethra and the catheter to clear secretions (58.0%).

Conclusion: With the results of this survey could learn to perform clinical nursing cares for indwelling catheters, the implementation of interventions for behavior projects of the policy, regular follow-up results, thus reducing indwelling catheter-related urinary tract infections rate.
LIVING WITH A STOMA - EVALUATION OF PATIENTS' PERCEPTIONS ABOUT THEIR QUALITY OF DAILY LIVING.
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Objectives: A stoma, which is an artificial opening in the bowel, deliberately made in the bowel onto the surface of the abdomen so as to divert the flow of faeces or urine may result in distorted body image along with physical, psychological and social challenges. The aim of this study was to explore the live experiences, challenges, effect and the coping mechanism of stoma patient in their day to day living.

Methods: All adult patients, either encountered in inpatient or outpatient settings, with stomas (Ileostomy, Colostomy & Urostomy) were consensually assessed for Quality of life (QOL) and a ASCRS survey tool was used to assess their views. Major study variables were life style modification, coping behavior, depression/ self-perception and embarrassment. Other than these, demographic variable such as age and years passed were also included in the study.

Results: Study showed that 52% of participants found significant negative changes in their functional status, 68% hesitated to go out with stoma, 36% avoid traveling with stoma and 64% said they were almost always afraid of a leakage. On the other hand, 76% found no significant changes in sexual pattern, 56% find life equally enjoyable and 70% said they don't worry much about smell.

Conclusion: Management of stoma patient is vital aspect of patient care. To overcome the patient issue and rehabilitation suggestion was given for separate stoma clinic and formation of stoma support group which approved by surgery team and patient are getting support through patient to patient and by Stoma nurses.

THE POTENTIAL OF COMBINING HEALTH INFORMATION TECHNOLOGY, OUTCOMES MEASUREMENT AND BEHAVIOUR CHANGE TECHNIQUES TO TRANSFORM HEALTHCARE

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Objectives: The complexity of many health conditions and the heterogeneity of patient characteristics and comorbidities mean that Randomized Controlled Trials, with strict exclusion criteria, often do not apply to real patients. Simultaneously, a proliferation of treatment options and clinical research makes it impossible for clinicians to keep up-to-date with all but the narrowest of fields. Health services miss opportunities to improve quality and reduce costs, because of a lack of outcome and other data. Even when evidence does exist, it can take an unacceptably long time to change practice.

The Internet and big data analytics have begun to transform other industries. It has been proposed that when this technology is combined with, improved outcomes measurement and systematic behaviour change techniques, true Rapid Learning Healthcare Systems could emerge. The objective of this research was to assess the potential of such systems.

Methods: 1. A scan of the literature was conducted to identify relevant academic, grey and commercial literature.
2. An expert seminar with 20 participants was held in London, breaking into 6 focus groups, addressing, technical, ethical, regulatory, workforce, training and economic implications of potential developments.
3. 25 in-depth interviews, with UK and US experts, to seek clarification or further information on issues that could not be resolved from the literature or during the seminar.
4. A thematic analysis, of the literature, seminar and interviews, to generate insights into likely developments in the next 10 years and their implications.

Results: Several early examples of Learning Healthcare Systems were identified, including:
- Comparative Effectiveness Research in the form of observational studies using routinely collected data to fill gaps in the evidence base more quickly and at lower cost than would be possible with conventional RCTs.
- Real-time surveillance systems that track epidemiological phenomena and adverse events related to treatments in near real-time.
- Predictive models that identify where low quality or unnecessarily expensive care might occur and ‘impactability’ modelling that can identify those instances most likely to respond to mitigation.
- Clinical Decision Support Systems that aid clinicians in dealing with unfamiliar or high-risk situations.
- Improvement through positive deviance. Positive deviants (really good providers) are identified using outcome data, studied and evidence is disseminated to other organizations.

Widespread adoption would require building blocks:
- Secure methods of classifying, collecting, storing and analysing data from within and without the healthcare system.
- A hierarchical outcomes measurement methodology and automated collection system.
- An integrated evidence and theory based method for changing patient and clinician behaviour.
- A new ethics framework that places moral obligations on patients, clinicians and researchers

Significant workforce, regulatory and equity implications were also highlighted.

Conclusion: These developments could have a transformative impact on cost and quality in healthcare, as well marking a paradigm shift in clinical and health services research. There was consensus that these are not simply IT projects. They must be integrated sociotechnical systems. Significant public and private investment has been made in these technologies, but further research is required to establish their cost effectiveness.

I propose to present these findings in an original presentation or poster.

References: All source material is available at learninghealthcareproject.org
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APPLYING THE CONCEPT OF THE INTERNET OF THINGS IN iPADS TO IMPROVE INPATIENT CONSULTATION TIME EFFICIENCY
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Objectives: The continuous evolution of information technology has enabled smart devices to be connected with other types of devices and components, forming an Internet of things (IoT). In this study, the IoT concept was applied to connect hospital information systems, smart mobile phones, and mobile devices for hospital rounds (iPads) to improve the timeliness of patient consultation.

Methods: According to the requirements of clinical physicians, an inpatient medical record mobile application was developed for iPads, which interfaced with the inpatient consultation messaging system in the hospital information system and physicians consultation schedules. Additionally, using the existing wireless fiber hospital environment, an inpatient consultation notification system, which transmitted instant messages to the public smart mobile phones of consultant physicians was developed. In addition, the personal iPads of physicians were synchronized with the electronic patient record database and display information required for caregiving such as patient consultation lists, reasons for consultation, and electronic patient records. After patient consultation, the iPads were used to compile consultation responses.

Results: The statistics showed the following: (1) Before the application of IoT in this study (March–August 2014), the number of clinical consultation cases was 8342, and the average completion time of each case (from the time the consultant physician received the consultation notice to the time the consultation response was finished) was 19.08 hours. Six months after the application (September 2014–February 2015), the total number of consultation cases was 11,615, and the average completion time of each case was 12.67 hours. Thus, the consultation time efficiency improved by 6.41 hours. (2) At baseline, the rate of finishing a consultation within 24 hours increased from 69.17% to 81.9%.

Conclusion: Smart application requires innovative integration models. Through user experience and ingenuity, hospital supervisors are encouraged to expand the functions of newly introduced technological products using the concept of IoT to create added value.
OUTCOMES OF DIGITALIZATION OF AN INDIVIDUALIZED DRUG COUNSELING SYSTEM: A SINGLE CENTER EXPERIENCE
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Objectives: Although drug counseling is an indispensable part of medication safety, conventional way of counseling without support of a digital platform usually resulted in incomplete information sharing and data collection. This study aimed at assessing the outcomes of digitalizing a drug counseling system in a single center setting.

Methods: An electronic platform of the drug counseling system was established at a tertiary referral hospital in January 2015. Data were collected one year before (Jan – Dec 2014) and after (Jan – Dec 2015) system implementation for comparison of outcomes including the incidence of physician referring patient to pharmacist for drug counseling, number of medical specialties utilizing drug counseling system, patient and physician satisfaction, rate of physician feedback to pharmacists, time spent for whole process, and paper consumption. Significance of difference was determined by Student t-test.

Results: After electronic platform establishment, the incidence of physician referring patient to pharmacist for drug counseling increased from 2870±13 to 3277±35 (p=0.0054). The number of medical specialties utilizing drug counseling system rose from 8 to 12. Patient satisfaction with the counseling process, telephone follow-up on drug use, service courtesy of pharmacists, and usefulness in medication use increased from 4.72±0.21 to 4.78±0.17, from 4.74±0.19 to 4.81±0.16, from 4.80±0.18 to 4.96±0.04, and from 4.79±0.21 to 4.97±0.03, respectively (all p<0.00001). Physician satisfaction was also elevated from 4.49±0.55 to 4.85±0.57 (p<0.0001). Besides, the rate of physician feedback to pharmacist increased from 75% to 100%. The time spent for the whole process was reduced from 34440 to 6385 minutes, while paper consumption dropped from 5740 to 3277 sheets per year.

Conclusion: The results indicated the effectiveness of implementing an electronic platform for individualized drug counseling not only for more effective interactions among patients, physicians, and pharmacists, but also for improving satisfaction for both patient and physician as well as curtaining the time spent for the counseling process and paper use.
PHARMACISTS MEDICATION INTERVENTIONS - CLOSING THE LOOP

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Objectives: Our objective is to reduce medication errors due to uncorrected orders after pharmacist interventions in the Sunrise Clinical Manager (SCM) electronic prescribing system.

Background: When pharmacists perform medication interventions, they will contact prescribers to verbally confirm the change of orders, and dispense the amended orders to patients. Pharmacists will document the intervention in SCM, which will alert doctors when they try to re-prescribe the intervened orders. However if SCM is subsequently not updated by the prescriber, errors can arise if other healthcare providers disregard the SCM alert and then refer to the original order, or copy the un-amended order during re-prescribing. In 2013/2014, five errors due to uncorrected orders after pharmacist interventions were detected.

Methods: The hospital Medication Safety Committee and SCM Medication Core Clinical Design Team developed a workflow process for pharmacists to amend these orders online, on behalf of doctors in SCM after verbal confirmation, should the doctor be unable to make the amendment. On the next log-in, the prescriber will be alerted to “acknowledge” or “refuse” the order placed by pharmacist. If the order is not acknowledged within 24 hours, there will be a hard-stop alert to prevent the doctor from using SCM further. If the order remains unacknowledged after 7 days, the Head of Department (HOD) will be notified, who may then re-assign the order to another doctor. A report of orders with refused status is generated daily for pharmacists to follow up on. Interventions that cannot be clarified between pharmacist and prescriber are escalated to HOD for resolution.

The workflow concept was approved by the hospital Medical Board and Clinical Heads in 2013. The process for interventions by pharmacists in the outpatient setting was piloted for Department of Endocrinology, and gradually implemented across all clinical departments in Oct 2014.

Results: Overall in 2015, pharmacists discontinued 7931 orders and prescribed 10166 orders on behalf of doctors. There were 18 (0.1%) refused acknowledgements and all were resolved after clarifications between the pharmacist and prescriber. Medication error due to uncorrected medication orders after pharmacist intervention in SCM has dropped to zero since full implementation.

Conclusion: The workflow improvement has allowed pharmacists to close a critical gap in the medication use process, resulting in timely and accurate updates to medication records for patients. The objective to reduce medication error due to un-amended prescription orders after pharmacist intervention in SCM has been fully achieved. This process has brought the institution into compliance with local regulatory requirements, which stipulate that a prescription must be furnished within 24 hours of supply of medications for a verbal order, which was previously not practicable. This simple, yet effective, solution is planned to be implemented in other healthcare institutions in Singapore.
REDUCTION OF SKIN NECROSIS OF PATIENTS CAUSED BY PERIPHERAL VENOUS INJECTION EXTRAVASATIONS.

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Objectives: To develop measures to reduce incidences of skin necrosis caused by peripheral venous injection extravasations.

Methods: We performed root cause analysis of several cases of skin necrosis of patients caused by peripheral venous injection extravasations. We found that the type of medications, puncture site and phlebitis are among the most important factors. We looked for measures to prevent the recurrence of similar incidents.

1. We found 18 high risk drugs for skin necrosis in our hospital formulary. Including acidic or alkaline drugs and high osmotic pressure drugs. Guidelines for prescribing physician and reminder was built in the CPOE system when the physician prescribed the drug.

2. Daily information will be automatically transferred using the patient has a list of 18 drugs, the nursing staff to provide the units at the peripheral intravenous assessment for warning systems should use large intravenous administration, in nursing system also reminds.

3. According to the American Association for intravenous infusion (INS) phlebitis defined, developed the surrounding drip leakage higher injury checklist for warning systems should use large intravenous administration, in nursing system also reminds.

4. Development of digital evaluation form, nurses use mobile phone camera system, storage, imaging and electronic medical records to assess the results instantly assess the prevention of leakage of information can be included in the shift. And a personal image according to the audit findings and, if abnormal, feedback evaluators.

5. Because the images included in electronic medical records, physician can view the results on the web, increase health care team communication kage of information can be included in the shift. And a personal image according to the audit findings and, if abnormal, feedback evaluators.

6. When the use of the medical team resource management, provides instructions for difficult intravenous injection kage of information can be included in the shift. And a personal image according to the audit findings and, if abnormal, feedback evaluators.

7. Advocacy high alert intravenous infusion, should establish a central venous catheter central venous catheter and peripheral administration of the drug, to reduce the occurrence of peripheral intravenous leakage e according to the audit findings and, if abnormal, feedback evaluators.

8. Organized education and training, strengthen personnel medicines cognitive training, and implementation of direct observation of clinical nursing skills implementation (DOPS) test, to enhance the implementation of intravenous administration skills. If abnormal, feedback evaluators.

Results: The project excluded chemotherapy and contrast injection. Extravasations of inpatient has improve from 0.22% to 0%. It has maintained incidence 2014 Insert central line when take high-risk drugs has improve from 34% to 43%. Phlebitis detection rate increased from 2.6% to 4.3%, and are concentrated in the minor grade 0-1 grade.

Conclusion: The measures effectively decrease the occurrence of skin necrosis resulted by extravasation. There are several types of drugs hurt skin when extravasation. Example Levophed and Dopamine always be used when some patient blood pressure low. But both of them pH is below 4. One these drugs extravasation will make the skin damaged. We found the factors of extravagation include: medicinal properties, patient themselves, workflow safety design and staff training. Purpose of the project to provide clinical care to avoid damage occurred.
EFFECT OF HYPERBARIC OXYGEN THERAPY ON FATIGUE METABOLISM FOR HIGH INTENSITY ATHLETES

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Objectives: It is essential to monitor the fatigue level of high intensity athletes during training. When training intensity exceeds physiological tolerance, the body’s fatigue and metabolism will become unbalanced. This study was to analyze the effect of hyperbaric oxygen therapy on fatigue metabolism indicators such as activities of GOT, BUN, CPK, Lactate and Myoglobin in blood of high intensity athletes. It can be used as fatigue indicator for athletes during training in the future and provide an alternative for athletes to recover from fatigue and return to field soon.

Methods: The study subjects were high intensity athletes diagnosed in a medical center in Southern Taiwan between June 2014 and May 2015. The subjects were divided into experimental group and control group, with 15 subjects each. By comparing groups before and after therapy, fatigue metabolism indicators, GOT, BUN, CPK, lactate and myoglobin in blood were measured and analyzed by biochemical methods. Subjects from both groups received traditional therapy based on their conditions while those in experimental group received an additional hyperbaric oxygen therapy. Each therapy consisted of 10 treatments with an average treatment lasting 120 mins. The data were analyzed using descriptive and inferential statistics with significance level being P<0.05.

Results: Two indicators (CPK and Myoglobin) showed no significant difference between two groups before and after therapy. The other two indicators, BUN and Lactate, showed improvement for experimental group after the therapy (P<0.05), and the difference between the two groups was significant (P<0.001).

Conclusion: Competition or strenuous exercises can easily result in skeletal and muscular damage, energy imbalance, tissue hypoxia and lactate build-up, thus affecting performance of athletes on the field. Therefore, other than figuring out how to promote fatigue recovery of high intensity athletes, sports medicine is striving to develop a therapy to improve muscular damage and function recovery effectively. Through intervention with hyperbaric oxygen therapy, this study found that the average concentration of BUN for experimental group significantly decreased from an initial concentration of 18.5±4.9mg/dl to 15.5±4.7mg/dl after therapy (P<0.027). In addition, lactate indicator for experimental group showed significant difference before and after therapy (P<0.046). By contrast, the indicators were not improved in control group. It suggests that the introduction of hyperbaric oxygen reduced the products of protein catabolism in high intensity athletes, thereby regaining the balance of body function and promoting removal of lactate from the body. However, the CPK in this study was not improved by hyperbaric oxygen (P=0.463). The analysis suggests that difference in CPK activation was not only affect by training intensity, time and age, gender and stamina of the subjects, but also closely linked to skeletal and muscular contraction during training. Therefore, a case by case long term assessment is required to accurately grasp the changes in its concentration. In conclusion, hyperbaric oxygen can effectively reduce accumulation of fatigue products, regulate metabolic irregularity and regain energy supply, while increasing oxygen supply to skeletal and muscular tissues in fatigue state, allowing high intensity athletes to recover from fatigue rapidly and return to field. Therefore, hyperbaric oxygen can be seen as a treatment for fatigue recovery.
Objectives: Contrast mediums are used to improve images of medical diagnostic modality and allow the radiologists to distinguish normal from abnormal conditions. It is important to manage the contrast medium which belongs to a high-alert drug. Team resource management (TRM) is an effective approach for reducing errors and enhancing patient safety. The purpose of this study is to apply the activity of TRM for management of contrast medium.

Methods: This team consists of doctors, pharmacists, radiological technicians, nurses and information technicians. We utilize the TRM tools including the leadership, mutual support, the ISBAR communication model, the Shares Mental model, and "Brief, Huddle, Debrief" methods. Strategies: (1) integrated the process of different departments and increased communication of staffs to avoid the overlapping work. (2) provided the education about knowledge and management of contrast medium. (3) used the new information technology such as APP to set up the consultation and attention system. Also, the team members cooperated with external resources including pharmaceuticals, students and professors of information technology.

Results: We applied the TRM to improve quality for management of contrast medium from March 2015 to December 2015. The indicators show significant promotion after TRM activity: (1) increased high-alert marker labeling rate on the drug bottle of contrast medium from 0% to 80%. (2) elevated understanding degree of professional knowledge about contrast medium from 47% to 89%. (3) increased recognition degree of TRM from 51% to 81%. (4) raised satisfaction degree of TRM from 70% to 90%. (5) created the APP system by the mobile phone to provide the information of contrast medium and attention function for the patients. As we know of, it is the first presentation of novel application in Taiwan.

Conclusion: High-alert medications are drugs that bear a heightened risk of causing significant patient harm when used in error. TRM is a practical skill to improve quality for management of high-alert contrast medium. It builds up the value and the culture of teamwork in our hospital for promotion of patients safety.
DEVELOPMENT OF A PATIENT-CENTRED MOBILE PERSONAL HEALTH RECORD APPLICATION FOR PATIENTS WITH CHRONIC DISEASES IN A TERTIARY HOSPITAL

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Objectives: To develop a mobile personal health record (mPHR) that enables patients manage their chronic diseases by analyzing previous mPHR service data.

Methods: An mPHR called “My chart in my hand” was launched in December 2010, at Asan Medical Center, Seoul, Korea. The main purpose of the mPHR was to provide patients their own medical information and help manage their health conditions. Until in November 2015, about 160,000 users have downloaded and 18,000 users have actively used the application. Patients with chronic diseases were targeted to be the main active users, but there were no submenus for chronic diseases management in the initial version. In order to develop new version to be more patient-centred and suitable for chronic disease management, previous research findings on usage pattern of the initial version and user's requests were gathered and reviewed. These data were analysed by a clinical informatician, an mPHR nurse coordinator, and an IT technician who participated in the development and management of the initial version. New functions, menus, and target chronic diseases were selected and the new mPHR version was then developed.

Results: The most frequently visited menus were lab result, outpatient department (OPD) support, and medication management in the initial version of mPHR. Presence of chronic diseases and number of OPD visits were closely correlated with active users. Age group of 0-19 years was one of most active user groups even this age group was not initially targeted. Health management menus, for example, blood glucose levels, which is considered as one of the very important menu for attracting continuous usage of the application were not actively used. The users requested more lab results to be shown that were relevant with their specific conditions like cancer or transplantation status. New mPHR was developed after reflecting the above results. Diabetes care menu was added as a main menu. Cancer hospital application named, “Asan Smart Cancer Hospital” was made as a new application. Paediatric asthma and atopy menu was added for young age group. OPD supporting functions were also added including automatic OPD registration using beacon, OPD schedules, mobile payment information, allergy and anaphylaxis card, and patient identification with mobile ID card. Symptom diaries for inflammatory bowel diseases, diabetes, paediatric asthma and atopy were added so that these diary data can be used when patients visit OPD clinics. To promote health management, health check-up and promotion functions were also added. The New mPHR is available at Google Play Store and Apple App Store since Jan, 2016.

Conclusion: Based on our 5 year experience of mPHR, “My chart in my hand” was upgraded from its initial version to improve patient centeredness and patient engagement. Further research can be done to assess the effectiveness and impact of the mPHR as this application is more widely utilized by patients.
EXPERIENCE WITH AN EARLY WARNING SYSTEM (EWS) TO IMPROVE PATIENT SAFETY IN HOSPITAL WARDS WITH MANY INPATIENT BEDS AND LIMITED STAFF RESOURCES.

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Objectives: Apply the early warning concept of “rapid response teams (RRT)” in a Taiwan hospital with large wards and limited staff. Monitor the incidence of cardiopulmonary resuscitation (CPR) in these wards as a measure of effectiveness.

Methods: The hospital is a large general hospital in southern Taiwan covering two city blocks. It comprises four main buildings, each six floors high, with approximately 700 inpatient beds distributed as 8 wards, each containing 30~60 beds. RRT methods were impractical because of problems with staffing and distance. We used information technology (IT), online mobile nursing carts, and EWS score to automate scoring and to notify the attending/on duty physician by mobile phone. The EWS consisted of 6 parameters: respiratory rate, pulse rate, systolic blood pressure, temperature, percutaneous oxygen saturation (SpO2) and hourly urine output, each given a severity score between 0 and 3. The sum of the 6 parameters is the EWS score; a total greater than or equal to 3, or a single parameter with a score of 3, is an indication to activate the warning system.

Results: In 2014 CPR occurred at a rate of 8~10/month; all were transferred to intensive care units (ICU), and died. After implementation (last 3 months 2015), there were 5 CPR: 3 were transferred to ICU, 2 left the hospital after an uneventful course.

Conclusion: EWS uses processes that nurses are already doing (no extra burden). The addition of IT is a back-up to nursing awareness, simplifies communication, and documents the sequence of events. The target of decreased CPR in wards has been achieved. The fact that CPR can now be followed by an uneventful hospital course suggests our primary goal of patient safety is also being reached.

Establishment of an Electronic System for Improving the Effectiveness and Accuracy of Collecting Healthcare Quality-Related Data

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Objectives: This study aimed at investigating the improvement in effectiveness and accuracy of healthcare quality data collection after establishment of an electronic system for data procession in a medical center setting.

Methods: Between January 25 and December 30, 2015, an electronic management system was established at a tertiary referral hospital. Fifty-two healthcare-related parameters were used for assessing the effectiveness and accuracy of data collection before and after system implementation. The definitions and sources of all parameters were determined by the Committee of Healthcare Quality Indices organized for building the system, headed by the Vice Superintendent for Medical Quality. The accuracy of all data was confirmed before uploading. Indices for comparison before and after system implementation included the number of healthcare parameters collected using the new system as well as the time and manpower for data collection. Accuracy of the collected data was also compared. The significance of difference was determined by paired-t test.

Results: After implementation of the system, the incidence of data collection using personnel was reduced from 32.69% to 1.9% and that using semi-automatic means dropped from 67.31% vs. 7.7%. On the other hand, the incidence of automatic data collection rose from 0% to 90.38%. The time of data collection was shortened from 25.90 ±49.72 to 7.88±24.84 minutes (p=0.025), while the use of manpower was reduced from 19.44 ±66.40 to 0.13±0.345 (p=0.041). The accuracy of collected data rose remarkably by 51.16% from 48.84% to 100%

Conclusion: The results of the present study not only demonstrated the successful establishment of an electronic system for healthcare data management, but also an enhanced effectiveness and accuracy of the collected data vital for medical quality improvement.
IMPROVING PATIENT EXPERIENCE AND STAFF WORKFLOW THROUGH HA INFORMED CONSENT FORM (ICF) SYSTEM

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Objectives: Informed consent for medical treatment/procedure is part of quality care and also a legal requirement. Healthcare professionals are facing the challenges of rising public expectation, media interest, discrepancies between spoken Cantonese and written English, and changing professional expectations for clear explanation and documentation of rare but serious consequence risks and treatment options. Public hospitals are particularly pressured by busy clinical operations. Our primary objectives are improving patient experience and staff workflow through information technology (IT) facilitation. The HA Informed Consent Form (ICF) System was developed to enhance data quality and documentation of consent forms.

Methods: There are three key success factors to the ICF System: user-friendly functionalities, good data and engaged users. With the kind sharing of New Territories West Cluster, the ICF System could start from a well trialed IT prototype which provided a simple web-based interface to select information on doctor, procedure and language. Document integrity was safeguarded by a unique serial number on each page of consent form. Many clinical departments have their pre-printed consent forms and patient information leaflets. The ICF System provided an opportunity to align different datasets, specifically the procedure name, intended benefits, risks/complications and patient leaflets. Clinical Coordinating Committees/Central Committees (COC/CCs) were engaged to align the procedure data. Clusters have also reviewed their data sets. Staff engagement was done through set up of Working Group on Informed Consent with representatives from clusters and Head Office, and over 30 roadshows to COC/CCs and clusters.

Results: With the concerted efforts of related parties, HI/IT, COC/CCs, clusters/hospitals and Quality and Safety, the HA ICF System was launched in September 2015 and fully implemented by December. There were over 2,100 procedures in the dataset, of which 251 procedures were aligned by seven COCs across HA. After one month of full implementation, 99,537 consent forms have been generated, with over 80% in Chinese.

