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ISQUA17-3274
PATIENT AND PUBLIC INVOLVEMENT IN JAPANESE CLINICAL PRACTICE GUIDELINE DEVELOPMENT

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Objectives: Evidence-based medicine promoting project managed by Japan Council for Quality Health Care (JQ) aims to improve the quality of healthcare by disseminating the use of clinical practice guideline (CPGs) to medical setting. In 2011, Institute of Medicine (IOM) published “Standards for Developing Trustworthy Clinical Practice Guidelines” in Clinical Practice Guidelines We Can Trust. The standards proposes patient and public involvement (PPI) in CPGs development process is equally important as the management of conflict of interest (COI) and integrating the body of evidence by systematic review. Although the social concern with PPI has been growing for the last several years, guideline development group (GDG) faces many challenges for PPI. In this study, we identified the trend and current situation of PPI in CPGs development.

Methods: CPGs (n = 441) published between 2011 and 2016 were evaluated by the CPG evaluation group using the Appraisal of Guidelines for Research & Evaluation II Instrument (AGREE II) and AGREE Reporting Checklist. Firstly, each reviewer evaluated CPGs independently, and after that, the face-to-face consensus meeting was conducted. Secondly, each reviewer reappraised CPGs independently based on the consensus meeting discussion. Finally, we summarized the secondary evaluation results and made out evaluation reports. AGREE II is composed of six domains including 23 items and overall assessment. In this study, we focused on the following scores;

- Domain 2-Stakeholder Involvement (items 4–6)
  - Item 4: The guideline development group includes individuals from all relevant professional groups
  - Item 5: The views and preferences of the target population (patients, public, etc.) have been sought
  - Item 6: The target users of the guideline are clearly defined
  - Domain 5-Applicability (items 18–21)
  - Item 19: The guideline provides advice and/or tools on how the recommendations can be put into practice.

In addition to above scoring points of AGREE II, we examined whether GDG developed plain language version of CPGs.

Results: Among the AGREE II domains, the mean scores of Stakeholder Involvement by publication date were as follows: CPGs published in 2011, 46% (n = 78); CPGs published in 2012, 40% (n = 76); CPGs published in 2013, 47% (n = 80); CPGs published in 2014, 46% (n = 92); CPGs published in 2015, 52% (n = 78); and CPGs published in 2016, 56% (n = 37). The mean score of the item 5 was 2.6 point (range1-7), which meant the lowest score among all of the AGREE II items. Of evaluated CPGs, 32 (32/441 = 7.1%) CPGs had a score of 5 point and above in the item 5 of Stakeholder Involvement domain. In these high-scoring CPGs, the mean score of Item 19 was 5.0 point and the most common disease category was cancer (7/32 = 21.8%). 8 CPGs published plain language version of CPGs (8/32 = 25%). Of high-scoring CPGs, all of the CPGs published in 2016 performed PPI in development process.

Conclusion: This study indicates that PPI in Japanese CPGs has progressed during the past two years. Further study on CPGs development process would clarify the barriers and facilitators for PPI in Japanese CPGs.

References

ISQUA17-3306
LITERACY ON PATIENT HEALTH CARE RIGHTS

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Objectives: Literacy on patient health care rights can be defined as a person’s knowledge and ability to understand his bill of rights and the ability to take decisions concerning health care. Increased awareness on patients’ rights promotes responsible behaviours within health systems, provides greater potential for improving health and favours a better use of health care.

There is a considerable body of literature on health literacy. Under a broad framework of the concept of literacy, the European Health Literacy Survey emerged as the first project that provides population data on health literacy at the European Union level. However, there is a lack of empirical evidence on the level of literacy on patient health care rights.

The assessment of literacy on patient rights is of major relevance in patient centred health care systems, with focus on patient empowerment. Moreover, the fostering of literacy can be an effective way to tackle information asymmetries in health care, stimulating shared decisions between health professionals and patients.

Therefore, the main objective of this study is to assess the level of literacy on patient rights, considering both patients and healthcare workers views. To achieve this aim, we administered a questionnaire that covers a comprehensive set of patient rights which are set forth by Portuguese law, namely Law 15/2014 of March 21. We evaluate the literacy level regarding rights to general access to health care, access to dental care, informed consent, living will, personal data protection, information available to health care providers, religious assistance, patient complaints, patient accompaniment and maximum waiting times for health care.