Conclusion: Although detailed evaluations on System utilization and effectiveness are yet to come, many staff feedback that ICF System had improved the quality of informed consent form with more comprehensive, standardized and legible information, elimination of abbreviation and reducing handwriting time or omission. Doctors can focus on explaining the consent content and communicating with patients/families.
PROCESS REENGINEERING FOR A SAFER AND FRIENDLIER BLOOD TRANSFUSION SYSTEM
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Objectives: To ensure that the correct patient gets the correct blood is one of the National Patient Safety Goal. Also, enhance patient safety and user satisfactions are the purposes of all healthcare informatics systems. Originally, the Ping-Tong Christian Hospital (PTCH) had a blood transfusion record system which combined automated (hand-writing of uniform sheets) and computerized medical record. However, paper work still existed, and reminding and connection between healthcare team members were lacked. The purpose of present study is to process reengineering for a better blood transfusion system.

Methods: Through interdisciplinary meetings for decision making, we intended to redesign a blood transfusion system via field visits, interview and questionnaire survey of users, aiming for an automatically check, ID contrast, providing relevant information, and data transform. Overall User Reaction component of the QUIS 7.0 and Perceived Usefulness and Perceived Ease of Use were utilized in the present study to measure subject satisfaction with the blood transfusion systems. Otherwise, the time interval between the blood bag out of blood bank and patient starting blood transfusion was compared between the two systems. SPSS 19.0 was used for statistical analysis. The mean scores of the user reaction questionnaires were used to evaluate user satisfaction with the systems. Independent-Sample t-test was used to test the differences between two different systems.

Results: The new module integrated the dispersion jobs display into one platform with paperless. To ensure users working step by step, until verification was proofed and the previous step was finished then following step will be unfold. Only one bag of blood was transmitted each time, therefore patient would have blood transfusion immediately and refrigerator would be needless at station, and mistake from took wrong one could be avoided through this procedure. Furthermore, there was no more waste of blood due to prolong un-transfused condition of blood or higher temperature storage from out of blood bank. The nurse only need to press one bottom to sending messages out to transportation center instead to operate another system and key in data, which is not only save time but also avoid type error. Ultimately, the new blood transfusion system enhanced the patient safety through patient identification, blood identification, and interdisciplinary communication. The authors also calculated the period from blood out of the bank to transfusion after process reengineering (19.5 minutes), which was shorter than before (47.7 minutes), although there was no statistically significance (p = 0.312). The probable reason is the small scale of the present study. There was no statistical significant difference in of user satisfaction also, which might be due to user satisfaction were surveyed soon after system implementation. Longer period to survey satisfaction for a more precise result is warrant in the future.

Conclusion: To utilized information technology to create a safer and friendlier blood transfusion system for the healthcare team members and patient is feasible. A large scale study with longer observation for parameters mentioned in the present study is recommended.
DEVELOPMENT OF A WEB-BASED TOOL TO SUPPORT THE CREATION OF CLINICAL PRACTICE GUIDELINES IN HIGH QUALITY

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Objectives: In the creation of clinical practice guidelines, there is a need to create many related documents. We believe, we can create clinical practice guidelines efficiently by using a tool on the Web. We developed a Web-based tool to support the creation of clinical practice guidelines in high quality. The tool was named GUIDE. In this paper, we report overview of GUIDE.

Methods: In Minds guideline center, as a creation support of clinical practice guidelines, ‘Minds Handbook for Clinical Practice Guideline Development 2014’ was compiled and opened to the public on the Minds website. This handbook introduces a development method of clinical practice guidelines based on the EBM. The feature of this handbook is that document templates for the creation of clinical practice guidelines have been prepared. In the handbook, the creation procedure of clinical practice guidelines is shown as follows; 1) clarification of development objectives, 2) determination of development body, 3) establishment of secretariat and task forces, 4) scope development, 5) systematic review, 6) formulation of recommendations, 7) development of draft clinical practice guideline, 8) external review and collection of public comments, and 9) publication. Along the line of this procedure, GUIDE provides the contents of the handbook and the document templates on the Web.

Results: In GUIDE, users can browse ‘Minds Handbook for Clinical Practice Guideline Development 2014’ on the website. GUIDE provides the contents in both HTML format and PDF format. Users can download and print PDF files. The handbook prepares document templates to be required to create clinical practice guidelines. The number of document templates is 35. Users can complete the internal elements of clinical practice guidelines by filling out the templates. Document templates have created with Microsoft Word or Excel. An identification number is assigned to the each document template. Users can share the filled document templates within the guideline development group by uploaded the templates to GUIDE. Uploaded files are listed in each chapter, section, clinical question and outcome automatically. Uploaded document templates can be output as a draft guideline to be aggregated. Users can download these guidelines in HTML, Word, and PDF format. Users can recruit the public comments of the draft guideline on the GUIDE website. Anyone can read the draft guideline that has been published on the Web. And they can send a comment through the website. Sent comments are stored in the GUIDE database. Finally, users can output the final version of the clinical practice guideline. There are four types of guideline outputted. Those are detailed version, utility version, simplified version, and consumer version.

Conclusion: In this study, we developed GUIDE which provides ‘Minds Handbook for Clinical Practice Guideline Development 2014’ on the Web and assists in the creation of clinical practice guidelines on the Web. GUIDE has entered into normal operation after the test operation and modification of the system. While performing the operation, we want to continue to modify the tool by incorporating the voice of the users.
Early Warning System Improves Cardiopulmonary Resuscitation Event and Patient Survival

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Objectives: Many adverse events such as cardiac arrest and death are predictable and preventable by abnormal vital signs six to eight hours before the event. When the condition became worsen, medical team should monitor and evaluate the patient more frequently. Early warning system (Early Warning Systems, EWSs) can help medical team to identify significant changes in a patient’s status earlier. This study is to develop an early warning system and improve events of cardiopulmonary resuscitation (CPCR) and patient survival.

Methods: We set up a EWSs team with regular conference. The software was be implemented in January 2014. The data were collected from non-ICU wards (medical and surgical ward) on a monthly basis from January 2013 to December 2014, including the number and ratio of CPCR, the ratio of return of spontaneous circulation (ROSC) and survival rate from database of hospital information system (HIS).

Results: There are 10,848 alarms totally in 2014. The event of CPCR is decreased from 81 patients in 2013 to 46 patients in 2014. The ratio of CPCR is decreased from 2.04‰ in 2013 to 1.16‰ in 2014. The ratio of ROSC is 65.3% in 2013 and 57.1% in 2014. The survival rate is increased from 65.4% in 2013 to 67.3% in 2014.

Conclusion: To prevent and reduce the incidents of CPCR and improve survival rates are the major challenges and hard work in acute and critical care of the hospital. The study show the EWSs can decrease events of CPCR and improve survival rate. The EWSs can early detect and warn the deteriorating patient, so that health care workers can early identify high-risk patients, avoid CPCR, reduce the workload of healthcare, medical cost and enhance the quality of medical care.
THE APPLICATION OF ATP BIOLUMINESCENCE ASSAY IMPROVE FINAL CLEANING PROCESS FOR MDRO PATIENTS IN A REGIONAL HOSPITAL
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**Objectives:** In a regional teaching hospital in southern Taiwan, the patients infected with multiple drug resistant organisms (MDRO) increased from 11 cases per month during January to February 2015 to 22~25 cases per month during March to April 2015. The most common pathogen is Methicillin-resistant Staphylococcus aureus which accounted for 54.2% of cases, followed by carbapenem-resistant Acinetobacter baumannii (22.2%). The most MDROs are cultured from abscess (n=17, 23.6%), followed by sputum (n=15, 20.8%). In order to understand the efficacy of final cleaning process, we made up an evaluation sheet for environmental specimen collection by ATP bioluminescence assay, in which ten items were selected according to frequency of touch and ease of contamination.

In preliminary result, the average value of ATP bioluminescence assay in three ICU beds is 351 RLU, where drip stand had the highest level (536 RLU). On the other side, the average value of ATP bioluminescence assay in twelve general wards is 1197 RLU. The highest two value is at bed table and bedrail, which is 9378 RLU and 771 RLU, respectively. The efficacy of final cleaning process in general ward is worse than in ICU. We used questionnaire to evaluate the cause of discrepancy between general ward and ICU. The main difference in final cleaning process between general ward and ICU is the operating procedures in disinfection. The test score of beach blending in cleaning staff is low. The average score about final cleaning process in cleaning staff is 76.6 points.

**Methods:** First, we made a standard procedure of final cleaning process for wards contaminated by MDROs. Second, we held education and training about final cleaning process for cleaning staff. Third, we made an audit system to make sure the correct procedure of final cleaning process.

**Results:** After these measures, we use ATP bioluminescence assay to evaluate twenty-two wards again, including 6 in ICU and 16 in general ward. In ICU, the average value is 264 RLU and the value less than 250 RLU is 87.5% of all items. Only value of buttons on EKG monitor was greater than 250 RLU. In general ward, the average value is 623 RLU and the value less than 500 RLU is 42.8% of all items, but the bed table still had the highest value. The average test score in cleaning staff reached 88.4 points, which is 11.8 points higher than before these measures.

**Conclusion:** In our hospital, the final cleaning process is operated by outsourcing cleaning staffs. The staffs whose age more than 50 years old were 65% and who worked in our hospital less than one year were 53%. In order to increase the attention for final cleaning process in wards contaminated with MDROs in cleaning staff, repeated education, discussion and audit were important. To build a standard procedure for disinfection also made cleaning staffs easily to follow. We used ATP bioluminescence assay to evaluate the efficacy of disinfection and cleaning. However, we only evaluated 22 ward, which may not represent the overall cleaning efficacy.

MDROs related healthcare associated infection is a common issue. The contamination in environment and equipment may be one of the sources. Therefore, monitoring the efficacy of cleaning process is very important.
PAPERLESS PREPARATION FOR HOSPITAL ACCREDITATION USING KNOWLEDGE MANAGEMENT AND ACCREDITATION MANAGEMENT SYSTEMS

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Objectives: Hoping to promote healthcare quality in Taiwan, Joint commission of Taiwan is entrusted by the health authorities and develops the State-of-the-Art accreditation Standards. All the hospitals have to be surveyed every 4 years. Owing to constantly updating such material for Accreditation, we had to print out too much document. It is not only harmful to our ecosystem but also wastes our money and time. We conducted a paperless program for Hospital Accreditation in 2014 successfully. The good experience will be detailed and shared.

Methods: Taichung Veterans General Hospital is a 1500-bed medical center in Middle Taiwan. We collaborated with external consultants to implementing Knowledge Management System and adopted gradually since 2008. All departments and divisions of our hospital have to upload the indicated documents to Knowledge Management and Accreditation Management Systems (KM & AMS) (Galaxy Software Services Corp. Taipei Taiwan). The indicated documents include daily business, clinical care, teaching and training, and quality management and so on. KM & AMS provides multidimensional quick links to retrieve the documents and to apply in quality improvement of PDCA cycle. We conduct on-the-job training in using KM & AMS regularly. To assure the quality of each uploaded document, constant auditing and authority control process are set up. We also invited departments’ members to contest and share their novel experience of using KM & AMS. In 2014, we used KM & AMS to undertake the hospital accreditation.

Results: The documents in KM & AMS increase gradually from 7,810 copies in 2008 to a total number of 260,648 copies in 2015. We also used mobile devices, such as I-PADs or Notebooks to provide the on-line information to the surveyors. Based on the accumulated documents, we finished the paperless hospital accreditation by KM & AMS in 2014. It spared our limited space for allocating the files and saved us around NT 0.4 million dollar (5.46 million sheets of A4 paper).

Conclusion: KM & AMS has been the major system to store our daily documents. It facilitates the paperless hospital accreditation. Now, our staffs are able to search the documents and share the updated information through KM & AMS. It also improves overall administrative effectiveness and efficiency.
A STUDY OF THE USE OF BEDS AND RELATED FACTORS IN THE MEDICAL INTENSIVE CARE UNIT OF A MEDICAL CENTER

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Objectives: To investigate the use of beds and related factors in ICUs and use an information system to enhance the usage rate of ICU beds.

Methods: 1. Observed the process and bed booking regulations to investigate and collect data on nurses booking beds in various wards according to the proper department and demands for the types of beds when ICU patients show signs of improvement and are waiting to be transferred to general wards, and to determine whether nurses need to state the instruments and equipment patients are currently using and whether they are to be quarantined when they book a bed. Ward nurses will first record the ICU bed booking and wait until patients have been discharged before providing beds based on their attributes. According to statistics from January to June 2014, MICU nurses spend approximately 28 minutes per day on the telephone booking beds and are required to contact up to 14 wards, while ward nurses spend 36 minutes on the telephone handling ICU bed bookings and ICU patients must wait up to 9 days (an average of 2.5 days) to be transferred into general wards.

2. Under the current process and bed booking regulations, the following problems were found: difficulty determining the proper department, complicated levels of hospital beds (single rooms, twin rooms, and healthcare beds), limitations in bed booking regulations, non-transparent bed booking information, sectionalism (rejection of general patients), and so on.

3. After communicating with IT engineers and the hospital bed management department, a “Hospital Bed Booking System for ICU Patients” was established according to the department, type of bed required, priority of transfer, type of quarantine, equipment used by the patient, and any limitations. Moreover, the permission of the system was also controlled. ICU nurses can key in the bed booking information for patients while ward nurses can search for information on the list of patients with ICU bed bookings. When wards have unoccupied beds, nurses can search for departments and inform the hospital bed management department, which is in charge of making the overall arrangements for the hospital bed management of the entire hospital.

Results: The “Hospital Bed Booking System for ICU Patients” saves 57 minutes of manpower per day and reduces the waiting time of ICU patients to 0.5 days.

Conclusion: The “Hospital Bed Booking System for ICU Patients” effectively decreased expended manpower from 64 minutes to 7 minutes and shortened ICU patients’ average waiting time from 2.5 days to 0.5 days. Not only did this system save manpower and enhance the use of ICU beds, the satisfaction of personnel also increased. Current medical institutes generally lack talent with expertise in clinical procedures, administrative operations, and information concepts, and much of the information in medical institutes belongs to individual systems that have not yet been integrated and connected, which often leads to healthcare personnel spending time and effort to learn each system. Due to the abundance and development of information today, if owners of various medical institutes can dismiss their personal professional framework and integrate and apply information to management and clinical care in a timely and appropriate manner, it is possible that considerable manpower costs and medical resources can be saved so that clinical healthcare personnel can have more time to take care of patients, thus enhancing healthcare quality.
PATTERNS OF INTERNET USE FOR SELF-HEALTH MANAGEMENT AND BARRIER AMONG ADULT POPULATION IN BANGLADESH: A CROSS-SECTIONAL SURVEY

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Objectives: The purpose of this study was to analyze the prevalence of online health information seeking behavior and types of barrier regarding self-care management among the adult population in capital city Dhaka, Bangladesh.

Methods: A cross-sectional survey conducted on adult population in Dhaka, Bangladesh. A total of 58 participated in this survey study from 27 January to 6 February 2016. This survey design involved sending Google document questionnaire to participants via email and sharing link on Facebook. It developed to collect data on participant’s demographics (age, sex, socioeconomically status), access to the internet, and competency in computer and English. The primary outcome measures included health information searching pattern and barriers regarding self-health management. Finally descriptive statistics were used to analyze all aspects of the survey data.

Results: Among 58 participants, 86.2% (50/58) of participant’s age range was 21-30 whereas male and female ratios were 63.8% (37/58) and 36.2% (21/58). Among 58 participants around 60 percent’s educational qualification were B.Sc and M.Sc. Also, 81% (47/58) participant was student and rests of them were service holders. Among service holders, 50 percent participants are working in three major sectors such as Pharmaceutical, Engineering, and Banking. Furthermore, a total of 58.6% (34/58) and 20.7% (12/58) of participants had good and excellent English reading and writing competency. Moreover, 77.6% (45/58) of participants always used the internet and 63.8% (37/58) had good computer knowledge. In total, 72.4% (42/58) know that the internet used for self-health management and 62.1% (36/58) often used the internet for seeking health-related information. Unfortunately, about 38% (22/58) educated adult participant did not know about different internet disease groups and almost 78% (41/53) of participants had never been the internet group member. Among them, 41% (24/58) of participant seek health information once a week. However, maximum 25% (14/58) searched for anxiety and depression information. It is followed by those who searched for diabetes, obesity and hypertension as well and 60.3% (35/58) participant seek their health-related information before seeing the doctor. Barriers regarding online self-health management for them were more in time management along with difficulty to understand medical terms and procedure, less information regarding health, and trustworthiness of health online health information, etc.

Conclusion: Self-health care is usually the first management option to the health condition and common ailments. Physicians were the leading source of health information for the patients in Bangladesh. Recently, people are using the internet to search health related information and utilize this information for self-health management. This study demonstrates that participant’s had an impressive knowledge about online health information and prevalence of online line health information seeking behavior was admirable. Further analysis should be conducted whole Bangladesh in future.
MOVING COMBINED TREATMENT ESCALATION AND CARDIO PULMONARY RESUSCITATION PLANS INTO THE 21ST CENTURY – A DIGITAL DEVELOPMENT

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Objectives: To create an electronic combined "Treatment Escalation Plan" (TEP) and "Do Not Attempt Cardio Pulmonary Resuscitation" (DNACPR) form on the hospital computer system and ensure it is always easy to access when required urgently.

Methods: It has been recognised that if a patient has a DNACPR form they can sometimes receive worse care than if the form had not been completed 1,2. The solution to this is a "Treatment Escalation Plan" (TEP) that contains not only the resuscitation decision but an agreed plan around treatment escalation options. The structure and content of the form are important, but also how its presence or absence is displayed and how it is accessed, as the resuscitation status of a patient needs to be available within seconds.

A Multidisciplinary design group was assembled including representatives from IT, Medicine and Nursing. The electronic form was adapted from a paper version, and we added a symbol showing the presence of a completed form next to each patient on the Electronic Whiteboards. Due to confidentiality we don't show the resuscitation status on the electronic whiteboard, but a symbol shows a completed form, and a double click on this symbol displays the ‘Resuscitation Status’. It was made hospital policy for every adult patient in hospital for more than 24 hours to have a form completed. Data on form completion is now available live by looking at a ward list, or historically via automated Run Charts.

Results: The new system was successfully implemented in July 2015 with 509 forms being completed across the Trust in the first month. Some examples of form completion status by ward is shown below.

<table>
<thead>
<tr>
<th>Location</th>
<th>Proportion of patients with Form pre electronic system (2013-2015)</th>
<th>Proportion of patients with Form Post introduction of electronic system (September 2015)</th>
<th>Proportion of patients with a completed TEP/DNAR Form (6 months post launch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITU</td>
<td>-</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>Elderly Care Unit</td>
<td>10% - 50%</td>
<td>~98%</td>
<td>92%</td>
</tr>
<tr>
<td>Neuro Rehab Unit</td>
<td>-</td>
<td>-</td>
<td>10%</td>
</tr>
</tbody>
</table>

Conclusion: The electronic form has many advantages: it avoids the unintended consequences of simple DNACPR forms on other aspects of patient care; it is very quick to access; it can't be lost; it can be automatically shared on discharge and the number of forms being completed can be remotely monitored. In ward areas where the completion is not 100% we are supporting locally driven quality improvement projects utilising the opportunities offered by a live dashboard.

While a great means for recording and communicating information, it does not guarantee quality of the discussion about future care options and so we have an improvement workstream to incorporate shared decision-making principles into these discussions.


IMPLEMENTATION OF A NATIONAL DRUG VIEWING AND MEDICATION DUPLICATION ALERTING SYSTEM DECREASED THE DUPLICATIONS OF OUTPATIENT MEDICATIONS WITH OTHER PROVIDERS

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Objectives: To assess the effect on drug duplication after implementation of a cross provider drug viewing and medication checking system in a medical center

Methods: Under the universal health plan in Taiwan, patients are not restricted to visit clinics or hospitals. Medications duplications are therefore not uncommon. The Taiwan national health insurance bureau (NHI) require all providers to submit medication claims daily to NHI in all outpatients. Since 2014, the NHI provided a cloud service for institutions to download the current medications of the patient across all providers up to the past 4 months. Our institution created a graphic views of patients’ medications; extended the duplication check and drug-drug interaction alerting capabilities of our outpatient computerized physician order entry (CPOE) system using the downloaded data from NHI, aiming to improve the medication safety and quality of our outpatients.

The medication duplication rates across different healthcare providers were provided by the national health bureau on the open quality website. (Ref 1) The quality indicators included 6 groups of drugs classified by ATC codes: antihypertensives, (gp1) lipid lowering, (gp2) diabetes drug (gp3), antipsychotics (gp4), anti-depressants (gp5) and hypnotics (gp6). The duplication rates were calculated as the ratio of duplicating days of prescription with other provider to the total accumulated days of prescription each month by the institution. The new CPOE functions started on 1st November 2014. Consent of patients were required. We obtained consent from about 75% of the outpatients after 3 months. Post intervention period therefore started from February 2015. The median duplication rates of medications from January to October, 2014 were compared with the median duplication rates from February to October, 2015. Mann-Whitney U test was used for statistical inference.

Results: A total of 219,917 duplication days out of a total of 17,163,784 days of drug prescribed in pre-intervention period and 105,889 duplication days out of 13,934,503 days of drug prescribed in post-intervention period were reported by the NHI on our institution. Overall, the median duplication rate was 0.92 % with interquartile range (IQR) 0.66 – 1.36 before the intervention and decrease to a median of 0.55% with IQR 0.41-1.05, after intervention. p < 0.001 Of the 6 groups, Group 1,2,3,5,6 all showed statistical differences before and after the intervention period. Group 4 showed decrease of median rate but no statistical significance. The results were summarized in table below

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-intervention period (n=10 months) Median(IQR)</th>
<th>Post-intervention period (n= 9 months) Median(IQR)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group1</td>
<td>0.84 (0.80-0.94)</td>
<td>0.57 (0.51-0.70)</td>
<td>&lt; 0.001 **</td>
</tr>
<tr>
<td>Group2</td>
<td>0.53 (0.45-0.59)</td>
<td>0.36 (0.30-0.41)</td>
<td>0.001*</td>
</tr>
<tr>
<td>Group3</td>
<td>0.68 (0.55-0.78)</td>
<td>0.43 (0.38-0.50)</td>
<td>&lt; 0.001 **</td>
</tr>
<tr>
<td>Group4</td>
<td>0.94 (0.92-1.16)</td>
<td>0.65 (0.60-1.03)</td>
<td>0.060</td>
</tr>
<tr>
<td>Group5</td>
<td>1.32 (1.17-1.45)</td>
<td>0.51 (0.40-1.08)</td>
<td>&lt;0.001 **</td>
</tr>
<tr>
<td>Group6</td>
<td>3.58 (3.4-3.64)</td>
<td>2.75 (2.68-2.94)</td>
<td>&lt;0.001 **</td>
</tr>
</tbody>
</table>

Mann-Whitney U test. *P<0.05, **P<0.01
Conclusion: Overall the intervention is effective in decreasing inter-provider drug duplications using the enhanced CPOE system from 0.92% to 0.55%. A nation-wide cloud based medication information system combining with a local CPOE system with nation-wide drug duplication alert has potential to significantly improve the safety and quality of patients by decreasing medication duplications.

References: Ref 1 http://www.nhi.gov.tw/AmountInfoWeb/section02.html
THE PROJECT OF EXERTING INFORMATION TECHNOLOGY BLENDING WITH PORT-A CARE IN A CANCER WARD IN SOUTHERN TAIWAN

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Objectives: The common treatment of cancer patients, is chemotherapy, which is irritant and vesicant. If medicine is injected into vein in the long term, it will easily cause patients vein fragile and inflexible, which enhance the risk of extravasation. In terms of entire security, doctors will advise patients to install central venous catheter (Port-A), which is an important vessel in the process of treatment. The object of the project is promoting the healthy security care of Port-A.

Methods: However, because of the popularity of Internet, the results of knowledge have changed to e-learning from traditional books. Therefore, people in society usually use computer and intelligent mobile phones to conduct information learning. The project will give courses about security care and establish the security care nursing introduction processes of installing Port-A and manufacture diversified education and tools. Through repeatedly watching videos, it can enhance elder’s vision attention and intensify their impression.

Results: Through regularly inspection, the rate of complete installing Port-A needle will be up to 100%. Besides the rate that nurses give Port-A a security care is up to 91%. Meanwhile, the rate of the security care nursing introduction is up to 95%. Furthermore, the rate of patients recognition, which is about Port-A security care is up to 94%. On the other hand, the level of patients satisfaction is up to 4 points and the density of Port-A infected reduced to 1.54‰.

Conclusion: Hoping that this information blending with the project of Port-A care can provide other medical care teams a reference, which is about information technology mixed with medical care.

THE EFFECTS OF PATIENT-CENTERED PRESSURE ULCERS EVIDENCE-BASED CARE MODEL FOR PATIENTS IN THE INTENSIVE CARE UNITS

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Objectives: Pressure ulcer care is a continuum of care processes, including the risk factors assessment and evidence based care. Although there are guidelines for care, but the different circumstances of each patient, we should provide the individual care in accordance with the assessment. The purpose of this study is to establish the integration of informatics and evidence-based patient-centered care model for pressure ulcer patients, in addition to evaluate the takes time and acceptance when the nurses using this system in the intensive care units.