Methods: In what concerns patients, data was collected through face-to-face interviews, in registered health care providers all over the country, for one month during 2016. With regard to professionals, we conducted an online questionnaire, made available to
health care providers during the first half of 2016. The draft questionnaire was validated by experts in health care law and health economics and regulation.

The data covers 4502 Portuguese adults, including 1011 patients and 3491 health-care workers. Methods include descriptive statistics, statistical models (namely parametric tests t-student and analysis of variance (ANOVA)) and an ordinary least squares model to identify variables that influence literacy level. For the questions related to patients’ rights in health care, a literacy index was constructed, ranging from ‘inadequate’ (0–50% correct answers), to ‘problematic’ (51% > 66%), ‘sufficient’ (67% > 84%) and ‘excellent’ (85% > 100%).

Results: Our results showed the majority of patients revealed an inadequate level of literacy. The subjects whereby the patients presented a lower level of literacy relate to informed consent, maximum waiting times for health care, living will and access to dental care.

We also concluded that more than half of the health-care workers revealed a problematic or inadequate literacy level. This finding requires further investigation and action since health-care workers are the main contact point between patients and the health system, and their lack of knowledge impacts negatively on patient’s knowledge and ability to use health care efficiently.

Conclusion: Taking a systems perspective, it is fundamental to increase the level of literacy on patient rights health care which impacts the on quality and the volume of health care. In this sense, the Portuguese Healthcare Regulation Authority is developing several initiatives targeted to areas where literacy levels are more deficient.

Methods: Obstetric complaints routinely recorded in an electronic database of a large multicentre tertiary healthcare group between 1 April 2011 and 30 April 2016 were analysed. Characteristics of the complainant population were reported as a number and percentage of all complaints. Complaint severity and content were assessed and complaints were classified into one of the following four themes: Communication, Service Provision, Administrative & Legal, or Medical Care & Adverse Outcomes.

Results: Of the 214 complaints identified, 199 satisfied the inclusion criteria for analysis. The majority (46%) of complainants were Australian born, as compared to 43.7% of patients in the general obstetric population. The second largest number of complaints were from South Asian women (17.1%). In comparison, South Asian patients comprised 23% of the general obstetric population. Communication was identified as a factor in 59% of complaints. However, medical care and adverse outcomes were more associated with severe and critical complaints. The majority (91%) of severe and critical complaints related to medical care and adverse outcomes, addressing issues surrounding severe morbidity or mortality affecting mother or baby.

Conclusion: Analysis of historical complaints data affords health services an opportunity to identify opportunities for quality improvement. If patients at risk of complaints could be proactively identified, this may allow interventions to improve quality of care.

Reference

ISQUA17-2186
LISTENING TO THE PATIENT: QUALITY IMPROVEMENT LESSONS FROM FIVE YEARS OF PATIENT COMPLAINTS IN A LARGE MATERNITY SERVICE

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Objectives: Patients complaints reflect actual or perceived deficiencies in care provision. There is an increasing recognition that patient complaints are an important and useful source of feedback that can be used to drive service improvement and enhance safety. In particular, complaint profiles have been used by others to identify under-performing practitioners.1 However, most health services continue to manage complaints on an individual basis rather than use them to inform local practice and/or system deficiencies and improve future care. We sought to assess whether unsolicited patient complaints within an individual maternity could be used to identify opportunities for service improvement.

Objectives: To analyse five years of obstetric complaints in a single health service for both theme and content to determine whether system improvements can be thereby informed.

ISQUA17-1693
WHAT MATTERS TO YOU: WORKING WITH THE PATIENT VOICE TO IMPROVE THE SYSTEM

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Objectives: Most of us know what having a bad experience in hospital looks and feels like. It may have happened to us, to our friends or to our family. If feedback is given about services, there is often less awareness about what has been done to address the feedback.

Since August 2014, New Zealand’s national adult inpatient experience survey has been running in all 20 District Health Boards (DHBs). It surveys quarterly, covering four domains of patient experience: communication, partnership, coordination, and physical and emotional needs. A sample of adult patients who spent at least one night in hospital are sent an invitation to participate in the survey post-discharge (email, text message, or post). The consistently low-scoring domains across all DHBs relate to discharge and involvement of family in care. In response to these results, the Health Quality & Safety Commission is developing patient experience measures to inform a quality and safety marker for patient experience.

Methods: Using the lower scoring areas of the national adult inpatient experience survey as a starting point, a pilot was developed based on the Always Events® Toolkit. Two hospital-based sites were
chosen and interviews, workshops, and patient and staff observations were carried out to understand what is important to patients, how the concept of Always Events might apply to the New Zealand context, and how the lower scoring areas of the national adult inpatient experience survey could be improved over time.