Methods: The study design was divided into two phases, the first phase we build the mobile Digitized Pressure Ulcer Evidence-Based Care System (mDPUEBCS), the second phase we conducted observational studies to evaluate the outcomes. The mDPUEBCS was designed and write programs by the research team, we integrated many function on the mobile devices, including Braden pressure ulcer risk factor assessment, mobile Digitized Wound Monitoring System (mDWM) (has obtained patent), Pressure sores notification system, nursing care plan system, nursing care audit etc. when Braden score \( \leq 14 \), then provide individual nursing care plan based on the different risk factors and the severity of the risk factors. The observational study was to evaluate each step time of the mDPUEBCS by 10 ICU nurses. We used stopwatch as a tool, the interrater reliability 0.9, then the 10 nurses measured and compared each step spent time for the mDPUEBCS and original system, we collected a total of 30 cases. There are 200 nurses to fill the acceptance questionnaire of using the mDPUEBCS after one month.

Results: we established the mobile Digitized Pressure Ulcer Evidence-Based Care System (mDPUEBCS), in terms of the spent time were statistically significant decline in Braden pressure ulcer risk factor assessment \((t=2.22, p=.03)\), Pressure sores notification system \((t=5.51, p<.001)\), nursing care plan system \((t=11.77, p<.001)\), but there was not significant difference between the new and original (mDWM), the reason was that we increased the wound management recommendations. on the spent time item of acceptance was statistical significance of the differences.

Conclusion: We established the mobile Digitized Pressure Ulcer Evidence-Based Care System. We expect the individualized pressure ulcers care model applied to patient care, research and enhance quality of care.

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Clark M; Black J; Alves P; Brindle C; Call E; Dealey C& Santamaria N,(2014). Systematic review of the use of prophylactic dressings in the prevention of pressure ulcers. International Wound Journal, Jan 29. 1742-481X.
IMPLEMENTING A PAPERLESS MEDICAL RECORD SYSTEM IN TAIWAN
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Objectives: To improve the transmission efficiency of traditional paper medical record, a paperless medical record system has been implemented in a medical center, National Cheng-Kung University Hospital (NCKUH), Taiwan. Based on the implementation experiences of NCKUH, a case study was conducted, and furthermore several critical issues and suggestions were proposed for future enhancement of the paperless medical record system.

Methods: A paperless medical record system has been adopted and implemented in NCKUH since 2011. A multidisciplinary project team of paperless medical record was organized, which tasks including the conversion of a traditional paper medical record into a digital format and the development of an electronic medical record (EMR) system using HL-7/DICOM standard. Twenty categories of medical records (including 82 paper forms of inpatient, outpatient and emergency) were digitized successfully and four of them (medical image and report, blood examination report, inpatient prescription, discharge summary) were transmitted to the national electronic medical record exchange center in a daily basis. Monthly working meeting was held and statistics of paperless medical records were collected and analyzed by the project team systematically.

Results: The correct digitized medical records using medical staff digital signatures were up to 1,050,000 monthly on average in 2005: 31% was blood examination reports, 25% was nursing records, 10% was inpatient prescriptions. The number of paper saving was up to 5,140,000 sheets, the space saving was 18 square meters and the labor saving was 3,000 hours yearly. The number of transmitting to the national electronic medical record exchange center was 5,170,000 in 2015. The number of paperless medical records enquired by other hospitals was 185,000 times yearly; 58% was blood examination reports, 35% was inpatient prescriptions. In addition, we used an interview to evaluate the barriers of implementing a paperless medical record system. Our study showed that the incomplete system integration of patient’s paper and digital format medical records and the inappropriately use of digital signatures were two major barriers. Another barrier we found was some medical staff resisted on changing the reading habits of the paper medical records.

Conclusion: Based on the implementing experiences of NCKUH, a paperless medical record system proved to be effective in improving the transmission efficiency of traditional paper medical record and significantly reducing the paper, space and labor cost. In addition, our study found that the paperless medical record with a digital standard format could enhance the exchange speed of medical records among hospitals. We suggest that more efforts should emphasize on the seamless system integration of patient’s paper and digital format medical records within a hospital setting. More incentives and education should be offered to encourage the medical staff to appropriate use of digital signature and reduce their resistance of using paperless medical record system. We believed that the implementing experiences of NCKUH will be beneficial to future enhancement of paperless medical record system in Taiwan.
COMPARING SMARTPHONE CAMERA ADAPTERS IN IMAGING POST-OPERATIVE CATARACT PATIENTS
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Objectives: To compare image quality and clinical confidence for managing post-operative cataract patients based on anterior segment smartphone images obtained in real-world settings using four types of adapters: (a) macro lens (ML), (b) ML with augmented light-emitting diode (LED) illumination (ML-LED), (c) no adapter (NA) and (d) slit lamp (SL) adapter

Methods: Anterior segment images were obtained from 190 eyes after cataract surgery using an eight-megapixel iPhone 6 smartphone camera with four adapters: ML, ML-LED, NA, and SL. Smartphone images were subjectively rated by ophthalmologists as acceptable or not acceptable for: (a) image quality for evaluating the anterior segment structures and (b) reader confidence in clinically managing post-operative patients based on smartphone images.

Results: NA, ML-LED, and SL had the highest scores for image quality with 100%, 93.7%, and 86.3% judged as acceptable, respectively. NA, SL, and ML-LED were also rated highest in clinical confidence with 100%, 98%, and 93.2% having acceptable levels, respectively. ML was judged lowest in both image quality (61.1% acceptable) and clinical confidence (37.4% acceptable).

Conclusion: ML-LED, NA, and SL adapters were acceptable for visualizing anterior segment structures to physician readers in 86-100% of cases. When coupled with visual acuity, intra-ocular pressure and history, these images can result in acceptable clinical confidence in 93-100% of cases.
DEVELOPMENT AND EVALUATION OF SUPPORT SYSTEM FOR OUTPATIENT PHARMACIST'S SERVICE: THE EXPERIENCE OF SOUTHERN MEDICINE HOSPITAL

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Objectives: The study was to determine whether the incidence of outpatient dispensing errors changed significantly and greater patient satisfaction after the pharmacy adopted a barcode assistance system and drug instructions mobile app in five languages.

Methods: A retrospective review of pre-barcode assistance system implementation (2013 through Feb 2014) and post-barcode assistance system implementation (March 2014 through 2015) was conducted using data from a southern medicine hospital that dispenses approximately 2,700 prescriptions per day. Dispensing errors were defined as any deviation in the pharmacy administration from the prescribed order. The barcode assistance system provided barcodes for the information of physician referring patient to pharmacist for drug counseling, duplicate medication reminder, allergic reaction warning, auditory warning to error message, and essential drug usage information. Development drug instructions application (app) of mobile technology to advise outpatient about the appropriate use of medications. Surveys containing closed questions, and Likert scale responses, were completed in pre- and post-support system to investigate patient satisfaction after each consultation.

Results: The average error rate pre- and post-support system was 0.009% and 0.001%, respectively (P<0.001). Besides, the overall satisfaction of the outpatient pharmacy response rates, pharmacists service attitudes, and instruction of drug using increased from 79% to 82.8%, from 81.4% to 84.2%, from 79% to 82.8%, respectively (all P < 0.001). There were no significant differences in satisfaction on patient waiting time (77.6% versus 78.2%; The median waiting time was 7.26 minutes versus 7.33 minutes). The rate of prescriptions between departments reduced from 0.033% to 0.0026%.

Conclusion: The results suggest that the support system has been instrumental in significantly decreasing outpatient dispensing errors. Patient satisfaction were worthy of recognition that reflects the type and quality of service provided by healthcare providers, and the extent to which the expectations and needs of outpatients are met.
EFFECTIVENESS OF GENERIC VERSUS BRANDED PIPERACILLIN/TAZOBACTAM FOR TREATMENT OF INFECTED PATIENTS AT A HOSPITAL IN SOUTHERN TAIWAN.

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Objectives: To compare the biological efficacy of generic piperacillin/tazobactam (Pisutam™) and generic piperacillin/tazobactam (Piperacillin/Tazobactam™) versus branded Tazocin Lyo for treatment of infected patients.

Methods: Medical records of hospitalized geriatric patient who received piperacillin/tazobactam for at least 72 hours from December 2015 to January 2016 were reviewed. The medical records of 57 patients who received generic and branded piperacillin/tazobactam were included. Clinical outcome development or progression of temperature (temperature), leukocyte count (white cell counts), C-reactive protein (C-protein reaction), X-ray irradiation results were considered for efficacy comparisons.

Results: Twenty patients received Pisutam™ and fourteen patients received generic Piperacillin/Tazobactam™ while twenty-three branded Tazocin Lyo for treatment of infected patients. Overall favorable clinical outcome were comparable between Pisutam™, Piperacillin/Tazobactam™ and Tazocin Lyo groups (100.0% vs. 85.7% vs. 100.0%)

Conclusion: Generic and branded piperacillin/tazobactam exhibited similar clinical efficacy outcomes.

THE USE OF SHORT MESSAGE SERVICE (SMS) TO IMPROVE COMMUNICATION (CM) BETWEEN THE ADMINISTRATIVE BOARD AND DOCTORS AT A PRIVATE HOSPITAL (H) IN BRAZIL.

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Objectives: Good and quick CM is essential in any enterprise, as it may determine by itself either success or failure. CM difficulty between doctors and several departments in a private Brazilian H was detected, as it started affecting keeping essential documents in correct status (guides, private plan procedures and high cost drug use authorisation, etc). In addition, the lack of rapidity in CM both made it harder to improve new programmes and protocols and started to cause problems, as far as the safeness of assistant processes and operational results are concerned. The high direction of the H decided to adopt an integrated SMS system within the institution after cost, feasibility and internal acceptability evaluation (some doctors did not show to be happy about the idea).

Methods: In August 2014 a contract with a CM enterprise was signed and the different sectors of H decided who were the specific persons to be trained in the use of the new tool. Moreover, specific patterns for the messages were determined, mainly for those which were meant to be sent to groups. By that time, the Manager for Assistant Practices sent all the H doctors a letter with clear explanation about the new tool.

Results: Results of decided action included, at first, the reduction of administrative problems, such as incorrect or unauthorised guides, procedures and high cost drug use. In addition mobile telephone costs were also reduced, although the exact extent of that could not be measured; the register of SMSs with all its information (date and time of reception by the doctor, reports, etc) became automatic; assistant practices speeded up. This one was the most important consequence of the action. As a consequence of such good results, the use of the new tool was extended to other sectors of the H, including staff department, Medical Management and payment, Agenda, Haemodynamics, Hygiene sector, Security and Occupational Medicine, Nutrition, and Financial department.

Conclusion: All changes in an enterprise organisation culture causes resistances. In the beginning, some doctors resisted, as they considered the changes not to be necessary. The resisting people corresponded roughly, but not exactly, to the ones who had already disagreed in the beginning. Also, some inclusion mistakes were detected at that moment, as well as SMS errors and SMS destination. A second step in training was necessary, which included the choice of correct situation for the use of the new tool (avoiding fool generalised use, for instance), and the correct selection of SMS texts and destination. After around 6 months, results appeared to be excellent and were recognised as such by almost everyone involved. As investment was very small it was easy to conclude that the action had been extremely successful. It was then that its range was extended to other areas of the Institution. Resistance to the tool does not exist any longer now-a-days.
Using a Reporting System "TVUNA" to Disclose Causes of Errors Within Medication Process in 14 Hospitals

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Objectives: Errors in medication are the commonest of all medical errors, with serious implications regarding patient morbidity and mortality, quality of medical care and economic burden. Clalit Health Services has implemented a computerized system, "TVUNA", in 14 hospitals comprising 270 wards. The "TVUNA" system enables reporting and analysis of medication-related error and near-miss reports, with the ultimate purpose of promoting organizational learning. Our objectives were to identify trends and weaknesses in various stages of the medication process and to track failures in order to plan and apply interventions to improve the quality and safety of medication use in hospitals.

Methods: Analyzing medication related error and near-miss reports, entered into the "TVUNA" system between January 2005 and September 2015.

Results: During the 10-year period, 5157 error and 11433 near-miss reports related to medication process were entered into the system. The total number of reports and the ratio between near-miss and error reports are rising. In 46% of the reports, the profession of the person identifying the error was specified. Patients/family members were involved in identifying 0.6% of the events. The profession of the person reporting the event was indicated in 23% of the cases. Of the 39% reports in which route of administration were registered, the involved medications were administrated through the digestive system in 59%.

About half of the errors occurred at the medication ordering stage, and 36% at the administration stage. Classified clinically, medication errors were identified in 19% of systemic infection, 13% nervous system, 11% cardiovascular system, 9% circulatory system and 8% of blood clotting and metabolism system.

In 84% of the reports the near misses were detected by pharmacists, compared to 8% by nurses. There was some disparity between the professions regarding their adherence to filling in the requested data. Missing in particular was information on the exact stage within the medication process in which the event occurred, medication type and the route of administration. Lack of data in the near-miss reports currently hampers development of programs planning to target areas of intervention.

Conclusion: There is a growing awareness among hospital teams about the importance of reporting errors and near misses, and the number of reports is constantly increasing. Near misses are a milestone and an important component of organizational learning processes, enabling an organization to locate areas of focus for the purpose of reducing future errors. Pharmacists were leading in identifying and reporting near misses. However, it is still necessary to understand why others are reluctant to indicate the person identifying and/or reporting the error. Demanding mandatory entry of data might improve the quality of the reports. Our findings point to the necessity for intervention to improve the organizational reporting culture in order to ensure safety and quality at all stages of the medication process.
AUTOMATED CLINICAL DECISION SUPPORT SYSTEM FOR PREOPERATIVE RISK ASSESSMENT
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Objectives: The purpose of this protocol is to embed the ‘preoperative risk alert system’ into the hospital information system, thereby automatically triggering a checklist for lab tests, exams, and medications. This system can provide a real-time safety checklist for the multidisciplinary team (surgeons, ward nurses, anesthesiologists, and OR nurses) before sending patients into the operation room.

Methods: The items included in this preoperative alert system are: 1. active infectious disease, 2. Lab data within 3 months (Hemoglobin, platelet, prothrombin time, potassium), 3. Medications like antihypertensives, antiarrhythmics, anticoagulants, and antiplatelets 4. Informed consents/site marking sheet/anesthesia evaluation sheet.
The “traffic light” concept was applied in this alert system. Red light means there is missing data or abnormal test/exam result in any one of the 4 items. Green light means all items are completed and all data are normal. Yellow light means that surgeons or nurses still have concerns over some lab data or medications which require further confirmation. Once any patient is scheduled for surgery, this alert system will be automatically triggered. A “green light” is required for all patients before sending them into the operation room. Monthly audit on the completeness and utilization of this system is reported in the Surgical Committee.

Results: The alert system was launched in July 2015, with initial utilization rate of 95.81%, which was improved to 98.76% 2 months later owing to education and practice. The incompleteness rate dropped from 3.65% to 0.69% and bleeding complications dropped from 0.06% to 0.02%. Moreover, this HIS-incorporated alert system cut short the time for preoperative evaluation from 45 minutes to 11 minutes for each patient.

Conclusion: Use of the traffic light system allows easy interpretation and a quick overview of lab data, exams, and the required documents for the busy surgeons, anesthesiologists, and nurses. This computer-assisted decision support system offers excellent opportunities to reduce perioperative medical errors as well as to improve the safety of surgical patients.
DOCTOR ASSISTANT - A FREE EMR APPLICATION AVAILABLE ON GOOGLE PLAY WHICH HAS BEEN PUBLISHED IN THE WHO COMPREHEND OF INNOVATIVE HEALTH TECHNOLOGIES FOR LOW RESOURCE SETTINGS.

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**Objectives:** The aim of this application is to harness the computational power of smart devices to build a simple EMR for daily clinical usage. Doctor Assistant is a simple, easy to use and free EMR for smart devices. The software is an Android based application that runs a SQLite Database in background overlaid by a beautiful user-friendly interface. The digital footprint of the application is approximately 1 MB only but allows unlimited data entry for patients. Doctor assistant app has been launched in March 2014 but already count 3000 users worldwide.

**Methods:** Doctor Assistant has been coded entirely by the authors who are both practicing medical doctors [1]. They both studied computer programming for one year during their free time. It represents a true user-driven innovation in health information technology. The application runs on Android platform. The app requires minimal resources but the output is remarkable in terms of enabling healthcare practices to become paperless. The application is freely available on Google Play and can be installed easily. The usage is straightforward and has the intuitiveness like most of the software currently available for Android. No specialized knowledge is required. The app can easily input data by typing, handwriting recognition or even speech to text. The software is being used by about 70 doctors in Mauritius [2]. In Mauritius, the paper-based system is a major problem. The market penetration of smartphones in the island has been nearly 95% over the past two years. So, it is the right environment for the expansion of the app. Moreover, making it freely available on the Google Play suits the current economical setting perfectly. The evaluation has been carried out through questionnaires, online surveys and direct interview. Customer satisfaction was as high as 90%. In addition, all the feedbacks received are used to make the application better through regular updates.

**Results:** Health challenges present arguably the most significant barrier to sustainable global development. Technology has the potential to solve many problems faced by the developed and developing countries which range from basic education to primary health care. The unique characteristics (e.g. easy accessibility, personalized solution and location based services) of mobile devices compared to other platforms have made them attractive to the health sector. In low income countries, mHealth is the ultimate platform to serve the unserved. Mobile communications are part of our everyday lives and for this reason alone, they have the potential to transform our wellness and healthcare.

**Conclusion:** "Involve the user" is a mantra in IT development, yet numerous projects fail (some sources report 70% failure) because of inability to capture user insights. It is attributable to failure on the part of developers to understand the workflow of health professionals and to meaningfully involve users in the design, development and implementation. Development of mobile health applications need to respect the sociotechnical design of healthcare to be able to cater for end-user requirements. Rapid prototyping and iterative end-user feedback are crucial for mobile health applications to bring value to health professionals.

USING INFORMATION TECHNOLOGY TO SIMPLIFY THE WORKFLOW OF ADMISSION NURSING ASSESSMENT

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Objectives: With advances in information technology, automated medical records of nursing admission assessments (NAA) are unable to meet the needs of clinical nursing staff. Connecting medical information systems with patient health records is crucial. Although commercial software packages can be found everywhere, high cost and time wasted in coordinating systems to clinical demands are unavoidable. When contents have to revised or new demands crop up, time and money are required, and urgent needs cannot be met.

Methods: Our team reorganized the structure and content of our NAA in 2014 and have been working with Information Engineers since April 2015. For the convenience and familiarity of nursing staff, we retained as much of the original system as possible and designed the new edition in web design template. The changes mainly includes: 1) Communicating and exchanging health records efficiently with other medical personnel such as operation history, adverse drug reactions, and transfer to Electronic Medical Records. 2) Providing proper assessment guideline automatically in response to varying patient needs. 3) When the assessment is completed, including Discharge service or malnutrition assessment, the high risk score is also completed. As the consultation requirement is reached, transmission of automatic messages is done. 4) Abnormal data may also be stored in Care Plans and Nursing Records, where the system can check the missing values for key items.

Results: The Admission Nursing Information System began operating in this medical center in September 2015. The amount of paper for patient chart was decreased 57.9% and the high risk cases, such as malnutrition, was increased compared with the same period a year earlier (three months from November to January 2015 against 2016).

Conclusion: Difficulties and challenges still occurred; for example, the nursing staff had to learn how to use the new system, and we had to deal with the effect of uneven distribution of wireless internet. The greatest benefit was reducing costs and the amount of paper used. Applying credible information without delay and simplifying the workflow could promote patient safety and reduce the burden of the nursing staff.

THE EFFECTIVENESS OF AN INNOVATIVE SYSTEM THAT DISPATCHES AND TRACKS CRITICALLY ABNORMAL EXAMINATION RESULTS AT A MEDICAL CENTER IN TAIWAN


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Objectives: To develop a timely and efficient information technology system that dispatches and tracks potentially dangerous abnormal examination results in the hospital to guarantee the safety of patients and to monitor the results with minimal effort.

Methods: We developed a program at Kaohsiung Veterans General Hospital in southern Taiwan that informs the clinical physician when patients have abnormal results that are critical or urgent from medical examinations, including blood tests, imaging studies, malignant pathology reports...etc. The program would also track the follow-up of the abnormal result, which provides a way to evaluate if necessary measures were taken and helps determine if further inspection was needed. The method is by tracking if the physician ordered a follow-up test after treatment or intervention and by tracking if the patient returned to the hospital for further evaluation on the demands of notification mail sent by hospital. Which would be created automatically 7 days after the abnormal data emerging if the physician did not check the data, or it would created by the request of the physician who had checked and evaluated the significant abnormal data such as malignancy findings in pathology reports or image studies. We analyzed the rate of physician confirmation of abnormal data notification before and after the program was put into use. We also totaled the amount of critically abnormal and malignancy-related test results, along with those that needed further inspection due to lack of data follow-up or patient return.

Results: After setting up the system, the rate for the check and confirmation of abnormal data notification by physicians was raised from 60.3% to 99.5%. The amount of urgent or critical abnormal data was 1498±369 per month, and the amount of abnormal data that needed to be further inspected was 13.4±4.5 (0.9±0.3%) per month.

Conclusion: In this generation of rapid technological progress, it is not difficult to develop systems that notify clinical physicians of abnormal test results. However, without adequate filtering of information and well-designed supporting measures, electronic programs alone cannot improve the efficacy and accuracy of medical care. The goal of our system is to support physicians in appropriately managing the patients and to monitor the results with minimal effort.
THE EFFECT OF USING E-PRESCRIPTION ON DECREASING MEDICATION ERRORS
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Objectives: To evaluate the incidence of medication errors before and after computerized provider order entry (CPOE) with clinical decision support (CDS) implementation.

Methods: Design: E-Prescription with drug-drug interactions alerts was implemented in a 400-bed acute care hospital in Saudi Arabia. In a pre-implementation post-implementation design, trained personnel used chart review, direct observations of medication orders, patient complaints, occurrence variance reports and staff reports to identify medication errors in the hospital. Measurement: Medication error data were adjudicated by a physician, a pharmacist and risk management coordinator for error stage and type. A qualitative analysis of medication errors was performed to identify contributing factors. Trending and comparison of data were performed over 2 years period.

Results: Data were collected for 2 years prescriptions. Medication ordering errors decreased after E-Prescription implementation. Although the rate of medication-ordering errors fell substantially, not all errors were eliminated.

Conclusion: E-Prescription may have greater effect than the medication-transcription. However, our experience in studying the workflow of the medication-ordering process suggests that the medication-transcription greatly facilitates the documentation process for nurses and may be an important factor for its acceptance.

2) https://www.premierinc.com/safety/topics/patient_safety/index_1.jsp
3) http://flightsafety.org/files/justculture.pdf
8) http://www.fda.gov/Drugs/ResourcesForYou/Consumers/ucm143553.htm
THE DEVELOPMENT OF SELF-SERVICES BUSINESS INTELLIGENCE DECISION SYSTEM AND CLOUD COMPUTING PLATFORM AT TAIWAN HEALTHCARE SYSTEM

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Objectives: Hospitals often use "Business Intelligence Software Package", establish reporting system of decision management and quality measurement. In recent years, BI provide better solutions, analysts start to use self-service tools, to prepare data for analysis as part of deploying BI platform.

We improved the restrictions, that about high cost, long-term import time, high technical threshold, and less flexibility. We try to develop more efficiency model to enhance healthcare of quality. Finally, we provide the result of development experience in Taiwan.

Methods: In December 2012, we comprise a new BI technology and analytics platform, and to set up a cross-functional team. We improve data management efficiency, integrated HIS, IoT device, and Azure based on data both in the cloud and on-premises, and to expand the number and variety of data sources.

We used Microsoft EXCEL, Power BI tools (Self-service business intelligence), SQL Server Integration Services (SSIS), and to build the system frame and integrate management function of data warehouse and dashboard. We provided training program for power users, thus increase capabilities for building, deploying and managing. We also established import process guidelines and systems assessment checklist. Finally, we assessment the cost-effectiveness, and investigated to visit the BI system staffs to understand other hospital’s experience include their IT system develop situation and weak point in January 2013 to December 2015.

Results: We completed the decision support system at first two years, and spent approximately US $55,183 dollars from 2013 to 2015. We developed 148 dashboards, include hospital administration, financial management, clinical quality, patient safety, and medical research.

The effectiveness and efficiency include (1) Utilization: The website query: 463 times per monthly (The average annual growth rate: 5.6%); (2) Function: The data of flexible, interactive visual exploration, and information technology and security, have reached the indicator criteria of BI system; (3) Workflow streamline: Automate platform could saving approximately US $166,400 per year; (4) Clinical benefit: We have evidence-based study to reduce the length of stay, readmits, antibiotic use.

Finally, we collected 28 cases to understand BI system develop experience in other hospital. The results was 47% hospital had built a BI system, 63% was facing barriers and weak points, and consider other new tool or platform. 76% had investment and development plan in next year. 93% agreed BI platform could use for decision making, and they thought factors of BI development successful, include (1) Data oriented culture: 89%; (2) Department of responsible: 89%; (3) Decentralized and advanced analytic method: 71%; (4) Current data management state: 54%.

Conclusion: In case hospital’s experience, self-service BI have support a full range of analytic capabilities, and can resolve managers concerns responsible for departments and advanced analytics.