The piloting phase closely followed the protocol for rolling out an Always Event. Always Events are defined as aspects of the patient experience that are so important to patients, care partners, and service users that health care providers must aim to perform them consistently for every individual, every time. The ‘event’ is best measured by linking it to the patient experience surveys, particularly the lower scoring areas. This offers an opportunity to improve as well as measure impact.

**Results:** Early findings suggest that a systematic approach to capturing the patient experience as it related to the lower scoring areas of the national adult inpatient experience survey provide an opportunity to improve patient care that the national aggregated results do not offer. Specific patient experience data can be used to tailor specific interventions and provide parameters for a national quality and safety marker.

**Conclusion:** As a result of the pilot, a quality and safety marker for patient experience can now be investigated. The challenge remains to adapt interventions across all services that are truly patient-centered and informed by the patient voice.

**Reference**


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**ISQUA17-3279**

**HOW MANY HOSPITAL WEBSITES PROVIDE INFORMATION TO ATTRACT PATIENTS TO ATTEND CARDIAC/PULMONARY REHABILITATION ACROSS ENGLAND?**

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**Objectives:** British Thoracic Society, British Heart Foundation, British Lung Foundation and NICE guidance that patients should be offered rehabilitation to improve lung and heart health, however uptake and referral to programs are suboptimal. Whilst many patients and their caregivers/family members may have heard of PR or CR they may not know what this entails and increasingly may use the internet to help them understand this approach to disease management further. Hospital websites allow the general public to assess whether a service is available locally, and also help to provide the relevant information, for GPs to refer patients to rehabilitation. This study aims to assess if hospital websites supply essential information required to help patients decide whether to attend the initial assessments for rehabilitation.

**Methods:** Both the national PR and CR audit data from 2015 were used to find the number of rehabilitation centres available across England. We searched online for the search terms “Chronic obstructive pulmonary disease,” “Pulmonary Rehabilitation,” “Lang rehab,” “breathlessness rehabilitation” “Cardiac Rehabilitation,” or “Heart Rehab” with the local hospital name. We then searched the hospital website to check whether it was providing local information for both CR and PR using the following questions:

1. Does the hospital website provide information specific to CR and PR services?
2. Are contact details and address available for CR and PR?
3. Are the acceptance criteria for each PR and CR service displayed on the Hospital websites?
4. Does the Hospital website provide links to useful resources?

**Results:** 32% of CR services had no information on all four areas available in comparison with 36% of PR services. 50% of CR and 42% of PR contained information to inform patients of where the service is located and how to get in touch with the service if they have further questions. Only 40% of CR and 32% of PR services had their acceptance criteria displayed. Webpages that provided links to useful resources like British Heart Foundation or British Lung Foundation were found for 24% for CR and 16% for PR. Information in all 4 areas were only available for 16% of CR and 9% of PR services (Fig 1).

**Conclusion:** It appears that the information provided by hospital websites on CR and PR programs across the UK is suboptimal. In general, fewer of the answers to the four questions were listed on hospital websites for PR in comparison to CR. This may be due to the national audit for CR carrying out audits for many years and the national audit for PR being the first to take place in this area. Given that PR and CR are proven to be evidence based services to improve health related quality of life and exercise capacity, ensuring that patients are provided with the correct local hospital information from the outset may help them to decide and forward plan how and when they can attend the service to improve uptake into the programmes. Further enhancement of patient awareness on the practicalities of attending their nearest rehabilitation centre, alongside their understanding of what it entails is required.

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ISQUA17-1752
THE EFFECT OF ADVERSE EVENTS ON PATIENT EXPERIENCE AMONG HOSPITAL INPATIENTS

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Objectives: The focus on patient reported experience, one of the multiple dimensions of health care quality, has intensified. It is not fully understood how patient reported experience intersects with the other dimensions of health care quality. This study examines the relationship, if any, that reported adverse events in the hospital, have on patient reported experience.

Methods: Cross-sectional assessment of one year experience of adult hospital discharges from Mayo Clinic Rochester hospitals from fourth quarter 2012 through 2014 with follow-up patient satisfaction surveys. All provider-reported events with and without harm were linked to all hospital discharges with follow-up HCAHPS patient satisfaction surveys. Univariate analysis was conducted across events with harm vs. events without harm, non-events, and a combined non-harm event and non-event cohort. Categorical comparisons of survey response rates and composite measures were conducted using chi-square test of proportions and continuous variables using Wilcoxon rank sum test. All statistical analyses were conducted using SAS v9.3.

Results: A total of 8734 reported patient events occurred during the study period; 6682 (6.4%) adult hospital discharges had a provider reported event which reached the patient (C or higher), of which 3191 (3.1%) had adverse events with harm or required intervention (D or higher). HCAHPS surveys were obtained on 20,935 (20.1%) of all discharges. The survey rate was significantly lower among those with reported events with and without harm than those without events (16.4% and 15.4% vs. 20.5%, p < 0.001) Among survey responders, those with events reaching the patient scored lower on Communication with Nurses (63.1% vs 70.0%), Communication with Doctors (67.3% vs 72.7%), Responsiveness of Hospital Staff (59.2% vs 67.1%), Pain Management (56.5% vs 62.3%), Communication about Medicines (45.8% vs 52.8%), Environment (50.1% vs 54.7%), Global Rating (80.4% vs 83.6%), and Overall Summary Score (92.4 vs 93.8) than the others (all p < 0.01). No differences were seen on Discharge Information or Care Transition (both p > 0.05).

Conclusion: Patients experiencing adverse events are less likely to be surveyed about their hospital experience, and when they are surveyed, they report less satisfaction with most aspects of their care. The biggest differences between those with harm and those without events appeared to be in staff responsiveness and communications with both doctors and nurses. Understanding how patient reported experience impacts other dimensions of quality will provide insight into what patients’ value, improve patient care and also has the potential to improve hospital reimbursement. As a component of CMS value based purchasing, the patient reported experience dimension accounts for 25% of the score.

ISQUA17-2402
CO-DESIGNING PATIENT-CENTRED CARE USING PARTICIPATORY ACTION RESEARCH [PAR] - THE EPILEPSY PARTNERSHIP IN CARE [EPIC] PROJECT

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Objectives: “Co-design”, “Co-creation”, “Co-production” are concepts currently used by those promoting innovation to improve the quality, safety and integration of healthcare services. They reflect an approach where the consumer and the provider of a service/product work in partnership to make things happen in a meaningful way. Such collaboration is inherent in models of patient-centred healthcare.

Patient-centred care (PCC) is a core value in health service reform that recognises people within the full context of their lives not just their health condition. PCC promotes partnerships between healthcare practitioners, patients and their families to ensure that correct and responsive clinical decisions are made.

The National Clinical Care Programme for Epilepsy in Ireland is conducting a project which aims to create co-design teams of those who receive and those who deliver health services to work together on devising services that can realise the promise of patient-centre care.

Methods: The Epilepsy Partnership in Care (EPIC) project is using anthropological methods of ethnography, interviews and focus groups in parallel with participatory action research (PAR). Through anthropology the diversity of needs, and experiences within the epilepsy care
domain are being observed and catalogued and are informing the intelligent design and implementation of PCC through action research. **Results:** EPIC is a nationwide research project. Ethnography, interviews and focus groups have taken place at multiple locations across Ireland within specialist epilepsy centres, in patients’ homes and in the community.

32 people with epilepsy, 6 community resource officers, 4 consultant epileptologists, 13 epilepsy specialist nurses, 3 intellectual disability sector nurses, 3 general practitioners, 2 health service managers and 1 epilepsy service manager have participated in the project.

The exploration is elucidating the full range of actors involved in the epilepsy ecosystem, and the nature of their interactions with each other and their surroundings.

Strengths and weaknesses of patient-centredness in the epilepsy domain are emerging as are opportunities for advancing PCC through a balanced patient-provider partnership.

Four PAR teams (Community Care; Education; Adolescent Transition; Telephone Advice) have been formed. The teams made up of people who receive and deliver epilepsy care are iteratively and incrementally exploring the meaning of PCC while simultaneously identifying both opportunities for and challenges to achieving sustainable PCC.

**Conclusion:** PCC requires a fundamental re-balancing of the patient-healthcare provider relationship to one that changes the role of the healthcare professional from “experts that care for patients to enablers that support patients to make decisions”.

Because of its positive impact on health outcomes and health resource utilisation, it has been suggested that “if patient-engagement were a drug, it would be the blockbuster drug of the century and malpractice not to use it”.

The EPIC project is working to realise more fully the promise of PCC in the management of epilepsy through a fine-grained understanding of the spaces between the provision of health services and the experience of living with the condition. PAR is promoting continuous improvement and implementation of sustainable patient-centred care.