Our import process have create an innovative model, it can integrated management strategy, data analysis and visualization, to enhance the efficiency of management, and explore innovations services with patient journey. We also found the model invested fewer resources, and it is expected to continue to receive the excellent results. We expect to the model can use for other healthcare organization quickly, and bring more cost-effectiveness applications in the future.
THE EFFECTIVENESS OF ELECTRONIC DIFFERENTIAL DIAGNOSES (DDX) GENERATORS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Objectives: We conducted a systematic review and meta-analysis to investigate the efficacy and utility of DDX generators.

Methods: We undertook a comprehensive search of the literature including 16 databases from inception to May 2015 and specialist patient safety databases. We also searched the reference lists of included studies. Article screening, selection and data extraction were independently conducted by 2 reviewers.

Results: 36 articles met the eligibility criteria and the pooled accurate diagnosis retrieval rate of DDX tools was high with high heterogeneity (pooled rate= 0.70, 95% CI=0.63 to 0.77; I²=97%, p<0.0001). DDX generators did not demonstrate improved diagnostic retrieval compared to clinicians but small improvements were seen in the before and after studies where clinicians had the opportunity to revisit their diagnoses following DDX generator consultation. Clinical utility data generally indicated high levels of user satisfaction and significant reductions in time taken to use for newer web-based tools. Lengthy differential lists and their low relevance were areas of concern and have the potential to increase diagnostic uncertainty. Data on the number of investigations ordered and on cost-effectiveness remain inconclusive.

Conclusion: DDX generators have the potential to improve diagnostic practice among clinicians. However, the high levels of heterogeneity, the variable quality of the reported data and the minimal benefits observed for complex cases suggest caution. Further research needs to be undertaken in routine clinical settings with greater consideration of enablers and barriers which are likely to impact on DDX use before their use in routine clinical practice can be recommended.
DEVELOPMENT OF AN ANDROID MOBILE APPLICATION TEACHING HOW TO USE METERED-DOSE INHALER (MDI) IN MYANMAR AND ENGLISH (ME-MDI APP)

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Objectives: To develop and evaluate an Android mobile application teaching the use of Metered-Dose Inhaler (MDI) in Myanmar and English (ME-MDI app).

Methods: An Android mobile app was designed and developed to help teaching and learning the use of MDI in Myanmar and English languages. Twelve experts were asked to evaluated the quality of the app in different aspects using structured questionnaires with four-category Likert scale (very good, good, acceptable and poor); three experts were asked to evaluate the correctness and appropriateness of the content, 3 different experts were asked to evaluate the app’s interface and design, three experts were asked to evaluate the use of Myanmar language. The use of English language were evaluated by other three different experts.

Results: ME-MDI app contains pictures, text, and voices in both English and Myanmar explaining each step of using MDI in both English and Myanmar. Forty percent score in good category in overall app’s interface and design. Eighty seven percent score in very good category in overall accurate and suitability of Myanmar language. Seventy nine percent score in very good category in overall accurate and suitability of English language. The content’s correctness and appropriateness is in an evaluation process.

Conclusion: ME-MDI app shows high percentage in good and very good scale in three different aspects; interface and design, Myanmar language, and English language. Further study needs to investigate on how ME-MDI app can improve efficacy and safety in patients using MDI devices.
ACCOUNTABILITY, MAY BE REGARD AS A NEW ELEMENT TO IMPROVE THE OUTCOME IN AN ANTIBIOTIC STEWARDSHIP PROGRAM
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Objectives: In order to reduce the emerging multidrug-resistant organisms and moral hazard derived from the limited antibiotic prescription, all the variety of the antibiotic selection, the duration in antibiotic usage, and the antibiotic combination are unrestricted in hospital informatics system. The only measurement that is to be reviewed is the appropriateness in antibiotic diversity.

Methods: We imbed the algorithm, specified for diversity calculation, into the antibiotic prescription system (APS). There are four parts at this upgrade: First, patient-centered safety is the highest priority. We retain all the program logics that fundamentally designed to guarantee the patient safety, such as antibiotic dosing at any spectrum of renal function for every drug, the restriction selection in pregnancy category, the pull-back procedure from absolute contraindication, and the special issues in tissue penetration. Secondly, we categorize the antibiotics available into various spectrum-equivalent groups according to the guidelines of Clinical and Laboratory Standards Institute (CLSI). The third part is the crucial of our goal. It consists of a modifying algorithm derived from Shannon's diversity index. We analyze the diversity scores of the physicians monthly and rank the data from high to low. Finally, the Infection Control Committee renders the medical teams the results. Furthermore, both online dynamic antibiotic consumption and real-time magnitude from the calculation of diversity index are provided on APS in order to remind the physicians when they are ongoing to make decision in antibiotic of choice.

Results: In the first part, the system absolutely holds back the dangerous medical errors so long as the physicians prescribe the antibiotics in APS. In the second part, the spectrum-equivalent antibiotics successfully widen the drug of choice to prescribe. This contributes the baseline antibiotic diversity. In the third part, the reporting diversity scores provide the sufficient information to recognize the issues in antibiotic abuse/overuse. The average diversity scores in the hospital is 0.61 in fraction, whereas the clinical infectious specialist, 0.73. In the fourth part, the weak point of the antibiotic stewardship program is the administration management. It is actually subject to the medical ethics, since the antibiotic stewardship seldom overrides the requirement of the medical care in one given patient.

Conclusion: The accountability actually ushers the new point to enforce the efficacy in antibiotic stewardship programs in our hospital. It renders the physicians to use diverse antibiotic prescription to treat infectious diseases, and prompt them to know the importance in issues of avoiding emerging multidrug-resistant organisms from antibiotic overuse.

References: 1. The guidelines of Clinical and Laboratory Standards Institute (CLSI)
2. Anatomical Therapeutic Chemical (ATC) classification/Defined Daily Dose (DDD), from the website: www.whocc.no
APPLICATION OF SPOKESMAN IN TEAM RESOURCE MANAGEMENT SUCCESSFULLY IMPROVES PREOPERATIVE NURSING

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Objectives: Importance of Preoperative Nursing (PN) has been paid more attention in surgery. The effects of PN were limited in our hospital because of the lack of visiting techniques, nurses’ sense of accomplishment, medical staff support, and valid methods to resolve patient’s problems and anxieties. The average rate of successful PN was only 8% in 2013 at our hospital. The aim of this study is to apply the methods of Team Resource Management (TRM) to improve the effects of PN.

Methods: Importance of Preoperative Nursing (PN) has been paid more attention in surgery. The effects of PN were limited in our hospital because of the lack of visiting techniques, nurses’ sense of accomplishment, medical staff support, and valid methods to resolve patient’s problems and anxieties. The average rate of successful PN was only 8% in 2013 at our hospital. The aim of this study is to apply the methods of Team Resource Management (TRM) to improve the effects of PN.

Results: The rate of successful preoperative nursing was 100% after the introduction of TRM. The rates of completing preoperative preparation and resolving patient’s problems improved from 63% to 100% and 71% to 100%, respectively. Patient’s satisfaction rate rose up from 79.8% to 95.3% and anxieties were reduced from 100% to 45%. The feasible new measures were approved and subsumed in Standard Operation Procedure of our operative room.

Conclusion: The application of TRM with the new strategy of patient’s spokesman successfully improves the effects of PN.
AN AUTOMATIC MEDICAL QUALITY INFORMATION SYSTEM MAKES QUALITY CONTROL MORE CONVENIENT
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Objectives: The quality indicator system in Taiwan arose from Maryland quality indicator project (MQIP). Taiwan Joint Commission developed our quality indicator system-Taiwan quality indicator project (TQIP). Besides, there were many other indicator systems, like Taiwan healthcare indicator system (THIS). If one hospital joins any system, quality management staffs need to collect these indicators from all units in the hospital every month. It wastes a lot of time and the data should be checked and corrected. So, we want to build an automatic medical quality information system which could collect correct data automatically by our requests.

Methods: The National Quality indicator project was held since April 2015. 74 indicators were defined and collected. All indicators were divided into 13 groups such as cancer screening, emergent and critical care, infection control, chronic disease, etc. At the same time, we developed a medical quality information system and all items from 74 indicators were set in the system. Then the claim date of National Health Insurance was input into the system monthly. The indicators are calculated automatically every month.

Results: Before the medical quality information system was introduced, although 55 of 74 indicators could be collected automatically, the data might be collected separately from different systems by several units. After we introduce the medical quality information system, we could collect 66 of 74 indicators automatically at the same time by one staff. The quality management staffs can apply the data immediately without fixing or correcting them. The staffs can save more time and make more effort in quality improvement.

Conclusion: Medical quality improvement is important in the healthcare system. We used to collect quality data from medical or administrative staffs. How can we collect the data more efficiently? The smart health information system could help clinical staffs to reduce their work loading and help administrative staffs to collect data more conveniently and correctly. It can also help the management staffs to know the real-time data and save the human resource and cost. We hope this automatic healthcare information system can apply to all kinds of hospitals and quality improving experience and knowledge can be shared by the system.
HOSPITAL STAFF KNOWLEDGE AND THEIR COMPETENCY BEFORE AND AFTER TRAINING TO SUCCEED TELEMEDICINE IN INDONESIA
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Objectives: This study aims to determine the hospital staff knowledge and their competency before and after training. The second objective is to evaluate the effectiveness of training and their performance in handling the new task.

Methods: 240 participants have participated in the training and filled out the questionnaire for this study. The questionnaire contained 20 items to determine the readiness of the participants to the task of telemedicine and other relevant factors.

Results: It found the effectiveness of training reached 49.54 + 8803 (M + SD) while the performance of hospital staff in the first three months totaled 24.88 + 2.89 (M + SD), respectively. From the participants surveyed, it obtained 78% of respondents answered they got benefit from training with absentee rate 14%. Their absence rate in training due to poor internet network and they did not get much information about the training. For participants who complete the training (P = 0.05) is caused by their ability to understand the training material and their background in Information technology.

Conclusion: After training, hospital staff must be evaluated and trained on a regular basis in order to adapt to the development of health technology. From this study, routine training can improve the staff performance in supporting the success of telemedicine.

LESSONS FROM THE FIELD: SUCCESSFUL IMPLEMENTATION OF INTEGRATED RISK MANAGEMENT (IRM) IN HEALTHCARE

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Objectives: Many leaders of healthcare organizations have indicated that industry-based integrated risk management (IRM) programs are complex and not well-suited for healthcare. The aim of this initiative was to standardize and simplify the implementation of IRM in healthcare organizations and to provide a shared online platform to efficiently track and manage key organizational risks.

Methods: The Healthcare Insurance Reciprocal of Canada (HIROC), a not-for-profit insurance company, together with an Integrated Risk Management Steering Committee comprised of risk management experts from various healthcare organizations, developed a web-based IRM Risk Register program in 2014. IRM has been identified as an important requirement to monitor and improve quality and safety in leadership and governance by the Canadian healthcare accreditation body. The outputs of this initiative were comprised of 1) a comprehensive knowledge synthesis of IRM best practices; 2) the development of a taxonomy of key risks in healthcare organizations; 3) the implementation of a shared Risk Register application; and 4) an information sharing model called the Community of Practice comprised of webinars and newsletters. Five guiding principles influenced the development of this program: go with the evidence, focus risks to key organizational objectives, gear to board and senior leadership needs, recognize that it is an evolving area, and “keep it simple”. The program was successfully launched in January 2015 and the early results are promising.

Results: Since the launch of the Risk Register in January 2015, 75 healthcare organizations ranging from teaching hospitals to community health centres are actively participating in the program. A national database of risks is being materialized and there are 640 self-identified risks in the Risk Register. The top active risk themes are: patient care (34%); human resources (16%); financial (11%); leadership (10%); and information management/technology (9%). The top five active risks (by frequency) are: regulatory/legislation; medication; care communication; human resources shortage; and revenue/funding. The top five active risks (by rating) are: workplace violence, leadership of strategic projects, breach/loss of information, lab/radiology, and diagnostic errors.

Conclusion: Recognizing the value of benchmarking and learning from data, participants have access to shared aggregated information about risks across participating organizations, including best practices and common challenges. A whitepaper on IRM in the form of the first IRM Risk Register Annual Report is currently under development.
A PROGRAM TO IMPROVE COMPLETENESS OF NURSING RECORD IN POST-ANESTHESIA CARE UNIT

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Objectives: The objective of this project was to improve the integration rate of the nursing records in post anesthesia care unit and then establish inter-unit report guideline, were evaluated by our team. A detail and precise nursing record can assist medical staff in following up patient’s condition. In our clinical practice, physical assessments such as pain assessment, PAR score, or muscle power of extremities were recorded incompletely and therefore, influenced patient safety and continuous care. The purpose of this study was to improve the completeness of nursing record in Post-Anesthesia Care Unit.

Methods: We implemented six strategies such as planning nursing information interface, establishing nursing record standard, setting up consultation manpower bank, conducting continuing education, establishing monitoring system, and setting up rewards and punishments system.

Results: The results revealed that the completeness of nursing record improved from 82.7% to 96% and reached the goal of this program. The result of this program can improve the continuity and safety of the patients.

Conclusion: The clear and detailed of the actual Nurses record, is a systemic record on patient receiving treatment and care progress. It will be able to enhance the continued care then improve patients quality of care, and safety of the patients.

WORKPLACE INTERPERSONAL CONFLICTS DETECTED BY THE INCIDENT REPORT SYSTEM OF A UNIVERSITY-AFFILIATED MEDICAL CENTER

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Objectives: Surveys have reported that workplace interpersonal conflicts (WICs) can lead to prolonged fatigue, burnout and job dissatisfaction of the employee. Its association with patient safety in the healthcare system has also been alerted recently, most through surveys. As the incident report system has been a commonly applied mechanism of active reporting of adverse events or errors, we wished to explore WICs from the system of the hospital.

Methods: We conducted a retrospective study in a university-affiliated medical center in Taiwan to identify WICs by a review of the report contents of the institutional incident report system from July 2010 to June 2013. Relevant data including the employee involved in the conflicts, the processes involved in the incidents, the time, and place where the conflicts occurred, were retrieved and collected. The conflicts were typed through consensus discussions, based on the 2 focuses of the conflicts including task content/process and interpersonal relationship, and the 3 properties of the conflicts, including disagreement, interference and negative emotion. Data were then analyzed.

Results: A total of 147 incidents were identified to have the active reporting of WICs from the employee. The most common processes associated with the WICs were patient transfer between units or departments (20%), laboratory tests (17%), surgery (16%) and medical image examination and interventions (16%). The majority (67%) of the WICs were experienced concurrently with the incidents. All of the 147 WICs focused on task content or task process, with disagreement (91.2%) as the most common property, whereas 41 (27.9%) of the WICs also focused on the interpersonal relationship, with negative emotion (27.2%) as the most common property. The most common processes related to the WIC were the care transfer of patients between units or departments (20%), laboratory tests (17%), surgery (16%) and medical image examination and interventions (16%). For the tasks in each category of the incident-related processes, the first step, i.e., decision to start the process and requesting or scheduling for the process, were the most common (64 incidents, 44%) tasks associated with the conflict. Nurses accounted for the majority (57%) of the reporting while there was a diversity of encounter scenarios among different worker the most common encounter was the nurse-doctor interaction (33%). Doctors were more frequently as the reporter when there was a WIC focused on interpersonal relationship than there was not (34.1% vs. 17.0%, P=0.024). Negative emotion was reported in 82 (55.8%) cases, including 75 (51%) reporting negative emotions to the task content or process. Compared with the reported incidents without WIC (n=8,408), those reported incidents with WIC had significantly less rate of harm to the patients (30.5% vs. 1.9%, P<0.0001).

Conclusion: Employee of the hospital applied the institutional incident reporting system to actively report workplace interpersonal conflicts. The conflicts were most commonly associated with the processes related to care continuum in the hospital, and most focused on the task process and content. Our findings highlight the emerging requirement for involving conflict management in the improvement of care continuum in the healthcare system in response to the workers’ needs.

TRANSITIONS BETWEEN HOSPITALS DURING THE COURSE FROM DIAGNOSIS OF CANCER UNTIL DEATH: A POPULATION-BASED STUDY USING CANCER REGISTRY DATA
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Objectives: Although cancer patients in Japan historically received care in one hospital from the time of diagnosis until death, referrals of patients between hospitals have been promoted by health policies of differentiating acute-care hospitals from hospitals providing non-acute care such as end-of-life care and rehabilitative therapy. Until now, however, no information has been available about which patients are referred from a hospital to another and by which hospitals.

The aim of this study was to explore factors influencing the probability of transitions between hospitals for patients who died after a diagnosis of cancer in Japan.

Methods: We conducted a retrospective database review of the Osaka Cancer Registry database that identified 66,906 adults (≥18 years) who had a cancer diagnosis registered by hospital and died from cancer in the study period of 2006 to 2010. Patient demographics (sex and age at death), tumor characteristics (cancer site and survival time from the time of cancer diagnosis until death), and treatment data were collected for each patient. Case volumes of 203 hospitals as a hospital-level factor were estimated by using the data set and treated as a continuous variable. Our outcome of interest was whether death occurred in the same hospital where each patient received the first treatment or not. Multilevel logistic regression modelling with a random intercept at Level 2 was constructed for the dichotomous outcome, where patients were nested within hospitals.

Results: Approximately 28% of decedents experienced at least one transition between hospitals, and died in a different hospital than the hospital for the first treatment of cancer. After adjustment for potential confounders, older decedents and women were significantly more likely to have been referred to another hospital, when compared with younger decedents and men, respectively. Longer survival time from the time of cancer diagnosis until death was significantly associated with an increased likelihood of dying in another hospital. Colorectal and breast cancer increased the likelihood to die in another hospital; stomach, liver, biliary tract, prostate cancer, lymphoma and leukemia decreased the likelihood, when compared with lung cancer. Esophagus, pancreas, and uterus cancer were not associated with the outcome. Patients receiving surgical procedures or chemotherapy as first treatment for cancer were less likely to die in another hospital, when compared with those who did not receive either. Patients receiving radiotherapy as first treatment were more likely to die in another hospital. After adjustment for clinical factors, a higher hospital volume of cancer treatment was associated with a higher rate of referrals of patients to another hospital.

Conclusion: We found that patterns of referrals among cancer patients varied considerably by patient demographics, survival time, site of cancer, and type of treatment. Hospitals treating greater numbers of cancer patients were significantly more likely to refer patients to another hospital, when compared with hospitals with fewer patients.
SOLUTIONS TO INCREASE THE REFERRAL RATE FOR LONG-TERM CARE AT A MEDICAL CENTER IN TAIWAN

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Objectives: With the rapid improvements in medical technologies and increase in life expectancy in Taiwan, older adults and the disabled accounted for 16% and 3.3% of Taiwan's population in 2014, respectively, creating a massive need for long-term care. At this medical center, the referral rate for long-term care services in the first quarter of 2013 was 69%, lower than the average referral rate for other divisions. Surveys revealed that only 65% of nurses and 50% of families were familiar with long-term care services. The objective of this study was to increase the referral rate for long-term care in order to reduce the rehospitalization rate and provide continued care after hospital discharge.

Methods: The questionnaires used in this study found that only 65% and 50% of internal and external medicine nurses and family members were familiar with long-term care services, respectively, and only 70% of families were satisfied with their long-term care referral; the main reasons for dissatisfaction were poor advertisement and inconvenient application. The methods used to improve this situation included in-service education on long-term care for nurses and post-class evaluations; creation of a multimedia video entitled “Advertising and referrals for long-term care resources” that was played over the clinic television system to educate the public; and business cards and posters detailing how to apply for long-term care that were placed in the clinic.

Results: After this study, the referral rate for long-term care services in the second quarter of 2015 increased to 90%; the percentage of nurses and family members familiar with long-term care services increased to 95% and 80%, respectively; and the percentage of families satisfied with their long-term care referral increased to 95%.

Conclusion: Aside from increasing the familiarity of nurses and families with long-term care, the referral rate for long-term care increased from 69% to 90% and the percentage of families satisfied with their long-term care referral increased from 70% to 95%. Long-term care is a multidisciplinary professional service; adequate use of these resources to help disabled people and their families can help provide continued care for discharged patients and improve patients' and their families' ability to care and quality of life.
INCREASED FREQUENCY OF VITAL SIGN MONITORING IN PATIENTS DISCHARGED FROM INTENSIVE CARE UNITS TO GENERAL WARDS DECREASES THE 24-HOUR UNPLANNED READMISSION RATE

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Objectives: Unplanned return to the intensive care unit (ICU), particularly within 24 hours after discharge, may deleteriously impact on patients’ prognosis and increase medical cost. Vital signs are crucial indicators of patients’ clinical condition. We conducted a prospective study to assess the association of increased frequency of vital sign monitoring in patients discharged from ICU to general wards with the 24-hour ICU unplanned readmission rates.

Methods: This study was conducted in a 6 specialized ICUs, which comprised 74 beds, in a 1,000-bed academic university-affiliated hospital in Taiwan. Patients admitted to ICUs during 2011-2012 were enrolled. The routine vital signs, including blood pressure, pulse rate, respiration rate, and oxygen saturation, were measured every 6 to 8 hours in the general wards for patients discharged from ICUs to general wards between January and July 2011. We performed an intervention to increase the vital sign monitoring frequency from every 6 to 8 hours to every 1 hour for 2 times, every 2 hours for 3 times, and then every 4 hours for 4 times on the first day of discharge from ICUs to general wards between August 2011 and December 2012. The unplanned ICU readmission rates and duration of ICU stay were compared between the 2 periods.

Results: From January to July 2011, totally 1,912 patients were discharged from ICUs to general wards and 12 patients unplannedly returned to ICUs within 24 hours after discharge from ICUs, with a 24-hour readmission rate of 0.628 per 1,000 patients. After intervention by increased frequency of vital sign monitoring between August 2011 and December 2012, only 3 patients unplannedly returned to ICU within 24 hours after discharge from ICUs to general wards among 4,534 ICU discharge patients, with a 24-hour ICU readmission rate of 0.066 per 1,000 patients. There was no significant difference in the length of ICU stay for patients before and after intervention (mean ± standard deviation of length of ICU stay, 5.47 ± 0.37 days vs. 5.56 ± 0.53 days, respectively; P = 0.698). The 24-hour ICU readmission rate significantly decreased by increased frequency of vital sign monitoring on the first day of patients discharged from ICUs to general wards (P < 0.0001).

Conclusion: Increased frequency of vital sign monitoring in patients discharged from ICU to general wards massively decreased their 24-hour unplanned ICU readmission rate. All patients discharged from ICUs to general wards were suggested to frequently monitor their vital signs on the first day of transfer.
HOSPITAL BASED AMBULANCE ACCELERATES "CYCLIC TYPE MEDICAL WELFARE SYSTEM" AND "INTEGRATED COMMUNITY CARE SYSTEM"

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Objectives: Background:
In Tokyo, fire department ambulance (F-Ambulance) run 757,554 in 2014, which increased 8,522 from previous year. Aged people above 65 years old occupied 49% of total cases. Among them, people from geriatric health service facility or special nursing home occupied more than 2,000. These patients are commonly difficult to look for receiving acute care hospital, therefore transportation time from emergency phone call to reaching hospital increased year by year, which is one of big problems in Tokyo.

Objectives:
To improve this issue, Hachioji Medical Association started hospital based ambulance (H-Ambulance) service. Home doctor who takes care of the patient at home or nursing home calls H-Ambulance if a patient needs hospital treatment. The aim of the study is to reveal that H-Ambulance promote a cooperation between an acute care hospital and a chronic hospital.

Methods: Materials and Methods:
A retrospective observational design was utilized. Study period was from December 2014 to December 2015 (13 Months). During this period, 144 cases (Male 75 vs Female 69, Mean age: 78 years old) were transported by H-Ambulance. Dispatch destination, patient's status, transported hospital, one month outcome were reviewed.

Results:
Dispatch destination was hospital (76 cases), home (59 cases) and nursing home (9 cases). Patient's status were respiratory disease (20), bone fracture (19), movement difficulty (16), mental disorder including dementia (13), malnutrition (10), terminal stage of malignancy (9), urinary tract infection (9), heart disease (7), sequelae of cerebrovascular disease (6), abdominal problems (6), catheter trouble (5), etc. (24). Transported hospital were acute care hospital (69; 48%) vs chronic hospital (75; 52%). One month outcome were discharge home (35%), continued hospital care (25%), expired (15%), transfer to rehabilitation hospital or chronic hospital (13%), nursing home (9%) and advanced emergency center (3%).

Conclusion: Discussion:
In Tokyo, a number of F-Ambulance run is increasing year by year, according with a sharp increase of an aged emergency patient. These patients are commonly difficult to look for receiving acute care hospital, therefore transportation time from emergency phone call to reaching hospital was 51.8 minutes in 2014 which is worst one in Japan. To keep efficient F- ambulance activity, it's necessary to establish patient's receiving system including a chronic hospital, not only an acute care hospital. However, most of F-ambulance patient were transported to acute care hospital, and only 5% to a chronic hospital. In this study, more than half of the patients were transported to chronic hospital by H-ambulance. Therefore it became clear that H-ambulance has an effect to promote cooperation between acute care hospital and chronic hospital.

One month outcome showed that 48% of H-ambulance transported patients were went home or rehabilitation unit or nursing facility, H-ambulance had been contributed to accelerate "Cyclic type medical welfare system" and "Integrated community care system". The transportation time of F-ambulance will be able to reduce by expanding H-ambulance service to whole Tokyo from now on.

Conclusion:
H-ambulance transportation of patients at home or nursing home promotes cooperation between acute care hospital and chronic hospital, which accelerate "Cyclic type medical welfare system" and "Integrated community care system".
ASSESSMENT OF INTRA-HOSPITAL STROKE CARE PATHWAYS IN FRANCE USING HEALTHCARE QUALITY AND SAFETY INDICATORS

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Objectives: Stroke is a chronic illness with sudden onset. Its initial management is fundamental to limit disability. In 2015, healthcare quality and safety indicators for the initial management pathway have been collected in all French healthcare facilities. These tools are available to healthcare professionals and to supervisory authorities in order to improve the care pathway of patients.

Methods: A working group headed up by the French National Authority for Health (HAS), which groups together healthcare professionals involved in the initial management of stroke patients, has defined 10 indicators collected by means of 47 questions. These were updated in 2014. All French healthcare facilities dealing with acute care that managed at least 10 strokes (excluding transient ischemic attacks) in 2014 were involved in the data collection. In each facility, 80 records were drawn from the French Medical Information Systems Programme (exhaustive database of admissions to all French hospitals). A retrospective analysis of 26,887 patient records was carried out in 542 facilities, including 136 with a stroke unit. The median age of patients was 79, the average length of stay was 12 days with a distribution of 87% of cerebral infarctions and 13% of haemorrhagic strokes and a 50% sex ratio.

Results: The median time from door to imaging was 1 h 44 (45 min if using magnetic resonance imaging and 1 h 55 if using computed tomographic imaging; 57 min for patients potentially eligible for recombinant tissue plasminogen activator treatment). Onset time of clinical signs was logged in 87% of records with a median time from onset to admission in 3 h 15. On average, 73% of patients had neurovascular expertise, 60% from dysphagia screening, and 49% had a post-stroke appointment scheduled within the next 6 months. A National Institutes of Health Stroke Scale score was logged within an hour of arrival in 49% of records. The weighted gross rate of thrombolysis in France was 12% of cerebral infarctions. Telestroke was available in 112 facilities. A medical act involving telemedicine was performed on 662 patients. Facilities with a stroke unit had significantly better results in virtually all fields.

Conclusion: Healthcare quality and safety indicators are one of the main components facilitating understanding of the different care pathways. The purpose of monitoring these tools is to promote the fair management of patients in accordance with professional recommendations. Their success is attributable to all healthcare professionals involved.
OPTIMIZING QUALITY MEASUREMENT: APPROPRIATE CONTROLLER THERAPY FOR ASTHMA

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Objectives: Asthma is a common chronic disease. Although regular daily controller therapy is considered the mainstay of persistent asthma management, under-treatment is not uncommon. Therefore, appropriate controller therapy is an essential target for quality measurement. This study seeks to assess alternative quality measures for appropriate controller therapy for asthma. The study results will help to create a process quality measure that correlates with both disease outcome and quality of care.

Methods: Pharmacy data for 12,412 Israeli persistent asthma patients aged 5-44 years was extracted from Maccabi Healthcare Services computerized database for 2012-2013. Data was collected anonymously to ensure confidentiality. We assessed three alternative pharmacy-based quality measures:

1. Controller medication use: the rate of persistent asthma patients who were dispensed at least three controller medications in different months during the measurement year.
2. Reliever medication overuse: the rate of persistent asthma patients who were dispensed at least 6 canisters of reliever medications during the measurement year. Reliever medication overuse is a characteristic of uncontrolled asthma.
3. Rate of persistent asthma patients with AMR (Asthma Medication Ratio) > 0.5. AMR is the ratio between controller medication and total asthma medication purchased in one year. The AMR measure is in current routine use by the Healthcare Effectiveness Data and Information Set (HEDIS) developed by the American National Committee for Quality Assurance.

We examined the association between each measure and systemic steroid use, serving as a marker for the outcome of asthma exacerbation. For each measure we calculated the rate of systemic steroid use by patients fulfilling and not fulfilling the measure criteria. The difference was evaluated using Pearson's chi-squared test ($\chi^2$).

Results: There was no association between controller medication use and systemic steroid use. The rate of systemic steroid use was 25.7% and 25.6% in patients fulfilling and not fulfilling this measure respectively, ($p=0.88$). Rate of reliever overuse and rate of patients with AMR > 0.5 were significantly and similarly associated with systemic steroid use. For both measures the rate of systemic steroid use was 23% and 32% in patients fulfilling and not fulfilling each measure respectively, ($p<0.01$). There was a 79% agreement between these two measures. Systemic steroid use dropped progressively with higher AMR values.

Conclusion: A process quality measure should ideally correlate with disease outcome and reflect the quality of medical care. Three alternative pharmacy-based quality measures for appropriate controller therapy for asthma were assessed. Asthma exacerbation was utilized as disease outcome. Rate of controller medication use had no association with this outcome. Rate of reliever overuse and rate of patients with AMR > 0.5 were equally associated with this outcome. There was a 79% agreement between these two measures, yet the AMR measure may better reflect the quality of medical care, especially in severe asthma cases which are difficult to control. The AMR measure has recently been incorporated into the Israel National Program for Quality Indicators in Community Healthcare due to its strong correlation with disease outcome and quality of medical care.
PRESENT CONDITION OF FALL INCIDENTS IN TOHOKU UNIVERSITY HOSPITAL, JAPAN.
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Objectives: Inpatient falls are one of the most common incidents in medical institutions. To clarify the present condition of fall incidents in our institute, we analyzed the annual incident reports from April 1, 2012 to March 31, 2015.

Methods: Subjects: All patients admitted to the Tohoku University Hospital from April 1, 2014 to March 31, 2015 were included in this study. Methods: We collected the medical information including the patient ID, age, disease, time and place of fall and any sleeping pills (including anti-anxiety drugs), which is found on the incident report. As for hypnotics, we collected the drug name from the medical records. We analyzed descriptive statistics and compared them with previous years. This study was approved by the Institutional Ethical Review Board of Tohoku University Hospital.

Results: Among 3,548 incident reports in total, 573 falls were reported from April 1, 2014 to March 31, 2015. The fall incidents ratio (FIR=100 x number of fall patients/total number of inpatients) was 2.74% during this period. The FIR from April 1, 2012 to March 31, 2013 and from April 1, 2013 to March 31, 2014 was 3.06% and 3.26, respectively. The FIR from April 1, 2014 to March 31, 2015 was significantly lower compared to the previous two periods (p<0.05, chi-square test and post hoc Ryan method). Among 573 cases, 69% were patients over the age of 60. Patients 70 to 79 years old fell most frequently across all ages. 5 patients had suffered bone fractures or required longer hospitalization. Two of the five patients had malignancies, two others had immune-suppressive conditions, and the last had osteoporosis. Among 573 cases, 187 patients had malignancies, 62 were taking narcotics, 40 were taking anti-cancer drugs and 34 were undergoing irradiation. 385 cases occurred in wards, 69 in wash rooms, 49 in passages and 21 in bathroom changing rooms. In daytime we had more falls compared to nighttime. The peak of falls happened between 6AM and 8AM. During nighttime, we found three peaks from 23:00 to 24:00, from 1:00 to 2:00 and from 3:00 to 4:00. 238 patients had hypnotics or anti-anxiety drugs. As for the types of hypnotics, benzodiazepines, non-benzodiazepines and melatonin receptor affinity drugs were taken by 177, 65, and 27 patients respectively.

Conclusion: 1. In Tohoku University Hospital, long-term steady measures to prevent patient falls may have lowered the risk of falls in recent years. The main cause of a decreasing number of falls in recent years may be the effect of introducing “CATCH Risho”, a low-to-the-floor electric bed with a high quality moving sensor (Paramount Co. Ltd), and repeated training sessions with nurses for using the bed.
2. Patients 70 to 79 years of age had the highest falling risk.
3. From the results of fall places and times, in nighttime, excretion may be the main reason behind falls.
4. Hypnotics and their respective type may be related to falls. It is necessary to research the relationship between the type of hypnotic, and the time and amount of the dose.
5. More studies are needed to clarify the relationship between patients’ diseases, medications, treatments and falls.
UNDERSTANDING THE ACCESS TO SPECIALTY CARE AND HEALTH-RELATED QUALITY OF LIFE OUTCOME IN CHILDREN AND ADOLESCENTS WITH CHRONIC KIDNEY DISEASE

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Objectives: Thirty to sixty percent of children and adolescents required dialysis and kidney transplantation was associated with childhood onset chronic kidney disease (CKD), and many of them are asymptomatic at early stage. Although research on health-related quality of life (HRQOL) in children and adolescents is increasing, studies examining perceived physical and mental health outcomes are still limited in childhood onset CKD. This study aims to examine how different kinds of access to pediatric nephrology care and the HRQOL among children and adolescents with different stage of CKD.

Methods: A cross-sectional study was conducted among children and adolescents with CKD aged from 3 to 17 years in the pediatric nephrology clinic at a medical center in Taiwan during 2014-2015. A parent questionnaire was addressed to collect family-report child specialty care experience in terms of time since diagnosis of their children diagnosed with CKD, access to nephrology specialist care, family medical history and mother’s health condition during pregnancy, gestational age at birth and children’s birth weight. HRQOL of pediatric patients with CKD was evaluated among patients aged 7 to 17 using EQ-5D-Y.

Results: We assessed 64 children and adolescents with CKD, the male/female ratio was 3/2, age at enrollment was 23% aged <6 years, 6 to <10 (25%),10 to <14 (17%), 14 to <18 (34%), time since diagnosis was 44.7 (±34) months, only 5 patients currently received another chronic illness care. Half of parents knew their children with kidney disorders from treating other illness (39%) or health screening (11%), 57.8% expressed they knew the causes of kidney disease, and 26.6% cases identified during pregnancy or newborns screening. Over 50% seek for pediatric nephrologists care directly and 11% referred from specialists. Only 1 patient has ever discontinued regular follow-up. Between 91.2% and 95% children and adolescents reported no problems with “mobility”, “self-care”, “usual activities”; 85% and 72% of them experienced no problems with “pain/discomfort” and “happiness/worry/sadness, respectively. Children and adolescents with advanced CKD stage (3 or 4) self-rated EQ-5D-Y visual analogue score was significantly lower, and more likely to respond some problems on at one dimension than those at earlier stage (1 or 2). The worsening HRQOL in children and adolescents with advanced CKD was significantly associated with the severity of hypertension and presence of CKD complications (anemia).

Conclusion: The study highlighted the importance of general pediatric care and prenatal care on early identification and referral to a nephrologist for pediatric patients with CKD in the health care system. Despite HRQOL reduction, ED-5D-Y is useful to evaluate how does renal impairment affect therapeutic interventions and social support what dimension of health utility, which may ultimately help in the design and implementation of therapeutic interventions and social support for children and adolescents and their families with special needs.
INTEGRATED GOVERNANCE ANALYSIS – ABERDEEN CITY HEALTH AND SOCIAL CARE PARTNERSHIP (SCOTLAND)
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Objectives: The Public Bodies (Joint Working) (Scotland) Act 2014 provides a framework for the integration of adult health and social care services in Scotland. Working with Aberdeen City Health and Social Care Partnership (ACHSCP), the Good Governance Institute (GGI) have explored the practical realities of health and social care integration through the prism of governance. The focus has been to develop a governance framework which delivers robust assurance mechanisms, while facilitating the innovation necessary to drive change across care delivery in Aberdeen.

Methods: As the statutory integration authority for Aberdeen City, ACHSP is required to develop an ‘integration scheme’ using guidance from Scottish Government. Beyond the remit of this statutory document, however there is the scope and need for the practical implementation of ACHP’s integration agenda. With this in mind, GGI have worked with the newly formed Integration Joint Board (IJB) of ACHSP on a comparative analysis of assurance mechanisms and pathways across care providers and commissioners in Aberdeen City. Drawing on resources from a cross-continuum field including National Health Service (NHS) Grampian, Aberdeen City Council, third sector and independent partners, GGI undertook this qualitative analysis through comprehensive documentation review and semi-structured interviews with Board members and stakeholders. This analysis was then applied to assurance needs surrounding the practical implementation of innovative integration initiatives. Specific examples analysed include the pooling of resources to integrate the locality management of respite care in an effort to avoid unnecessary recourse to hospital admission. Such cross-continuum collaboration involves unique assurance challenges in order to effect the necessary change to the patterns of care delivery in Aberdeen City.

Results: This integrated governance analysis has produced a range of assurance resources to support and facilitate the practical integration of care in Aberdeen City. These resources are the result of the comparative analysis of embedded institutions and mechanisms active across the continuum of care, which must now operate and drive change in the context of integration. These resources include; a Good Governance Maturity Matrix for Integrated Boards in Scotland; IJB Maturity Matrix to support the development and improvement of quality and care governance within service areas; Risk Appetite Board Assurance Prompt; Board Assurance Framework; Risk Register and Risk Appetite Statement.

Conclusion: Recognising that hospitals, primary care practitioners, care homes, or any individual institution cannot improve care transitions in isolation, this investigation has explored the practical realities of governance needs in the context of care integration, and has produced targeted assurance mechanisms which operate in the context of innovation and change management. This model of integration has delivered tangible improvement within the context of the NHS and social care, and is being taken up as an example of good practice for roll-out across Scotland.
DESIGNING AND EVALUATING INTEGRATED CARE ACROSS THE CONTINUUM OF CARE
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Objectives: To foster integrated care, Singapore’s healthcare system was reorganised into six Regional Health Systems (RHS), according to geographic location. Every RHS covers up to a million in population, is anchored by a public acute hospital and comprises of a network of health and social care providers working together through various initiatives to provide preventive, primary, acute, specialist and community care for the population throughout their healthcare journey. Each RHS aims to help individuals navigate through the various healthcare settings and empower them to manage their own care needs more effectively. As these initiatives are still nascent, it is important to evaluate them to refine them and avoid misattribution of and the wider adoption of practices without proven benefits over existing alternatives. Therefore, our research aims to evaluate the National University Health System (NUHS) RHS to support its development so as to improve healthcare quality, contain costs and potentially generate new information to inform future initiatives. The evaluation of integrated care is in its infancy and may be hampered by the application of methods not well suited for complex and context sensitive improvement initiatives. Hence, we take careful consideration of the complexity of the RHS and its context.

Methods: The realist evaluation approach is adopted for this study to examine what works, for whom, to what extent and how by assessing its context, mechanism and outcome conjectures through a mixed method study at two levels. First, the context and working mechanisms that underpin the RHS as a whole will be assessed through ethnographic observation of meetings and events, interviews with stakeholders and surveys to assess the level of integration from providers and users’ perspectives. Data collected will be analysed according to the purported formula of the realist evaluation method. Second, implementation fidelity and outcomes of specific programs of the RHS will be assessed. Overall fidelity of the respective RHS programmes will be examined through programme document reviews, ethnographic observations of the conduct of programme activities and structured interviews with program team members and healthcare users. Structured interviews with the beneficiaries of the programs and a time series analysis that assesses the changes in the measurements of quality of care and quality of life scores together with periodically collected utilization data will be conducted to examine the changes associated with the various programs.

Results: The results of the study, which will be presented during the conference has significant implications on a few levels. It will potentially (i) provide information for improvement of the NUHS RHS, (ii) provide a methodological guide for the evaluation of other RHS in Singapore, (iii) inform policies at the national level, (iv) provide insights to other countries that are experimenting with new models of healthcare delivery to cope with the aging population and (v) contribute significantly to the international literature on healthcare reform and improvement science.

Conclusion: To better understand how and in what context integrated care works, its evaluation needs to account for the iterative nature of this improvement strategy and undertaken prospectively to generate lessons applicable to ongoing improvement efforts and enable midcourse adjustments.
THE IMPACT OF PATIENT NAVIGATORS ACROSS THE CARE CONTINUUM
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Objectives: The Singhealth Regional Health System facilitates patient care delivery across the care continuum. It leverages on Patient Navigators to help right-site patients to appropriate care settings. The study looks at the 1-year post-enrollment impact of the Patient Navigators scheme on patient-related outcome measures: Emergency Department (ED) attendances, readmission rates and length of stay (LOS).

Methods: Complex patients were enrolled from Jun to Nov 2014. Complex patients are those fulfilling the following criteria within a 12-month period: (A) 3 or more admissions, or (B) 4 or more ED attendances, or (C) 13 or more outpatient reviews to 4 or more specialties. Suitable patients not enrolled were due to the following reasons: (1) death, (2) lost to follow-up, (3) patients or relatives refusing enrollment. Relevant aggregate data were obtained from hospital registries and databases. Pairwise (within patient) comparisons were done for ED attendances and readmissions using Wilcoxon signed rank test for testing the null hypothesis, while the pairwise (within patient) comparison of LOS uses the paired T-test for testing of the null hypothesis.

Results: 1,699 complex patients were screened. The gender ratio is 1:1 and mean age is 70.4 years. Of the 1,598 patients analysed for ED attendances, there is a significant reduction in ED attendances 1-year post enrollment (p < 0.001). For the 1,380 patients assessed for readmissions, there is no significant difference (p = 0.147). However there was a significant reduction in LOS for the 1,296 patients admitted to the general medicine and general surgery departments (p < 0.001)

Conclusion: The use of Patient Navigators to right-site care across the care continuum has benefited patients through less ED attendances and shorter in-patient LOS.
WAITING TIME MANAGEMENT OF INITIAL PATIENTS IN OPD
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Objectives: The cultural shift for the healthcare model from a physician centric approach to a patient centric one is driven pre-dominantly by the increasing complexity of healthcare delivery, the easy access to healthcare information online, increase in research and patient disease patterns. OPD is considered as the window to hospital services and a patient’s impression of the hospital begins at the OPD. This impression often influences the patient’s sensitivity to the hospital and therefore it is essential to ensure that OPD services provide an excellent experience for customers. Patients waiting time is defined as the length of time from when the patient entered the outpatient clinic to the patient actually leaves the OPD. Waiting happens to just about everyone seeking medical care whether its registration or consultation. This leads to a quality improvement project related to shortening wait time in outpatient department.

Methods: Study was based on PDCA cycle. Gap analysis was conducted of the wait time for new patients. It was identified that new patients require more time of physician as initial assessment is required. Initial patient consultation time was recorded for approx. 45 minutes. It was recorded that it takes almost 20 to 25 min after registration for the process to begin at the clinic counter.
Initial patients clinic days were segregated from follow up patient clinics and their appointments were set apart for 45 min for initial patient and 15 min for follow up patients. Process restructuring was implemented by providing the set of folders proactively before clinic begins. Instead of folder preparation in medical record room, folders are prepared at the counter. OPD receptionists were given an added responsibility of instantly preparing the folder as soon as new patient arrives at the counter. Immediately after, nursing assessment is conducted and patient is ready for consultation within 15 min of the registration.

Results: Goal of reducing wait time is only possible with positive behavior of staff that results to be more efficient and do the right thing the first time. Positive feedback of improved behavior is seen as a consequence which is required to maintain the positive behavior and to match the behavior with the goal. One time delivery of folders before clinic began replacing three staff assigned for this purpose.
All the staff were appreciated for the work they are doing. OPD receptionists were trained and given added responsibility that reflected the confidence of leadership for the team members. This step was based on the best minute spend is the one invested on people.
Time management skills were required by each individual staff member involved in the process. Key factor was related to training and acceptability of the added responsibility. Resistance was noticed when staff was writing wrong MR # or incorrect/incomplete demographic information on the progress sheet. This was creating problems for document imaging unit during scanning. Counseling was done and many of them were explained the reason for the change in the work process. Close monitoring and positive reinforcement continued to enhance change management.

Conclusion: Outcome reflected reduction in number of complaints received related to wait time, improved clinic management, increase in patient count, increase in physician satisfaction, satisfied patients and families. Additionally, improved resource allocation by eliminating 3 FTE positions and after successful implementation at one location, replication of the same will continue on other locations. As an off shoot of the project and focusing on holding the gains, it was important to sustain the performance. All other staff members were trained by sharing the results and outcomes of the steps taken resulting in happy customers.
TO PUSH OR NOT TO PUSH THE PANIC BUTTON ORGANIZATION-WIDE PROCESS TO MANAGE REPORTING CRITICAL LABORATORY VALUES: IDENTIFYING PROBLEMS AND IMPROVING PROCESSES

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Objectives: Reporting critical laboratory test values to hospital wards in real-time is essential for providing immediate treatment to critically ill patients. Routine monitoring of panic values reported by phone revealed a 40-60% gap between the number of results that should have been reported immediately and the actual implementation. This unsatisfactory situation was found even in departments that received the report: only 40% of results obtained, including read-back were recorded, and of these only 88% were noted in the patient's chart. Therefore, laboratory management initiated a major quality improvement project; setting a goal that 100% of critical lab results receive immediate professional attention by improving communication between laboratories and departments.

Methods: The critical lab values that must be reported were determined. An Excel program was developed in the lab to measure the percentage of the panic values reported by each laboratory. The process in the laboratories was improved by developing specific alarms matched to patient and departmental criteria and implementing computerized reminders about required reporting. At the same time, a process for receiving and managing critical results in patient care wards was developed and implemented.

Results: The availability of the report and the ability of the managers and staff to present it quickly improved quality, and allowed real-time monitoring of failures in reporting critical lab values. This report allowed us to know exactly where, when and who did not report critical results and to address each problem. This led to a fundamental change in the conduct of the lab staff and their commitment to report PANIC values appropriately. The rate of timely reporting of critical values rose from 40% to 97%. Recording results by departments improved.

Conclusion: Availability of software and the ability to easily generate a report enables detection of failures in real-time reporting of critical laboratory results. Such a program can be used by all laboratories. Also, developing and implementing the process, and monitoring the departments, resulted in significant improvements in staff cooperation and in their commitment to the process.
INPATIENT SATISFACTION SURVEY BY THE MANAGERIAL LEVEL AS TOOLS FOR QUALITY IMPROVEMENT
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Objectives: Patient satisfaction is a significant part of the overall health care experience. Ward call by department heads or executives from managerial levels can deliver compassionate respect to each patient or their family. Suggestions or feedback from the call can provide effective and real-time improvement in quality and safety of patient care.

Methods: From 2013, a team led by the chief secretary made visits to the inpatients every Friday morning. One day before the visit, one patient in each ward was randomly selected for ward call. A small gift and greeting card was given after each visit. The patient had to fill out a questionnaire comprised of 30 items with categories like medical services, meals, cleanliness, etc. A meeting was held soon after the visit to discuss the suggestions or complaints. Responses or improvements made by the responsible sections or departments were forwarded to the patients or their family as an interactive feedback. Any complaints or issues which could not be responded or solved immediately would be followed closely by the group.

Results: A total of 528 ward calls were made from 2013 to 2015. The rate of positive feedbacks including patient safety, medical services, environment, and volunteer services improved from 97.4% to 98.3%. Negative feedbacks mostly involved administrative services like speed of admission process and room cleanliness. Complaints about patient safety decreased from 40 to 17, about medical care, from 68 to 39, and about administrative services, from 156 to 118. Issues to be followed were 71 items in 2013, 63 items in 2014, and 54 items in 2015.

Conclusion: On-site ward calls made by executives from the managerial level are useful in understanding how patients or family feel about the quality of medical care or administrative services. By rapid responses after each ward call, we not only make our medical care safer and more effective, but we also make our patients’ stay more satisfying and comfortable.
INTEGRATED HEALTH REGIONS IN SWITZERLAND: CAN THEY IMPROVE THE HEALTH OF THE POPULATION, FOSTER THE CONTINUUM OF CARE AND CONTAIN THE COSTS?

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Objectives: This study investigates if the concept of integrated health regions is viable in the Swiss context to improve the health of the population, foster the continuum of care and contain the costs of health care. The proof of concept is done by synthesizing (mostly own) previous research projects on managed care, ambulant care, home care and palliative care. It also illustrates the current trends in Switzerland regarding integrated care and health regions. Furthermore it reflects on the claim to contain the costs.

Methods: The study is realised in a mixed methods approach:
1) comprehensive literature review on integrated care and health regions, focused on Switzerland,
2) synthesis of previous research projects on managed care, ambulant care, home care and palliative care conducted by the authors and others,
3) qualitative interviews with experts of service providers, public agencies and health care economists,
4) expert interviews and workshops for validation of results.

Results: The concept - or vision - of integrated health regions is an interesting approach with the potential to change the Swiss health system fundamentally. The political system of Switzerland (federalistic), the current regulations regarding health care (including the various forms of financing) and the fragmented supply structures are not beneficial to the development and implementation of integrated health regions. Various systemic barriers have to be addressed and resistance of powerful actors has to be overcome to develop and integrate health regions in Switzerland. But the literature, the own empirical evidence and 3 case studies show that the establishment of integrated health regions is possible, even in the Swiss system. Evidence on the cost effect of more integration and of a reinforced regional perspectives is still virtually inexistent.

Conclusion: To improve the health of the population, foster the continuum of care and contain the costs of health care, the concept of integrated health regions is - under certain circumstances - viable in Switzerland. To develop and to establish integrated health regions in the Swiss context patience, persistence and resilience are needed. A network of cooperative actors along the continuum of care needs to be built up. Moderating and mediating actors and powerful promoters are fundamental to accomplish the journey. The social capital (including volunteers) needs to be activated and strengthened, because the (professional) health care services represent just one side of the coin. The expectations towards integrated health regions are high and further research is needed.
IMPROVING PATIENT OUTCOME USING DISCHARGE BUNDLE INTERVENTION FOR CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS IN A RESPIRATORY WARD

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Objectives: Chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death in Hong Kong. The discharge planning for chronic respiratory disease patients involves multidisciplinary effort for the transition between the hospital and the home. The role of non-physician health professionals is becoming increasingly important because of their good holistic vision and they are more prone to coordination. Patient education and their participation with a multidisciplinary approach to the transition out of hospital can improve ongoing patient care for COPD. A study from the United Kingdom suggested a 6% reduction in hospital readmissions upon implementation of a care bundle. Prolong hospital stay will also result in poor patient outcome.

To enhance the discharge management for chronic respiratory disease patients by reducing length of hospital stay, reducing readmission, enhancing patient empowerment and improving the co-ordination of services following discharge from hospital for uncomplicated COPD patients.

Methods: Introducing discharge bundles for patients with acute exacerbation of COPD to improve the care pathway and reduce length of hospital stay, decrease hospital readmission and enhance patient empowerment. Factors consistently associated with readmission include older age with respiratory failure, poor lung function, recent hospitalization for COPD, comorbidities, and psychosocial issues. Key components of discharge bundle include smoking cessation, education, inhaler technique, assessment for pulmonary rehabilitation, and scheduling follow-up appointment prior to discharge. We exclude those COPD with high chance of readmission. In order to ensure success in early discharge management, it is necessary to spend enough time on education of the patient and the caregiver. They should be given all the information and technical support so as to establish a plan to minimise the risks for readmission.

Results: We have recruited 40 patients with acute infective exacerbations of COPD in a respiratory ward during the study period. Twenty patients are excluded due to various risk factors for high risk for readmission. The average length of hospital stay is significantly reduced to 4.8 days when comparing to the average LOS of 6.4 days in respiratory ward. The readmission rate in 30 days is lower for the study group than the high risk group.

Conclusion: Several systems initiatives have shown promise in reducing length of hospital stay and minimizing readmissions for uncomplicated COPD patients. These interventions include improved collaboration between the care team, patients, and aftercare providers prior to discharge; medication reconciliation; enhanced patient education and empowerment; home visits by community nurses after discharge; and early post-discharge follow up. A discharge bundle comprising multiple concurrent interventions may be more effective than single component.
EXPLORING THE RELATIONSHIPS AMONG EMOTIONAL LABOR, COMPASSION FATIGUE AND TURNOVER INTENTION OF CLINICAL NURSES
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Objectives: The purpose of this study was to explore the emotional labor, compassion fatigue, and turnover intention of clinical nurse, and to investigate the influencing factors of turnover intention.

Methods: A cross-sectional correlative design was used. A convenience sample of 375 clinical nurses was recruited from a medical center located in southern Taiwan. Data were collected using a structured questionnaire which included three instruments: the “Emotional Labor Scale”, the “Compassion Fatigue Scale”, and basic demographic questionnaire.

Results: The average score of emotional labor was 92.78, indicating a moderate level of overall emotional labor. The average score of compassion fatigue was 52.53, indicating an extremely high level of overall compassion fatigue. In this sample, 215 participants (58.6%) had had turnover intention over the past year, and 99 participants (27.3%) reported turnover intention within the next year. The level of compassion fatigue was significantly positive by correlated with the “deep acting” dimension of emotional labor (r = 0.146, p < 0.01). The “basic emotional expression” dimension of emotional labor in participants who had turnover intention over the past year was significantly lower than that in those who did not. The results of multiple regression analysis showed that no factors had significant effect on “emotional labor” (F = 1.58, p = 0.07). The education level, health status, perceived understaffing, and “deep acting” of emotion labor were predictors of the compassion fatigue. These variables account for 14.8% of the variance (F = 7.92, p < 0.001). Perceived current health status, perceived understaffing, and level of compassion fatigue were factors affecting turnover intention over the past year. In addition, perceived current health status, perceived understaffing, and level of compassion fatigue were factors affecting turnover intention within the next year.

Conclusion: The findings of this study suggest that the administrators of hospital and nursing department should focus on the management of “emotional labor” and “compassion fatigue” and that should be sensitive enough to help nurses tide over crisis and reduce their level of emotional labor and compassion fatigue. Then, it will increase the efficiency of clinical nurse while provide nursing intervention. We also suggest that the concept of emotional labor and compassion fatigue should be included in the nursing program. It will not only help nursing students understand the essence and meaning of nursing but also to improve their abilities of observation, analysis, and self-reflection which required in humanitarian health care.

THE DEVELOPMENT OF KOREAN REHABILITATION PATIENT GROUP(KRPG) VERSION 1.0 AS A CASE-MIX AND PAYMENT TOOL FOR REHABILITATION INPATIENTS

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Objectives: Due to the rapid growth of the elderly population and patients having chronic diseases, the population in need of subacute care services is increasing recently. New patients in need of rehabilitation occur about 600,000 every year in Korea, and the elderly population (60 years and above) make up 63.1% of them. Rehabilitations in subacute phase are different from acute treatments regarding the characteristics and required resource consumption of the treatments. The patient classification systems (e.g. KDRG, KOPG) are widely used within the current healthcare system in Korea and are developed for the acute patients. Issues regarding a lack of accuracy and validity of the KDRG and KOPG as the case-mix and payment tool for rehabilitation inpatients have been raised. The objective of the study was to develop the Korean Rehabilitation Patient Group (KRPG) reflecting the characteristics of rehabilitation inpatients in subacute phase.

Methods: For the collection and establishment of data reflecting the characteristics of rehabilitation inpatients in Korea, a data collection form for rehabilitation inpatient’s medical record was developed in cooperation with the clinical experts from the Korean Academy of Rehabilitation Medicine. The form consists of 16 general information items, 2 medical information items, and 7 functional assessment tools. As a retrospective medical record survey regarding rehabilitation inpatients, 4,207 episodes were collected through 42 hospitals located all over the country. Considering the opinions of clinical experts and the decision-tree analysis, the variables for the KRPG system demonstrating the characteristics of rehabilitation inpatients were derived, and the splitting standards of the relevant variables were also set. Using the derived variables, we have drawn the rehabilitation inpatient classification model reflecting the clinical situation of Korea. The performance evaluation was conducted on the KRPG system.

Results: The KRPG was targeted at the inpatients with brain or spinal cord injury (about 95% of rehabilitation inpatients in Korea are suffering from brain or spinal cord injury). The etiologic disease, functional status (cognitive function, ADL, muscle strength and spasticity, level and grade of spinal cord injury) and the patient’s age were the major variables in the rehabilitation patients.
For the definition of the etiologic diseases requiring rehabilitation, the Korean Rehabilitation Impairment Categories(KRIC) which consists of 24 groups were developed. The definition manual of KRIC was established on 9 KRIC reflecting brain and spinal cord injury. It included the 9 definitions based on the KRIC, the relevant etiologic diseases, and the diagnosis based on Korean Standard Classification of Diseases(KCD).
The algorithm of KRPG system after applying the derived variables and total 204 rehabilitation patient groups (including error group) were developed.
The algorithm of KRPG Version 1.0 explained about 11.8% of variance in cost for rehabilitation inpatients. It also explained about 13.9% of variance in length of stay for them.

Conclusion: The KRPG Version 1.0 reflecting the clinical characteristics of rehabilitation inpatients in subacute phase was classified as 204 groups. It enables rehabilitation inpatients to classify accurately and reasonably. The KRPG might be utilized in a wide range of healthcare policy, such as a basis for payment system, a quality assessment, a benchmarking and a performance management for rehabilitation inpatients.
MEDICATION ERRORS IN LATIN AMERICA: A SYSTEMATIC REVIEW OF EPIDEMIOLOGY AND PREVENTION STRATEGIES
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Objectives: No previous systematic reviews have attempted to estimate the types and prevalence of medication errors (or preventable adverse drug events) in Latin America (LATAM). Previous reviews on medication errors have been restricted to English literature. Medication error reduction strategies and the methodological rigor of the studies published in LATAM literature are unknown. The objectives of this study were to review the prevalence of medication errors in the LATAM region and describe the interventions used in the region to prevent them.

Methods: A systematic literature search for peer-reviewed studies conducted in LATAM countries that explored the prevalence of medication errors, or examined medication error prevention strategies during one or more of the medication use stages in any type of healthcare setting. Studies were included if they met the definition or error shown in Table 1. We searched 10 databases to identify published studies in English, Spanish and Portuguese between January 1st 2000 and October 15th 2015. Two independent investigators per language assessed abstracts and full-texts for eligibility criteria and critically appraised the quality of the studies. A third investigator resolved discrepancies between the two reviewers.

Results: A total of 1,980 citations were retrieved from databases, and additional 20 from manual search. After removing duplicate records, articles were screen based on their title, 766 articles were eligible for additional abstract screening. On reviewing the abstracts, 560 articles were excluded due to irrelevance of topic (n=188), not conducted in LATAM countries (n=51), containing duplicate data (n=2), were conference proceedings (n=29), editorials or commentaries (n=38), reviews (n=84), theses or dissertations (n=19), case reports (n=7), qualitative studies (n=40), duplicate citations (n=100) or project proposals (n=2). A final sample of 206 studies is currently under full text review and quality assessment. Additional results will be provided during the presentation.

Table 1: Definitions

| Medication errors (MEs) are errors in the process of prescribing, dispensing, or administering a medication, regardless of whether an injury occurred. | Preventable adverse drug events (pADEs) are injuries due to medication errors. Preventable adverse drug events are defined by the presence of some sort of harm or injury due to a medication error. We will consider only preventable adverse drug events, excluding any non-preventable adverse drug events (i.e., reactions to unknown allergies) |

Conclusion: Will be determined on completion of the study and analysis of the data.
TRANSLATING INTERNATIONAL STANDARDS OF CARE IN A BRAZILIAN CANCER CENTER: A PRELIMINARY PERSPECTIVE
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Objectives: International guidelines recommend that provision of appropriate psychosocial services be adopted as a standard of quality cancer care. It is recommend that all patients undergo screening routine to identify the level and source of their distress. Taken together, the current study intend describes the use of these indicators to evaluate the quality of psychosocial care in a Brazilian outpatient oncology setting

Methods: The biopsychosocial screening routine was developed from existing guidelines and adapted to the context and culture of the institution and the country. In 2015, a total of 51 cancer patients – from a private cancer center, located at Sao Paulo, Brazil – were assessed for distress, anxiety/depression and quality of life, using the Distress Thermometer (TD), Hospital Anxiety and Depression Scale (HADS) and the Functional Assessment of Chronic Illness Therapy-General (FACT-G). Descriptive statistics were used.

Results: Around 26.9% of patients reported moderate to severe distress, being 23.1% with moderate symptoms of anxiety and 11.5% of depression. The QoL total scores was an average of 86.2. In the sub-scales it was observed an average of 24.5 for physical well-being, 21.0 for social/family, 20.1 for emotional and 20.6 for functional.

Conclusion: The prevalence of moderate to severe distress and anxiety/depression was close to that found in the literature. For QoL patients presented an average score at 50th percentile of the US norm. Another interesting fact was related to the representativeness of the psycho-oncology service; after the implementation of this routine, it was close to 40% in contrast with the 10% obtained in the previous year. The present findings provide preliminary evidence of the feasibility of the standard of quality cancer care, for identifying patients’ psychosocial needs in Brazil in line with international standards. We may also infer that this program favored a major integration of the psychology domain into the cancer care. The present findings provide refined information to design an effective patient-centered supportive treatment program.

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USING AN ON-LINE ABNORMAL-DATA ALERT SYSTEM EFFECTIVELY IMPROVES PATIENT SAFETY DURING RADIOTHERAPY
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Objectives: Cancer patients are vulnerable during radiotherapy (RT), especially when chemotherapy is prescribed concurrently. In such a condition, leukopenia and several types of opportunistic infection may occur. Thus, during radiotherapy, paying attention to patient’s abnormal laboratory data (including infectious pathogens) is essential for protecting the patient, other non-infected patients, their care givers, and the entire medical-care team. Hence, during radiotherapy, we used an on-line abnormal-data alert system to systemically improve: (1), adopting adequate infection-protection rate for infected patients; and (2), adopting adequate management rate for those with leukopenia.

Methods: Condition analysis: From January 2013 to December 2013, we retrospectively collected 20,188 person-times in those patients who were treated with RT. Two types of malpractice were identified: first, 71 person-times were identified to suffer from severe leukopenia (WBC < 1500/ul), but only 58% (41/71) had held RT till a recovery; second, 35 person-times were identified with a pathogen infection, but only 14% (5/35) had adopted an adequate infection protection during RT.
Further analysis identified three major causes responsible for these adverse events: (1). different alert-message-sending criteria between RT and other departments; (2). the intra-mural information system didn’t send an alert message; and (3). the alert-message-received department didn’t transfer the information to RT department.
Quality-improving methods: To solve the above problems systemically, we developed an on-line information system that can automatically alert us for abnormal data. When low WBC values or infection pathogens were identified by our intra-mural laboratory, the information system will immediately show on-line alerts. As a result, we are able to adopt suitable managements, including adequate infection-protection practices.

Results: After intervention, the two monitoring items gained improvement. First, the holding-RT rate in irradiating patients who had severe leukopenia was improved from 58% to 94% (P < 0.001). This allowed individually medical interventions for these patients. Second, the rate of adopting adequate infection protection in those with identified pathogens was improved from 14% to 94% (P < 0.001). After re-PDCA, both rates were further improved up to 100% in the maintaining period till now.

Conclusion: For both health-care givers and all under-RT patients, our on-line abnormal-data alerting system effectively improves during-RT safety. Extending this system to other RT departments is of value and ongoing
SERVICE QUALITY OF PRIVATE HOSPITALS; THE PAKISTANI PATIENTS’ PERSPECTIVE

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Objectives: Private hospitals in Pakistan are playing a vital role in the deliverance of healthcare services to public. The rapid growth of this industry has created an atmosphere of competition and provision of healthcare services with higher quality. The objective of this study was to examine the different dimensions of the service quality in the private hospitals of Pakistan and evaluating the service quality from the patients’ perspective on the basis of these dimensions.

Methods: A cross sectional study was performed during the month of February; 2013. A survey was conducted by using SERVQUAL Questionnaire consisted of 23 items in five service quality dimensions. The study sample was composed of 200 patients randomly selected from the four private hospitals.

Results: SRVQUAL Model of five service quality dimensions was utilized in this study. The overall value of Cronbach’s Alpha for internal reliability was .926 for 23 item questionnaire. The results explain that the total mean score of expectation and perception was 4.93 (SD=.04) and 3.90 (SD=.19) respectively, and the gap between them was 1.03. The highest expectation was related to responsiveness and highest perception related to assurance. The lowest expectation related to reliability and lowest perception related to tangibility. There is a huge gap in tangibility and responsiveness dimensions of services. The gap (1.03) between perception and expectation was significant (p < 0.005) with t value 25.90.

Conclusion: The results of this study depict that SERVQUAL is a useful and effective instrument to monitor and measure the service quality in hospitals enables the hospital management to identify the areas that need improvement from the patients’ perspective. The findings clarified that not only the physical appearance and infrastructure is critical to quality but also the responsiveness, assurance and empathy of the hospital staff are also leading contributing dimensions of quality in Pakistani patient’s perspective. The timely and correct information provided by the hospitals determines the very course of treatment of the diseases. Hence the private hospital industry needs to revamp its prevailing image. Management needs to inculcate professionalism and implement modern techniques of customer relationship management.

References:
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PERFORMANCE OF SPECIAL CARE NURSERY/NEONATAL INTENSIVE CARE UNIT STANDARDS IN MALAYSIAN ACCREDITED HOSPITALS

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Objectives: To analyse the compliance of MSQH Special Care Nursery/Neonatal Intensive Care Unit (SCN/NICU) standards in Malaysian accredited public and private hospitals from year 2009 to 2014.

Methods: A retrospective study was conducted on the performance of SCN/NICU standards in the Malaysian Hospital Accreditation Programme from year 2009 to 2014. There are five areas of concern in the standards; these are Organisation and Management, Human Resource Development and Management, Policies and Procedures, Facilities and Equipment and Safety and Quality Improvement Activities. Each of the above areas of concern has specific criteria for compliance. In this study, overall compliance ratings for the SCN/NICU standards and ratings for each criterion in the five (5) areas of concern were derived from survey reports from year 2009 to 2014. The percentages of Substantial Compliance (SC) in overall rating and each area of concern were tabulated. The Substantial Compliance rating is given when the surveyor observes that sufficient key elements of the standards are achieved (80% and above). A comparison on compliance/performance between public and private hospitals was studied.

Results: From year 2009 to 2014, 72 surveys of SCN/NICU standards had been conducted in Malaysian hospitals. Of the 72 surveys, 37 surveys (51.4%) were conducted in public hospitals whereas 35 surveys (48.6%) were conducted in private hospitals. There were 30 (81.1%) out of 37 public hospitals that had achieved overall rating of Substantial Compliance and seven (7) (18.9%) public hospitals had been given Partial Compliance. 100% of the SCN/NICU services in private hospitals achieved Substantial Compliance status. None of the public or private hospitals were given Non Compliance status.

The results on performance of SCN/NICU standards in the 5 areas of concern indicated that above 90% of the criteria in these 5 areas of concern achieved Substantial Compliance. The study showed that private hospitals obtained higher percentage of Substantial Compliance compared with public hospitals in all the areas of concern, except in the area of Organisation and Management. Compliance to criteria in the Human Resource and Facilities and Equipment in public hospitals achieved relatively low percentage of Substantial Compliance that is 91.1% and 91.9% respectively. Human Resource in private hospitals also achieved only 91.4% for substantial compliance, which is relatively the lowest percentage of Substantial Compliance for private hospitals amongst all the 5 areas of concern.

Conclusion: These findings conclude that private hospitals achieved better performance on SCN/NICU service standards compared with public hospitals. The study also showed that the Facilities and Equipment for NICU in public hospitals are inadequate to accommodate the present workload. The bed occupancy rate (BOR) for NICU range from 100% - 200%. As space between the cots is compromised, an outbreak of healthcare acquired infection may lead to a significant increase in perinatal mortality. The Ministry of Health needs to address this issue of overcrowding in NICU. The outbreak could be pre-empted if overcrowding can be addressed earlier. Furthermore, equipment such as ventilators, incubators, phototherapy machine in some public hospitals are inadequate with the rising workload. The ratio of 1 patient: 1 nurse for ventilated patient is not met. The number of registered nurses with post basic training in neonatal care needs to be improved to provide optimal neonatal nursing care. The inadequate numbers of trained nursing staff for SCN/NICU was also observed in the private hospitals.
THE EXPLORATION OF COPING PROCESS OF ILLNESS FOR ACUTE EXACERBATION AND REHOSPITALIZATION AMONG THE PATIENTS WITH COPD

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Objectives: The purpose of this qualitative research is to explore the coping process of illness for acute exacerbation and re-hospitalization among the patients with COPD.

Methods: This study applied a qualitative design via semi-structured, in-depth, audio-taped interviews for patients with acute exacerbation and re-hospitalization of COPD in Taiwan. Each interview process was about 30-40 minutes. Content analysis and coding with a conceptual map depicting were used for data analysis until the data reaches saturation.

Sample: Patients with more than twice a year of hospitalization due to acute exacerbation chronic obstructive pulmonary disease were recruited.

Results: Findings: Six major themes were encapsulated from the interviews of seven participants, to sum up 6 themes (1) The symptoms of re-hospitalization of COPD including: respiratory distress, sadness, weakness, chest tightness, discomfort, numbness, limited activity, cough. (2) The impact of re-hospitalization with co-morbid conditions including catch a cold, nasal stuffiness, and gastric ulcer (3). The experience of seeking treatments includes visiting a physician for medical help, looking for treatment of Chinese medicine, and seeking medications from pharmacy. (4) uncontrolled factors for re-hospitalization of COPD including the cold air and temperature changing seasonally. (5) Conditions to make an emergency seeking medical help including breathless, intolerance to breathless, and uncomfortable from heart. (6) lacking of the knowledge of self-care for encountering acute exacerbation of COPD and re-hospitalization.

Conclusion: The co-morbid condition are significant factors, contributing to acute exerbation and repeated hospitalization of COPD patients. Furthermore, the delivery of education program regarding self-care for COPD patients was insufficient, which makes patients’ knowledge and cope skills are deficiency. It is imperative that to establish a systematic program of health education and program and case-management model to provide these patients receiving individualized management of disease, to improve the knowledge of self-care, and to reduce the number of hospital readmissions.

A PROJECT FOR UTILIZING MULTIMEDIA VIDEO TO IMPROVE THE BREASTFEEDING KNOWLEDGE AND ABILITY OF THE HOSPITALIZED WOMEN
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Objectives: Breastfeeding could effectively improve newborns’ immunity and reduce the risk of infectious disease. If Puerpera couldn’t acquire proper breastfeeding knowledge and ability, it may influence the willing of continuous breastfeeding and the relationship establishment between mother and infant. After investigating, we found out current registered nurses’ health education on breastfeeding completion rate stands for 71.9%, Puerpera’s breastfeeding acknowledge reaches 54.3% and breastfeeding skill correct rate meets 50%. Analysis represents that registered nurse health education’s content lacking of coherence. Postnatal women fatigue leads to less interest in complicating oral health education. There aren’t appropriate health education assistant tools, standard health education process and audit system.

Methods: Approaches to above targets should be set up standard health education process, audit system and medical care consultant tracking hotline. Further, we could print breastfeeding health education instruction manual, and multimedia health education assistant tool and diagram for Puerpera. We lack of breastfeeding health education standard process and don’t set up the audit mechanism. Therefore, the seductions are developing working breastfeeding training course, providing individual breastfeeding manual, using oral health education way one by one and producing Puerpera’s breastfeeding health education instruction manual and multimedia video.

Results: After above actions implemented, we evaluate 16 registered nurses and 40 hospitalized lying-in women who had breastfeeding health education, the results show nursing health education completion rate increases from 71.9% to 97.5%, Puerpera’s breastfeeding cognitive rate increases from 54.3% to 96.8% and Puerpera’s breastfeeding skill correction rate increases from 50% to 94.4%.

Conclusion: During implementation process, it is triggered the learning motivation of the care taker. And the practical operation pictures could make them understand easily and enhance their memory via playing the multimedia video. Further it could be strengthen breastfeeding motivation and improve the establishment for mother-infant relationship, which can effectively improve the breastfeeding health education completion rate for registered nurse and increase Puerpera’s breastfeeding cognition and skills.
Objectives: It is estimated that half a million Brazilians suffer avoidable adverse events each year, only in the public health sector (1). It is also known that this number is underestimated. Also, only in 2013 the Government made a real effort focused on this issue, creating the National Program for Patient Safety. One of its resolutions at that time was that all hospitals in Brazil, almost 7,000, should have a program for patient safety (2). Despite of it, nowadays, 81% didn’t accomplish it. To tackle this public health problem, the Brazilian Patient Safety Foundation was created.

Methods: The Brazilian Foundation is a multidisciplinary team of ninety hospitals, the main healthcare providers, the society and also it has the support of the accreditation institutions. It was launched in December 2015 and works with two main branches: awareness of health professionals and everyone involved in patient care as well as patient involvement. For this, managed by a corporate structure (board of directors, and administrative, financial and advisory councils), the foundation will have ten study groups (Rapid response team, Culture of safety, Infection prevention, Patient Blood Management, Patient Empowerment, Safe Surgery, Safety in outpatient settings, Safe medication practices, Health IT and Effective communication). Patient empowerment group will be led by a patient advocate. Each year, the Foundation will address two issues at the annual congress. This conference will be open to all interested parties: technology companies, laboratories, healthcare professionals, patient advocates, society.

Results: The Foundation purpose is to help hospitals start gathering data, to support risk management as well as help the creation of those patient safety programs in 50% of our hospitals in 5 years and 100% in 10 years. Also we will work together with the accreditation institutions to raise the numbers of accredited hospitals believing that it will be a wheel of change for the structure towards patient safety.
In February 26th the Brazilian Foundation promoted the First Patient Safety Conference with the presence of distinguished people from the healthcare sector to raise awareness of this issue. The next step is to do the strategic planning and work with standardization so that this program can be replicated anywhere in the world.

Conclusion: The Brazilian Patient Safety Foundation has many challenges to involve the interested parties and raise awareness. But it will succeed with the support of great people. We have to share our story. All help is welcome.

ISQUA16-1982

A SYSTEMATIC APPROACH USING LEAN SIX SIGMA FOR IMPLEMENTING AN ELECTRONIC MODIFIED EARLY WARNING SYSTEM (E-MEWS) IN MINISTRY OF NATIONAL GUARD HEALTH AFFAIRS-WR, SAUDI ARABIA

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Objectives:

1. To culturally transform and improve the process of taking and recording vital signs for an electronic Modified Early Warning Score (e-MEWS) system using a robust process-improvement methodology (Lean Six Sigma) to implement a high-quality, effective, and sustainable system.

2. To assess compliance to e-MEWS with the aim of reducing undetected deterioration of patients through timely Critical Care Response Team (CCRT) activations, subsequently reducing alerts for Cardiac Arrest (Code Blue).

Methods: This study was conducted in the medical-surgical wards of the King Abdulaziz Medical City in Jeddah from June 2015 to January 2016. Intervention began October 2015.

A data-driven improvement process framework was used to gather information retrospectively using the Define, Measure, Analysis, Improve, and Control (DMAIC) approach:

Define (Voice of the Customer): The improvement taskforce conducted interviews with executive management personnel, the e-MEWS design team, and ward nursing staff members. A taskforce observer used the Gamba Walk to gather information.

Measure (Data Collection):
(1) Code Blue statistics over the past 12 months.
(2) Observational Survey
(3) Staff Satisfaction Survey within 1 month of changing the e-MEWS interface
(4) Value Stream Mapping (VSM) and Failure Modes and Effects Analysis (FMEA)

Analysis: A cause and effect analysis was done.

Improve:
Non-value-added steps were excluded with an agreed action plan to change the e-MEWS interface from two separate electronic screens to one. The entire process was streamlined. The e-MEWS system was completely redesigned. VSM and FMEA was conducted with controls being incorporated.

Control:
The taskforce designed a database system to control and evaluate the process, including recording the total e-MEWS score triggered and the turnaround time of the processes. Continual cycles of improvement remained ongoing for optimization.

Results: CCRT activations increased from an average of 5.0 alerts pre-intervention to 7.7 post-intervention, with an average of 0.8 to 1.7 for Code Blue alerts.

Observational survey showed a delay of four hours in entering the vital signs into the system due to Patient Care Technicians (PCT) entering the data only after all patients were examined. A total of 390 e-MEWS vital signs entries were audited for the pre-intervention phase. Compliance to protocol was 6% (n=23). Primary nurses alerted on vital signs and e-MEWS scoring by the patient care technician (PCT) was 36% (n=140). Documentation of physician notification was 0% (i.e. not available).

For the post-intervention phase, a total of 104 e-MEWS vital signs entries were audited. Compliance to protocol increased to 100% (n=104). Primary nurses alerted on vital signs and e-MEWS scoring increased to 96% (n=99). For physician notification, 42.3% (n=44) of the entries were excluded due to documented normal acceptable parameters, resulting in 88% (n=60) of entries being acted upon and reported to physicians by nursing staff.
A total of 121 staff members in medical-surgical were invited to participate in completing the staff satisfaction survey. The response rate was 62% (n=75) and results were as follows: 39% felt they possessed adequate knowledge and have received adequate training in e-MEWS; and 35% believed e-MEWS has a positive impact on care quality and patient safety.

**Conclusion:** The MEWS is an evidence-based tool used to flag changes in vital signs at an early stage. Within our own organization, gaps were identified, the process was streamlined, and the e-MEWS system was redesigned. By implementing Lean Six Sigma methodology, we have improved the process for detecting and rescuing deteriorating patients. Further evaluation is required for optimization.
COMPARISON OF MENTAL HEALTH STATUS BETWEEN MIGRANT CHILDREN AND LOCAL CHILDREN IN GUANGZHOU, CHINA
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Objectives: The purpose of this study was to evaluate the mental health status for migrant children and compared them with local children in Guangzhou city in China. Awareness of the current mental health status of migrant children is essential in development of effective nursing interventions for migrant children in China.

Methods: Using a descriptive cross-sectional design, children (n=1182) aged 11-14 years were recruited from the fifth and sixth grades of primary schools in Guangzhou in China in 2014. The migrant children were mainly from four private schools, and the local children were mainly from four public schools. The Chinese version of the Strengths and Difficulties Questionnaire (SDQ) was used to measure children’s mental health status.

Results: 1) The migrant children’s total difficulties score of SDQ was 11.58±5.33, which was higher than the local children (9.85±5.27). Furthermore, the migrant children got higher scores on the dimensions of emotional problem, hyperactivity and peer problem as compared to the local children (P < 0.001). 2) The female children and those with higher parenting attitudes correspondence have better mental health status.

Conclusion: 1) The mental health status of the migrant children was not as good as the local children. 2) The related factors of the children’s mental health status were gender and parenting attitudes correspondence. A public health effort is required to improve the mental health status of migrant children in China.
THE EVIDENCE OF DISTANCE EFFECTS ON OPIOID HARM REDUCTION DRUG CHOICE IN TAIWAN: A LOGISTIC REGRESSION STUDY
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Objectives: Taoyuan Psychiatric Center is located in the middle of Chungli and Taoyuan District area (radius ≅ 13km). We want to know do opioid dependence patient live outside Chungli and Taoyuan District area prefer buprenorphine to methadone as their harm reduction treatment.

Methods:
Study design:
* The latest follow-up data from office-based patients in addiction Psychiatry department for opioid substitution treatment were collected from 2012.01.01 ~ 2014.12.31. The data was extracted from the Tatung computer system.
* After considering the directed acyclic graph, we decided to include the following variables

Variables description:
* Outcome of interest> Medication: Methadone (0), buprenorphine (1)
* Exposure of interest> farawaytc: Live in Chungli and Taoyuan District area (0), Live outside Chungli and Taoyuan District area (1)
* Urine positive rate: Positive times/ total urine check times
* Gender: Female (0), male (1)
* bzd_use: Taking substitution medication only (0), taking BZD with substitution medication (1)
* Age: Birth year
* farawaytc uri nepositive rate: farawaytc × Urine positive rate
* farawaytc gender: farawaytc × Gender:
* urin epositive rate gender: Urine positive rate × Gender

Model building and model selection
1. Univariate analysis with risk factors
2. Fitting multivariate analysis with no interaction terms
3. Removing insignificant risk factors
4. Test interaction terms
5. Adding significant interaction terms
6. Assessment of model for goodness of fit using H-L

Data analysis

Results: Univariate logistic regression: Model 4 is best

<table>
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<tr>
<th>Model</th>
<th>Parameter</th>
<th>Estimate</th>
<th>SE</th>
<th>95%CI(Woolf)</th>
<th>p-value</th>
<th>OR</th>
<th>Max Log Lik.</th>
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<td>a</td>
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<td>.00</td>
<td>8</td>
<td>0</td>
<td>10</td>
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Results:
Conclusion: Male patients living outside Taoyuan and Zhongli District were more likely to choose buprenorphine compared to the others patients. We also noticed a strong association between methadone use and opioid urine positive rate. These results could have emerged for two main reasons. First, male patients were more likely to be employed compared to female patients. Buprenorphine can be prescription for take-home medication in Taiwan, and patients only needed to come to hospital twice a month. If patients chose methadone, they would need to come to our hospital every day, inconveniencing those male patients who work outside the city. Second, buprenorphine is a partial agonist while methadone, like heroin, is a full agonist. Precipitated withdrawal can occur when buprenorphine (partial antagonist) is administered to a patient still using heroin (full agonist). If urine opioid positive patients use buprenorphine, the medication will cause precipitated withdrawal. Thus, patients with higher positive urine morphine results need to choose methadone.
UNIVERSITY FALLS AMONG PERSONAL ALERT VICTORIA CLIENTS
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Objectives: Personal Alert Victoria (PAV) provides mandatory daily monitoring to clients as well as an immediate emergency response from a central monitoring facility 24 hours a day by pushing a button on a pendant. Recent falls, or being at risk of falls, is a key reason for people to be referred to the PAV service and to activate their personal alarm. This study aims to generate new knowledge about the patterns, risk factors, referral pathways, services accessed and outcomes of PAV clients who experience a fall.

Methods: This mixed-methods study involves three components:
1. A cluster analysis to identify patterns, risk factors, referral pathways, services accessed and outcomes of PAV clients who experience a fall;
2. Interviews with PAV clients about their perceptions and experiences of falls and falls prevention interventions, services and activities including key barriers and enablers to participation;
3. A survey of PAV assessor referral practices and experiences, including their attitudes about PAV clients who benefit the most from referral to falls prevention services.

Results: Preliminary results from Phase 1 and 2 will be presented.

Conclusion: This study will provide an insight into the local problem of falls amongst PAV clients and help to inform the targeting and tailoring of falls prevention activities for these individuals within existing service models. Implications of this research for broader aged care service provision will be discussed.
SOCIOECONOMIC INEQUALITY IN PATIENT OUTCOME AMONG HIP FRACTURE PATIENTS: THE ROLE OF QUALITY OF IN-HOSPITAL CARE

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Objectives: We examined the association between socioeconomic status and 30 day mortality, time to surgery, quality of in-hospital care, length of hospital stay and readmission among elderly patients with hip fracture.

Methods: We performed a nationwide cohort study based on prospectively collected data from the Danish Multidisciplinary Hip Fracture Registry. We identified 25,354 patients ≥65 years who were admitted with a hip fracture from March 1, 2010 to November 30, 2013. Socioeconomic status was reflected by individual-level information on highest attained education, family mean income divided into tertiles of increasing income, cohabiting status and ethnicity. Outcome was 30-day mortality, time to surgery in hours, quality of in-hospital care reflect by receiving seven recommendations from the national clinical guideline on in-hospital hip fracture care, length of hospital stay in days and acute readmission within 30 day after discharge. We performed multilevel regression analysis with data from patients nested within hospitals and units with control for age, gender, type of fracture, type of surgery, time to surgery, Charlson Comorbidity Index score, unit setting and patient volume of the unit. To examine the interrelations among the four different indicators of socioeconomic status we furthermore mutually adjusted for the socioeconomic factors.

Results: The 30-day mortality was 10%, 9.4 % and 7.3 % for patients with ground school, short education and higher education respectively. The associations remained after adjustment for different patient case mix. Hip fracture patients with higher education had an adjusted odds ratio (OR) for 30-day mortality of 0.74 (95 % Confidence interval (CI) (0.63-0.88) compared to patients with only ground school. Increasing family income was also associated with lower 30-day mortality (13.0 % vs. 8.6% when comparing patients with the highest income) corresponding to an adjusted OR of 0.76, 95 % CI (0.68-0.85). Cohabitating status or ethnicity were not associated with 30-day mortality in the adjusted analysis. The associations remained for both education level and high family income in the mutually adjusted analysis. Socioeconomic status did however not appear to influence time to surgery, quality of in-hospital care, length of hospital stay, or readmission within 30 day after discharge. Stratifying according to admission year resulted in identical findings.

Conclusion: Higher education and higher family income was associated with substantially lower 30 day mortality after hip fracture. There were however no socioeconomic differences in time to surgery, quality of in-hospital care, length of hospital stay and acute readmission within 30 day after discharge, which indicate that these factors were not important mediators of the socioeconomic inequalities in mortality.
DEVELOPING A PEDIATRIC PATIENT EXPERIENCE QUESTIONNAIRE, A PILOT STUDY
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Objectives: Patient satisfaction or experience is an important indicator of the patient safety and healthcare quality. A questionnaire is one of the most frequently used methods to obtain patient satisfaction. The existing satisfaction questionnaires are mostly for adults and those specific for pediatric patients are scarce. Most of the decision makings for children in clinical setting rely on their parents or care-givers and the feeling of the pediatric patients are easily overlooked. Previous studies showed that the pediatric patients’ satisfaction could not be represented by the parents’ experience. Therefore, it is essential to develop a measurement from the standpoints of children. However, there were fewer tools designed for children than for the adults, including in Taiwan. The goal of this study is to develop a pediatric patient experience questionnaire for our patients.

Methods: This was a cross-sectional study. We constructed a pediatric patient experience questionnaire through the process of Delphi’s method. We conducted a literature search in PubMed for available questionnaires related to pediatric patient satisfaction or experience to build the item pool. Six questionnaires were identified and included 55 questions. The questions were translated to Chinese and 6 experts and 2 parents were invited to participate in the item selection by the Delphi’s method. They were asked to evaluate the appropriateness and importance of each question and 13 questions were left after 2 rounds of discussion as a result. The answer to each question was rated from 1 to 5 with the aid of face diagrams similar to faces pain rating scale. Overall satisfaction was rated by a 0 to 100 rating, with 100 as the most satisfaction. The pilot test was conducted in 4 pediatric wards which cared patients with the diagnosis of pneumonia or gastroenteritis mainly. This was a convenient sampling and only subjects aged between 7 and 12 years were included. This was a self-administrated questionnaire but the parents were allowed to help. The data was collected before discharge and analyzed by SPSS.18. Step-wise multivariate linear regression was performed by using overall satisfaction rating as the dependent variable and the rating of 13 questions as independent variables.

Results: Fifty-four complete questionnaires were collected. The children were 9.1 years old in average and 46.3% of them were boys. The Cronbach’s Alpha was 0.72 for the 13 questions. The lowest score was “How scared were you before you saw the doctor?” and the highest score was “How would you rate the overall treatment and care you received?”. The overall satisfaction rating was 96.4±6.0 and was no difference between boys and girls (p = 0.23). Those who considered the “treatment results good” and “would like to recommend to a friend” had higher overall satisfaction (p < 0.001 and p = 0.001). Multivariate linear regression showed that the 4 questions were significantly associated with the overall satisfaction, including communication, listening, pain management and recommendation. The adjusted R² for the model was 0.50.

Conclusion: This is the first attempt to develop a pediatric patient experience questionnaire in Taiwan. Thirteen questions were included in the pilot testing. Our results showed that the pediatric patients reported high satisfaction generally, especially among those who were satisfied with treatment results and would like to recommend to their friends. Besides, the questions related to communication, listening and pain management was related to overall satisfaction significantly. Test-retest reliability should be tested and a larger sample size would be required for construct validity analysis.
THE EXPERIENCE OF MANCHESTER MODEL USE ASSOCIATED WITH RISK STRATIFICATION ASSISTANCE IN THE CLASSIFICATION OF THE PATIENT IN HOSPITAL EMERGENCY SERVICE OF SANTA HELENA

R. F. B. Canineu  
R. Kalaf  
R. Restituti  
L. P. Amaral

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Objectives: The Manchester Triage System is a model developed in the UK, applied worldwide, which confers a risk classification for patients seeking care in first aid units, establishing flows and algorithms which separate the patients into color groups according to their medical condition. Santa Helena hospital has developed a system of emergency services care that combines the style of Manchester with a Care Risk classification in order to direct the High Risk patients, even those who are seeking the emergency department for a minor complaint, at a different flow, with medical staff specializing and multidisciplinary support team, thus ensuring a holistic approach of the patient with multiple pathologies.

Methods: The Santa Helena Health Care is a health care provider that has developed their own model of risk stratification in order to calculate the risk of patients. Medical record data is associated with the patient chronic diseases and the healthcare flow. Indicators such as age, gender, current hospitalization, recent hospitalization, long-term hospitalization history, and number of outpatient visits are evaluated.

Through an algorithm based on a scoring system, the score of the population is defined in low-risk, medium-low risk, medium risk and high risk. In the emergency room, patients are directed to screening rooms, where they are screened using the Manchester classification system. In this model, the colors blue and green indicate a call of low priority, with more waiting time, while red, orange and yellow are directed to urgent care.

In our study, patients classified as blue and green colors, but having high risk based on the Santa Helena score are directed to the same flow that patients of the red, orange and yellow. By combining the two models, these patients receive access to a specialist in emergency services, having more assistance time, faster exams resolution and condition resolution.

After discharge from the emergency room they are captured by the tele monitoring service for case management and contact your referring physician.

Results: The study shows that the patient's behavior originally screened as blue and green, but that changes color by the combination of the scores, it becomes similar to patients triaged as most severe for Manchester. The hospitalization rates of high risk patients who changed color was 6.98% while the originally patients of yellow color was 6.53%. Regarding the return to the emergency department within 30 days, patients with color change had a significantly higher rate of return, confirming the finding that these patients are more at risk. This change in patient care flow has allowed a decrease of approximately 30% in the number of re-hospitalizations in the service.

Conclusion: The combination of the Manchester triage system with Santa Helena’s stratification model of Care Risk provides a differentiated service to all patients seeking emergency services, they associate an already well validated rating for acute causes to a targeted rating of chronic diseases increasing thus, the intensity of patient care.

Perfil dos Programas de promoção de saúde e prevenção de riscos e doenças aprovados pela ANS – práticas inovadoras. Resultados do Laboratório de Inovação, 2014.
THE IMPORTANCE OF MANAGING MAINTENANCE OF MEDICAL DEVICES IN THE PROMOTION OF QUALITY IN HEALTH CARE

CASE OF STUDY: UROLOGY AND NEPHROLOGY HOSPITAL - ABDELKADER CHRAYAT-

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Objectives: It is very important to maintain the medical equipments at the safest and the most productive level in a urology and nephrology hospital. Cause the particularity of this kind of specialised institutions resides in to their treatment protocols which usually impose a direct connection between the patient and the medical device. This challenge imposes to hospital managers the obligation of designing effective maintenance management programs to eliminate all kind of failures, affecting the proper functioning of the device.

All these elements pushed us to focus on measuring the efficiency of hospital management maintenance programmes and we took, in this work, the specialized hospital in urology and nephrology - Abdelkader Chrayat- as case of study.

Methods: We analyzed maintenance management using an audit method called the maintenance profile; this method divides the maintenance function into twelve fields namely:

The General organization, Working methods, Technical monitoring, Preventive maintenance agenda, Spare parts management, Material procurement, Organization of the maintenance workshop, Equipments and measuring devices, Technical documentation, Personal training, Control activity, Outsourcing.

The method evaluates every field according to a number of qualitative criteria by applying a questionnaire and semi-structured interviews with the staff of the maintenance department of the public specialized hospital in urology, nephrology - Abdelkader Chrayat-. After that the method consists to rate every field according to a scoring grid, ranging from 0% to 100%.

Results: After applying the audit we found that the indicators of the management maintenance fields in Abdelkader Chrayat Hospital are divided to three main categories, depending on their level of efficiency:

1- The high level indicators category, which concerns the following fields:
   - Technical monitoring 100%, The general organization 90%, Preventive maintenance agenda 90%, Working methods 88%.

2- The intermediate indicators category, which concerns the fields that obtained an average rate, between 50% and 60% of efficiency and it is about:
   - Outsourcing 64%, Control activity 63.33%, Material procurement 60%

3- The low level indicators category, concerns the fields that recorded a rate under 50% of efficiency and it is about:
   - Personal training 46.5%, Equipments and measuring devices 42.5%, Organization of the maintenance workshop 25%
   - Technical documentation 22.5%

Conclusion: Through its objective analytical approach, this audit method allowed the managers of Abdelkader Chrayat Hospital to perceive both of the strengths and the weaknesses of their maintenance management program, particularly the indicators who belong to the third category, which reflects a big delay in terms of potential fields such as recycling the maintenance staff knowledge, measuring devices and technical documentation.

These delays are causing many operational and routine difficulties for the maintenance staff, and are in the urgent need to be improved, in order to:

1-Guarantee a better quality of health care.
2-Ensure the safety of patients.
3-facilitate the medical staff working.
THE USE OF QUALITY IMPROVEMENT STRATEGIES TO IMPROVE PARTOGRAPH UTILISATION AT LAGOS STATE HEALTH FACILITIES: A LONGITUDINAL STUDY

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Objectives: What is the effectiveness of quality improvement (QI) methods in increasing the correct use of partograph at Lagos state hospitals?

The use of partograph for labour monitoring cannot be overemphasized, especially in developing countries where partograph has been shown to improve maternal and neonatal health outcomes. [1, 2] Furthermore, studies have shown that the use of quality improvement methods in health settings improves processes and quality of care worldwide. [3] The study aims to compare the process of using partographs adequately in the monitoring of labour before and after the implementation of partograph-specific quality improvement efforts.

Methods: This is a prospective longitudinal study conducted over 2 months comprising of a total of 8 health facilities in Lagos State, Nigeria. These participating facilities comprise of 7 private hospitals and 1 primary health centre that provide maternal and child health services.

Facilities eligible for the study include those already participating in the ongoing Nigeria Healthcare Quality Improvement Initiative (NHQI). The quality improvement teams at these facilities under guidance of QI mentors chose to partake in this study after analysis of their facility data and processes, which showed the need for improvement in the area of partograph use.

The Model for Improvement was used as the framework to drive the changes to be implemented using the Plan-Do-Study-Act cycle. The quality improvement interventions (change ideas) to be implemented include training relevant staff on the use of the World Health Organisation (WHO) modified partograph [4] using videos and facilitators, and weekly audits of partographs for adherence to quality by utilising the NHQI partograph scoring tool.

The primary outcome measure was partograph adherence defined by the percentage of partographs correctly used. Baseline data for the previous 3 months was collected retrospectively, after which implementation began. Assigned members of the facility QI teams collected relevant data weekly and this was vetted, collated and analysed at the end of the study by the NHQI data analysts using Microsoft Excel®.

Results: The 8 facilities illustrate how implementing QI methodologies led to improving partograph adherence starting with a cumulative baseline of 15.9% and at the end of the study recorded 66.8% adherence. All 8 facilities (100%) showed an increase in partograph adherence and training of relevant staff was a common strategy employed by all the facilities.

Conclusion: Findings suggest that application of QI in health facilities in Lagos state can improve partograph utilization with training of relevant staff being an effective intervention. Next steps will be to continue QI mentorship to ensure gains are sustained. We envisage better health outcomes and enhanced patient safety following improved partograph adherence at these facilities.

PROMOTION OF NATIONAL COLORECTAL CANCER SCREENING HEALTH POLICY BY CLINICAL MEDICAL TECHNOLOGIST
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Objectives: In Taiwan, cancer diseases are the top one leading cause of death. Colorectal cancer ranked the third among all cancer mortality. Early detection and treatment can significantly reduce mortality, and medical expenses. Regular fecal occult blood screening is an early detection strategy of colorectal cancer. This study reported clinical medical technologists (CMT) use a variety of health education strategies to improve the screening rate and promote the national preventive policy of colorectal cancer.

Methods: There are 41,078 people receiving colorectal cancer screening between 2010 and 2014 in Show Chwan Memorial Hospital. A group of CMTs were trained to do quantitative Immunochemical Fecal occult blood test (KYOWA) for colorectal cancer screening, and encouraged to use colonoscopy as a follow-up confirmation. Statistical analysis of the positive screening cases with and without the follow-up confirmation was performed.

Results: Fecal occult blood screening data showed that a total of 41,078 (50 to 69 years) participants received fecal occult blood screening test. There were 4,909 cases (12.0%) were positive for occult blood reaction. 2,377 positive cases (48%) received colonoscopy, but the other 2,532 (52%) did not receive further colonoscopy. Of the 2,377 subjects with colonoscopy, 64 (1.3%) normal, 843 (17.2%) hemorrhoids, 19 (0.4%) ulcerative colitis, 1,271 (25.9%) polyps, 87 (1.8%) colon cancer, and others 93 (1.9%).

Conclusion: There were 2,532 (52%) subjects with positive occult blood did not receive further confirmation. Obviously we still have a lot of space to improve early detection of colon cancers. Ministry of Health and Welfare confirmed the colorectal cancer screening is an effective screening of colorectal cancer. Clinical medical technologists should use outpatient health education, community health education, and telephone surveillance to improve screening rates for early diagnosis and treatment of colon cancers and enhance the diagnosis rate of 63%.
THE EFFECT OF AVAILABLE RESOURCES DISTRIBUTION ON THE ACCESS TO PUBLIC HOSPITAL SERVICES IN ALGERIA
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Objectives: The optimal use of available resources in the health sector is the first way toward improving quality of hospital services. In the first phase, we have tried to demonstrate that the overall standards for the hospitals performance calculate don’t reflect the real level of the health services provided. In this second phase, we will try to find differences in the resources distribution of between hospitals, which may adversely affect the access to hospital services in Algeria.

Methods: In the beginning, we are trying to read through the data provided in the 3 annual activity reports (made in the period 2008-2015) of two public hospital institutions (H₁ -H₂), of the same size and disciplines (technical 120 beds), and then rely on the classified performance standards to input, processes and outcomes, we compare these results in order To extract imbalances and differences.

Results:
Input indicators
-The number of doctors in two hospitals compared to the actual number of beds has not increased from one doctor for every three beds. Compared to 4 beds per doctor,according to the recommended scale globally.
-The number of nurses compared to the bed, it was constant, in H₁, beyond one nurse per bed, while in H₂ there is improvement in the number of nurses, as well as proportionality did not exceed the applicable universally
-The number of pharmacists was exaggerated, in H₁ pharmacist for every 31 beds, while the H₂ pharmacist for every 58 beds. Knowing that 100 beds each pharmacist is considered sufficient by the global standard.

processes
-The average length of stay: In H₁ not exceed 4 days, but in the H₂ has exceeded 5 days in the period studied. But they did not go beyond the limits of 7 days.
-Bed occupancy rate: H₁ used only 45% of the beds capacity, H₂ did not exceed 60% at best.
-Bed turnover rate: 65 times in H₁ considered a record as the global standard, but H₂ did not exceed 43 per year.

Outcomes
-The overall rate of death in the hospital H₁ did not exceed 2%, and 1% in H₂.
-Deaths after the operation is considered high in H₁ reached 3%, compared to 1% as the level of a world.
-Maternal mortality: there have been no deaths in three years in both hospitals.
-Child mortality at birth: Fluctuations in mortality need explanations, especially as they go beyond the global level of 2%.

Conclusion: Several irregularities and imbalances have been found through the analytical reading of the data and results, the most important imbalance between the resources available to hospitals and between medical services within it (EX: imbalance in the proportion between the actual number of bed and human resources) so we had:
-Management by objectives
-Develop flexible mechanisms for the distribution of available resources
-Measuring the performance of each single parts of the hospital
TEST INTRODUCING IDEA OF JOINT GOVT AND NON-GOVT COLLABORATION FOR COORDINATING QUALITY OF CARE ACTIVITIES IN A DEVELOPING COUNTRY

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Objectives: - To outline the critical steps of involving the DPs/NGOs for supporting the quality of care activities and the outcome of the process
- To identify the opportunities and challenges for improvement of the qi functioning at different tiers through coordination from DPs and NGOs

Methods: Quality Improvement Secretariat team conducted an in-house consultation to plan for the nationwide mapping of DPs and NGOs at district and upazila level. The team designed a mapping template for collecting information from different DPs and NGOs. These filled-in templates were analyzed to find out the intervening districts and upazilas and its staffing pattern. The team then consulted with each organization to find out their willingness for support in coordinating the quality of care initiatives taken by the government. During this advocacy meeting, the detailed terms of references expected from the DPs/NGOs were discussed. After the consensus from the national level, the team conducted divisional advocacy meeting where they talked with the local DPs/NGOs staffs to explore the real context and feasibility of facilitating the QI activities.

Results: There was a challenging context to include the DPs and the NGOs. The initial response varied for different organizations. The screening found that the following DPs work at 64 different districts in Bangladesh.

<table>
<thead>
<tr>
<th>Organizations</th>
<th>Distribution of districts within division</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dhaka</td>
</tr>
<tr>
<td>UNFPA</td>
<td>0</td>
</tr>
<tr>
<td>WHO</td>
<td>10</td>
</tr>
<tr>
<td>BRAC</td>
<td>6</td>
</tr>
<tr>
<td>UNICEF</td>
<td>5</td>
</tr>
<tr>
<td>ENG</td>
<td>1</td>
</tr>
<tr>
<td>BIRDEM</td>
<td>14</td>
</tr>
<tr>
<td>SAVE</td>
<td>2</td>
</tr>
<tr>
<td>Marie Stopes</td>
<td>6</td>
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</tbody>
</table>

It was found that in the screening process that the DPs and the NGOs work through different projects and the projects have varied duration. It was important to target the projects that have longer duration so that the coordination mechanism for QI initiatives can sustain for a considerable length of time. Moreover, the category of staffs were an important indicator for selecting the project as the staffs are the key persons to be involved in the quality improvement process in this Go-NGO collaboration process. There were varied opinion revealed from project implementers during the one to one advocacy meetings. The advocacy with the field personnel from different organization found more enthusiastic response. But most agreed on the feasibility in terms of activating different quality improvement committees within government set up. It was found that most of these staffs are already collaborating with the government mechanism. There will not be much additional tasks on them as it's within their regular communication process.

Conclusion: The study reveals positive attitude of the non-government organizations as well as the development partners for collaborating with QI initiatives of the government mechanism. Without much extra resource allocation, this collaboration approach will help to facilitate the QI process that he Bangladesh government has recently initiated.
THE DEVELOPMENT OF THE LIBYAN HEALTH SYSTEM TO IMPROVE THE QUALITY OF THE HEALTH SERVICES

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Objectives: The overall aim and intended outcomes of this study were: to provide a foundation for the development of a framework and evidence-base, based upon the perspectives of healthcare stakeholders; to inform policy-makers and healthcare providers in devising and developing policies and strategies to re-engineer/reform the HS at the national level; and to introduce and/or improve quality initiatives at the health facility level.

Methods: A concurrent mixed-methods approach was used: the quantitative method to identify patients’ perspectives on the quality of hospital care, and the qualitative method for exploring health stakeholders’ perceptions of the HS and the quality of healthcare. A specifically designed questionnaire was used to collect the quantitative data from 550 patients in public and private hospitals in Benghazi. The qualitative data was collected via semi-structured interviews with 40 individuals, 10 health experts and officials, 20 health professionals, and 10 hospital inpatients in Benghazi City. The quantitative data was analysed using descriptive inferential statistics and multivariate analysis. The transcripts of the qualitative data were analysed manually using the framework approach and thematic analysis.

Results: The quantitative findings suggest that the majority of the respondents experienced lengthening waiting times to access healthcare. Furthermore, the results reflect the large number of respondents who have travelled for treatment abroad (43.1%). The analysis revealed that patients were dissatisfied with many aspects of care provision in hospitals. The overall quality score of hospital care was generally low (50.16%); the scores for the private hospitals were higher (52.82%), while public hospitals scored 49.02%. The Regression model was highly significant and explained 92% of the variation in satisfaction. The qualitative findings pointed to broad areas of obstacles and problems which affect the provision of high-quality and efficient healthcare, while the people’s choices about health services were influenced by the HS’s responsiveness. The findings demonstrated various constraints in equity, accessibility, availability, waiting times and the referral system, which all lead to poor responsiveness to patients’ needs. They also showed that the HS has misused its power and squandered its potential, as it is poorly structured, inefficiently organised and badly led. Broad areas of difficulties emerged regarding the HS’s governance, the HS’s financing and human and physical resources. Furthermore, cultural aspects and health awareness negatively affect the quality of the provision of healthcare.

Conclusion: The overall conclusion of this study is that the modern approaches and advances of the technical side of the Libyan HS have not been matched by developments in HS governance and managerial processes; beneath the surface, there lies a less developed HS of paternalism and bureaucracy. This unique situation produces a number of questions which require answers in order for Libya to evolve into the role of the twenty-first century country that the government and population desire. This study offers a dynamic model based on the findings, which gives a comprehensive view of a high-quality HS, incorporating its main components, structure, activities, and outcomes as well as the HS’s internal and external environmental factors, with an increase in the scope and participation of people and communities. Due to the convergence and similarities between HSs and their components, this model can be widely utilised, especially in developing countries.
“GOD HAS NO HANDS BUT OURS”: WHY FAITH-BASED ORGANISATIONS DELIVER QUALITY CARE IN PAPUA NEW GUINEA

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Objectives: The main objective of this study was to understand factors that influence the delivery of quality care by faith-based organisations (FBOs) in the resource-poor, developing country setting of Papua New Guinea (PNG). PNG is a developing country in the South Pacific with low levels of access to primary health and education, with approximately 85% of the population living on subsistence farming in rural and hard-to-reach geographic locations.

Methods: An ethnographic study took place from September 2011 to March 2012 with one FBO in an urban setting in the National Capital District, and another in a rural setting in the Southern Highlands Province. Christian churches, through their affiliated FBOs currently provide more than half of healthcare services in the country. FBOs are more preferred and trusted by patients and funding partners, as they are perceived as less-corrupt, more efficient compared to government-run organisations. Data comprised participant observation (with notes taken) and 48 in-depth interviews with healthcare workers to examine the role that religion and faith play in their healthcare practices. Data were recorded, transcribed and thematically analysed using NVivo, a qualitative data analysis software package.

Results: (1) Faith as a key value to committed service provision: Faith underscores motivation and commitment to healthcare services, with healthcare workers in FBOs medically-trained professionals who are, at the same time, religiously devout. They suggest that their medical work is the practice of pastoral theology - as Christians, their responsibility to care for the wellbeing of others is an act of faith. Working for an FBO was a “calling to act on behalf of God” and “following the footsteps of Christ”. Healthcare workers were willing to hike on foot for between 3 to 6 hours a day to conduct mobile clinics and deliver medication to remote and hard to reach communities. The commitment to work in resource-poor settings with limited incentives is motivated by their religious devotion.

(2) A Christian approach to holistic health: Suggests physical and spiritual wellbeing are inseparable concepts. For healthcare workers in FBOs, enabling patients to have both healthy bodies and minds is an important way to deliver the Gospel. The faith-based clinic becomes a religious space for physical and spiritual salvation, where the display of religious relics and paraphernalia in a modern medical setting is an accepted norm, and highly valued by both healthcare workers and patients.

(3) Faith-based healthcare as cultural competence: Almost all Papua New Guineans identify as Christian, and religion underscores beliefs about illness and healing. As a way to support the religious cultural beliefs of patients and themselves, healthcare workers would at times pray over medication before giving it out, and pray with patients after a traumatic diagnosis. A faith-based response to health provides a culturally competent and patient-centred service in PNG.

Conclusion: Faith can be a core value in shaping a strong organisational culture of care and motivating professional commitment, as seen in this example from PNG. In addition, high quality care and cultural competence can be perceived, in faith-based healthcare, to generate strong community trust and support. This study highlights the central role of organisational mission and core values in influencing service delivery. It has an important implication for understanding the role of religious culture in quality healthcare in a developing country setting.

APPLYING QUALITY IMPROVEMENT TO INTEGRATE NUTRITION ASSESSMENT, COUNSELLING AND SUPPORT (NACS) SERVICES AT HIV CLINICS IN ZAMBIA
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Objectives: To support integration of NACS into facility-based ART, prevention of mother-to-child transmission (PMTCT), and maternal and child health (MCH) services using quality improvement.
To strengthen the capacities of district health managers and healthcare providers to apply improvement skills at both district and facility levels.

Methods: In 2014, the USAID ASSIST Project in collaboration with two other USAID-funded projects, Food and Nutrition Technical Assistance (FANTA III) and Livelihoods and Food Security Technical Assistance (LIFT II), began supporting the Government of Zambia to pilot NACS activities in Kitwe District. ASSIST began work in eight demonstration sites to strengthen nutrition services to PLHIV using quality improvement (QI) principles. The selected sites met two criteria: they provided HIV services including antiretroviral therapy (ART), and they had received training in NACS from FANTA III. ASSIST provided a two-day QI training to healthcare providers from the eight facilities. After the training, ASSIST began twice-monthly coaching visits to support facility-based improvement teams and then convened learning sessions every quarter to share progress and learning. Teams applied improvement by testing small, specific interventions designed to increase the percentage of patients being assessed and categorized for nutritional status. Teams measured improvement by tracking performance indicators relevant to the change they were trying to effect.

Results: In the first year of improvement activities, the teams were able to improve assessment and categorization of patients’ nutrition status from 0% to 100% or close to it. Through this process, the facilities were able to identify moderately or severely malnourished patients who were previously being missed (up to 22% of all patients being assessed) and were able to provide nutrition counselling and therapeutic foods to manage their malnutrition. Between August 2014 and September 2015, up to 243 clients a month were identified as malnourished and placed on high-energy protein supplements; before the intervention, malnourished clients were not being identified or treated.

Conclusion: In April 2015, teams met at the third learning session and determined that they had largely achieved their first aim of increasing assessment and categorization of patient nutrition status. They then moved to focus on two new improvement aims: 1) to improve documentation of patient nutrition data and 2) to improve clinical progress and health outcomes of malnourished patients. Presently, the NACS activity is being spread to 18 more sites within Kitwe and to five sites in a second district, Mkushi.
At ISQua, we will present results from Kitwe and Mkushi and describe effective changes tested that resulted in improvement. We will also describe our expanding nutrition work in Kitwe to increase engagement, adherence, and retention of PLHIV using the NACS platform and a self-management approach to counselling.
HEALTH SERVICE PERFORMANCE INDICATORS AND AGREEMENTS IN QATAR; DELINEATE CHALLENGES AND ENHANCE HEALTH SYSTEM PERFORMANCE INITIATIVE

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Objectives: The Ministry of Public Health (MOPH) of Qatar conducted a situational analysis for healthcare organizations. Gaps were identified in the current systems of information, reporting, and accountability for quality and safety. A lack of standardized Key Performance Indicators (KPIs) was also identified. Health Service Performance Agreements (HSPAs) are performance-based contracts that mediate the relationship between the regulator (MOPH) and healthcare service providers based on an agreed set of KPIs. HSPAs contribute to the improvement of healthcare services, monitor and measure the overall performance, and strengthen transparency in the health system. This helps achieve the ultimate outcome of enhanced health status for the population of Qatar.

The project consists of multiple phases: engagement of stakeholders phase; selection of dimensions and KPIs phase; pilot phase; grace period phase; and actual implementation phase. Pilot Phase aimed to assess the feasibility, reliability, and validity of the selected KPIs in order to refine them to better fit the context of healthcare organizations in Qatar. The objectives of the pilot evaluation are 1) assess each KPI and its associated methodology including its feasibility, reliability, and validity of the selected KPIs in order to refine them to better fit the context of healthcare organizations in Qatar.

Methods: Literature review was conducted to identify possible KPIs that could potentially be used to monitor quality. A Steering Committee was formed to engage stakeholders. A shortlist of KPIs was developed using Delphi Technique through two consensus surveys administered to the members of the Steering Committee. The Delphi process identified KPIs to be piloted: 35 KPIs for public and private hospitals, and 25 KPIs for Primary Health Care (PHC). At the end of the three-month pilot phase providers completed a pilot evaluation questionnaire. Fourteen questions assessed the feasibility, reliability, and validity of KPIs using a 3-point Likert-scale, based on data availability, for 1 question, and a 5-point Likert-scale, based on level of agreement, for 13 questions. The questionnaire also included 12 open questions on data sources, barriers to data collection, missing information, incurred costs and time for data collection, consistency of data sources and interpretation of data elements, as well as examples on improvement and suggested changes to KPIs.

Results: Qualitative and quantitative analysis were conducted at the end of the pilot. This analysis identified 25 KPIs for public and private hospitals, and 15 KPIs for PHC that could be used to effectively monitor and evaluate health service performance.

Policy dialogue meetings were convened with key stakeholders including MOPH and healthcare providers. These meetings were used to share and discuss results on KPIs and the performance assessment report; highlight areas for improvement and finalize the regulatory, monitoring and evaluation framework for HSPAs. The final structure and content of the HSPAs were agreed at the policy dialogue meetings for subsequent scale-up in Qatar.

The agreed KPIs have been tested during a one-year grace period. The results from the grace period are being analyzed further, prior to the actual implementation phase.

Conclusion: The pilot phase period was an effective strategy for assessing and selecting KPIs in order to assess the performance against anonymous peers. The agreed KPIs allow comparison of performance with regional and international benchmarks.

The pilot phase helped identify challenges in data collection and reporting, and allowed providers to work collaboratively with MOPH to overcome challenges and identify opportunities for improvement.
NEWBORN HEARING SCREENING PROGRAM IN A UNIVERSITY HOSPITAL

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Objectives: Present the results obtained from the Universal Newborn Hearing Screening (TANU) ambulatory program and the birthing room of the University Hospital of Brasilia after 1 year of implementation.

Methods: The analysis is comprised of a retrospective study of the medical records of 2,332 newborn babies relative to the Otoacoustic Evoked Emissions performed in HUB between January and December of 2015. It was analysed the total of examinations performed, number of retests, child’s age at the performance of the examination, indexes of risks related to hearing impairment, as well as requests for Hearing Health and/or Cochlear Implant.

Results: The Universal Newborn Hearing Screening (TANU) is fundamental to the precocious diagnosis of hearing loss. In Brazil, the federal law 12.303 guarantees the performance of the examination in all hospitals and birthing rooms. The TANU program was universally implemented in the University Hospital of Brasília (HUB) in 2014. The service is functioning uninterruptedly and the patients born in HUB have the examination performed before the medical discharge, which guarantees greater scope and better quality of life to the patient, which will not need to schedule the examination after the medical discharge. In addition to the examinations performed in the birthing room, there also exists the ambulatory service that offers support to children born in other public hospitals that lack the technology to perform the examination. In 2015, 2,332 examinations were performed, being 2,188 tests and 144 retests. The failure index of the hearing screening has been of 8%, of which 5,8% have been sent to the services of Hearing Health or Cochlear Implant. Of the total examinations performed, 74,7% have been on children till 30 days of age, 20% on children between 30 and 90 days of age and 5,2% on children older than 90 days. Of the total children born in HUB, 100% had the test performed before the 30 days of age, because the service is offered in the birthing room before the medical discharge. The indexes of risks related to hearing impairment that appeared most frequently were, respectively, premature labour, use of ototoxics and permanence in ITU.

Conclusion: The Newborn Hearing Screening service is an efficient program that is able to detect precociously individuals with hearing loss and send them to hearing rehabilitation services.
PROVIDING HEALTHY AND QUALITY MEDICAL TRAINING - A CASE STUDY OF TAIWAN INTERNATIONAL HEALTHCARE TRAINING CENTER IMPLEMENT IN MONGOLIAN MEDICAL IMPROVEMENT

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1Taiwan International Healthcare Training Center, New Taipei City, Taiwan

Objectives: Taiwan International Healthcare Training Center (TIHTC) is a professional training center established by Ministry of Health and Welfare in 2002. The core of TIHTC is to raise the public health and healthcare quality of developing countries by providing healthcare training and international medical support and service. Until now, TIHTC has trained 1110 health care personals from 53 countries. TIHTC persists in providing assistance to developing countries, especially Mongolia. Mongolia is one of the developing countries which need excessive medical supporting, such as professional doctors and modern equipment. The phenomenon is much more obvious and urgent especially in rural and remote provinces.

Methods: To achieve our goal, TIHTC has been launching many plans.
1. Cardiovascular Center Project: Started in 2007, with the collaboration with Luxembourg and Mongolia government. It's to improve the quality of diagnosis and medical care for the cardiovascular disease patients, and decrease the number of unnecessary medical referrals to avoid waste of cost. TIHTC provides project involved Mongolian doctors to Taiwan to get the edging techniques and cardiovascular knowledges in Taiwan. Our instructors would introduce the procedure about inquiry and management. We also take care of their daily lives in Taiwan. To maximize the effectiveness, we strictly selected candidates and customized the training courses. So far, we received 51 trainees through this project. To grow more seeded doctors, TIHTC held an emergency care management program with Shastin Central Hospital, MOH. We dispatched medical team to Mongolia and instructed 33 cardiologists. All doctors who received the ACLS training course passed the exam and received the certificate. They successfully rescued 2 patients suffering from irregular heartbeat by the skills they learnt.
2. Medical Equipment Donation: TIHTC cooperated with GMISS in medical equipment donation to assist Mongolian hospitals replace their old equipment gradually.
3. Training Course: TIHTC noticed healthcare management plays an important role in the promotion of healthcare environment. TIHTC designed Public Health Course to assist Mongolia in building a sound medical system, and drawing up the policy of health promotion. The course involved health promotion, cancer screening, prevention of chronic disease, and Hospice care. 25 medical officials from MOH, Mongolia participated in this training course, and 85% participants thought the course was helpful.

Results: 1. Upper Level of Medical Staff: According to the report of Shastin Central Hospital, "Professional knowledge and skills of the cardiology surgical staff have been improved by various international and domestic trainings under cooperation with partner institutions including TIHTC." It proves that TIHTC can bring doctors to a higher level. The prevalence of mortality is also decreasing from 40.2%(2003) to 34.3%(2014).
2. More Capacities: From 2012 to 2015, the total number of Echocardiography examination case has been increasing from 6050 cases to 10270. The utilization of Holter grew up from 123 cases to 220 during 2012 to 2015. In 2014, they added the examination of stress ECG, the cases were 90 while in 2015 it grew to 250.

Conclusion: Just like to proverb “teaching a man to fish and you will feed him for life”, through TIHTC the trainees could experience an unforgettable learning experience and put into practice after accomplished the training course. However, we know we can do more. In this year, TIHTC will build hemodialysis center in remote areas. We hope we can share love and give practical assistance to those who need help around the world in the future.

References: Cardiovascular Center, MCH and eHealth Expansion, MON/005 Project
THE RELATIONSHIPS BETWEEN SOCIO-ECONOMIC STATUS(SES) AND CHILD-REARING FEELINGS AMONG MOTHERS WITH INFANTS IN JAPAN

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Objectives: The mothers’ feeling towards child-rearing is one of the most important factors that affect child abuse and neglect. Currently in Japan, hardly any knowledge about the association between child-rearing feeling and SES exists. Therefore, this study investigate the association between the 16 SES measures and child-rearing feelings including child care burden, anxiety and affirmation among mothers with infants.

Methods: Subjects: All mothers (n=2464) with children 1-3 years of age living A-ku (103,329 residents), Osaka, the second largest city in Japan.

Methods: An anonymised self-administered questionnaire survey was carried out in October 2011. 16 items measured SES such as household income, education, income support child rearing allowance, etc. Child-rearing feelings were examined each three factors and five lower scales.

1. Childrearing burden: 1. burden from restriction 2. Burden from children’s behavior
3. Childrearing affirmation

The association between the 16 socioeconomic factors and average points for child-rearing feelings were analysed using independent-test, one-way ANOVA (Turkey HSD test).

Results: The response rate was 47.9%.

For childrearing burden, full-time housewife are feeling more burden from restriction compared to both blue and white colored mothers. On the other hand, burden from children’s behavior has no significant relationship between picked up SES indicators.

For each two lower scales for child anxiety, more margin in money, anxiety grows higher, although, middle class of hierarchy sense of belongs has most anxiety showing U shaped result.

Childrearing affirmation has no significant relationship between picked up SES indicators.

Conclusion: Result from relationship between burden from childrearing restriction and SES conjecture actual time used for childrearing enhance burden from childrearing restriction. Also, result gave possibility of SES do not affect burden from children’s behavior and child affirmation
A 15-YEAR EXPERIENCE OF THE ORAL CARE CENTER FOR INHERITED DISEASES, UNIVERSITY HOSPITAL OF BRASILIA, BRAZIL

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Objectives: To report the experience of the Oral Care Center inclusion in a multiprofessional approach of patients with rare diseases and oral malformations.

Methods: Since 2001, the Oral Health Unit of the University Hospital of Brasilia (HUB) created a reference center for the evaluation, dental treatment, and follow-up of patients with diagnosis or suspect of any multi-organ disease with oro-dental manifestations. Patients followed by the clinics of Pediatrics, Endocrinology, Genetics, Nephrology and Gastroenterology, have been referred for oral exams and diagnosis. On the other hand, patients first examined by the dentists with any undiagnosed oral manifestation have also been referred to other Clinics to exclude systemic diseases. All the treatment is under the SUS coverage (Unified Health System) and includes free and accessible basic, specialized, and high complexity interventions. Thus, patients followed in other health centers or private clinics have also been referred for evaluation.

Results: Oro-dental anomalies can be an isolated trait but is also commonly associated with other rare diseases. In 15 years of experience, at about 1000 patients with different diagnosis have been evaluated and treated. Amelogenesis Imperfecta, Dentinogenesis Imperfecta type II and Hypodontia comprises the most common cases of dental anomalies without the involvement of other organs. Cases of Enamel-Renal syndrome, Raine’s syndrome, calcium and phosphate homeostasis dysfunction could be diagnosed due to the dental phenotype description. Besides, the dental phenotype was useful to confirm the diagnosis of other syndromes such as Cleidocranial Dysplasia, Beckwith-Wiedemann syndrome, and Gorlin–Goltz syndrome. To date, at about 100 patients affected with Osteogenesis Imperfecta have been included in a continuous care program. At about 50% of the patients present Dentinogenesis Imperfecta Type I and malocclusion and they have received preventive and interceptive orthodontic treatment and prosthetic rehabilitation. Moreover, tooth caries decay and tooth fractures have declined in this group. Other patients have been followed-up according to the caries-risk or their needs. The oral phenotypic characterization has also yielded important data to upgrade the clinical synopsis of many rare diseases.

Conclusion: The multi-professional approach is essential to improve the diagnosis of patients with rare diseases. As the oral exam has not been routinely included in the clinical medical exam, many dental features have been neglected. An accurate oral exam can provide important data for the better characterization of many diseases phenotype, and is also important to improve the patients’ life quality when the problems are early diagnosed.
IMPROVING COMPLIANCE OF COMPREHENSIVE EMERGENCY OBSTETRIC AND NEWBORN CARE (CEMONC) IN HOSPITAL BY EXTERNAL MONITORING AND EVALUATING

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Objectives: Comprehensive emergency obstetric and newborn care (CEmONC) in hospital is a credential from Indonesian Health Minister’s decision No. 1051 of 2008 to decrease the mortality of mother and newborn baby. In NTT Provience, almost all regional public hospitals have not been capable yet to provide 24 hours CEmONC as standardized. This study was to improve compliance with standardized 24 hours CEmONC in hospital through monitoring and evaluating (Monev)

Methods: CEmONC Monev is applied every 3-6 months in 11 NTT’s regional public hospital as the participant of sister hospital program during 2010-2015. Monev was carried out by external agencies consisting of obstetric and gynecology organization and pediatrician organizations. The instrument is derived from each professional organization, which are consist of standard input (hand-washing area, resuscitation and stabilization area, delivery room, intensive care for eclampsia, operating room, special care unit for neonatal, NICU unit, nursery area, and incubator sterilizing), standard process (the implementation of clinical guide, medical recording, human resources management, quality management, and maintenance management), and clinical output, especially in the mother and neonatal mortality number.

Results: External CEmONC Monev is succeeded in increasing the compliance standard input and the process of emergency obstetric care and also the emergency neonatal care in almost the entire 11 regional public hospitals. The mean of standard compliance was 40% in 2010, improved to 68% in 2015. In general, external Monev is more effective in enhancing the process of standard compliance, particularly in process of clinical services however, external Monev is quite ineffective for human resources process. The best standard input compliance is occurred in artificial respiration (resutasi) and stabilization however, it is quite ineffective in hand-washing area. The output improvement mainly occurs in decreased mother mortality but not quite effective to decrease the baby mortality number.

Conclusion: External Monev helps the hospital management and public health office to obtain the fact in the field and make it as a material in taking decision to improvisation. Monev methodology uses the third party also helps to overcome the limited human resources and public health office competence in implementing the application of monitoring and evaluating. However, the triumph in standard compliance is not only by Monev activities, but also the other activities such as sister hospital program is also contributed. External Monev CEmONC in hospital can ensure the availability of services that are needed by the patients by emergency obstetric or neo-natal in every time so that there is prevention of mortality by the factor of tardiness. It is suggested that public health office can implement the monev system for every region.