**References**

**ISQUA17-1743**

**PEOPLE WITH LEARNING DISABILITIES AS EQUAL PARTNERS IN SERVICE IMPROVEMENT**

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**Introduction:** A national UK charity which campaigns alongside thousands of people with a learning disability and their friends and families for the changes they want to see in society states that ‘learning disability has been invisible for too long. It’s time to see people with a learning disability for all they are and all they can be.’ A series of public inquiries has highlighted poor care in health and social care services for people with learning disabilities. Experience based codesign (EBCD) is a participatory action research method which has also been used increasingly as a quality improvement approach to improve the experience of service users. The majority of projects in England have been in acute hospitals. However, it has been successfully adapted for learning disability services and has enabled service users and their carers to make their experiences heard and to work as equal partners in making improvements.

**Objectives:** 1) To improve the experience of care for people with learning disabilities using the EBCD approach 2) To demonstrate that the EBCD method can be adapted successfully in learning disability services.

**Methods:** Experience based codesign (EBCD) is a method with two phases: the discovery phase and the design phase. The discovery phase involves collecting information about the experience of both service users and staff through interviews which are filmed, observation and emotional mapping. Events are held separately with staff and service users to identify priorities for improvement. The co-design phase involves staff and patients meeting together, to hear each others’ priorities, watch the films and choose three or four areas to re-design. Working groups are formed and over the next few months staff and service users together create ideas, prototype and test and implement improvements. There is now a good body of evidence to show that positive outcomes are achieved in terms of service improvements and impact on participants. Two projects adapted this method to improve learning disability services (in Leicestershire Partnership NHS Trust and Lancashire Care NHS Foundation Trust) – for example by creating new written materials, and running the events differently. Service users created and tested their solutions for improving the service with staff.

**Results:** Better communication with service users was made an absolute priority, and both projects resulted in introducing new ways to do this – for example communication passports for service users, staff contact cards, the use of a social media platform to communicate. Other changes include new training for health care staff in communication, patients on interview panels and a new community network for family carers. In both projects the method was successfully adapted and service users and their family carers felt that they had expressed their views, but also suggested and helped to bring about change.

**Conclusion:** EBCD can be used successfully to ensure the voices of service users with learning disabilities are heard and to enable them to improve their own services as equal partners with healthcare staff.

**ISQUA17-1843**

**CONSUMER INVOLVEMENT IN THE QUALITY OF HIV CARE, THE NAMIBIAN EXPERIENCE**

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**Introduction:** The Ministry of Health and Social Services (MoHSS) initiated the HIV quality of care program in 2007
Comprising of several components including consumer involvement. The aim was to improve the quality of health care services through addressing consumer concerns and soliciting consumer inputs.

The MoHSS developed a consumer representative eligibility checklist to guide the process of selecting consumers to participate in the Quality Improvement (QI) teams. Representatives were expected to provide feedback on ways to improve the quality of care, facilitate exchange of information and convey consumer grievances or recommendations to the health workers.

By 2015, a few facilities had peer educators called expert patients however, quality improvement teams did not have consumer representation. Analysis was done and lack of knowledge and skills by consumers emerged as the root cause. There was therefore a need to build capacity of consumer representatives.

Objectives: To build skills and the capacity of consumers to be partners in the planning, implementation, monitoring & evaluation of quality management efforts in HIV care.

Methods: Consultative meetings were held with relevant stakeholders including consumers and consensus was reached to develop a Consumer Involvement curriculum with the following components; importance of consumer involvement, QI principles, Performance Measurement (PM), Model for Improvement (Plan, Do, Study, Act), importance of teamwork in QI and Communication.

Consumer Involvement trainings would include both didactic and practical sessions. Participants for the training would include consumer representatives and health care providers. A database of all participants trained would be kept.

Results: A draft consumer involvement curriculum and a selection criterion for participants were developed. The inaugural pilot training was conducted in January 2016. A total of 24 participants from 8/38 facilities were trained which included 16 consumer representatives and 8 healthcare providers. Daily faculty debriefs were conducted to review participants feedback regarding the course content. A need for revising the curriculum was identified hence a stakeholders meeting was convened in September 2016 to accomplish this task.

Following the pilot training, the 16 consumer representatives signed a memorandum of agreement that outlined their roles and responsibilities. As a result of capacity building, consumers are now part of the QI teams and participated in 4 periodic peer review meetings in 2016. Additionally, these consumers participated in focus group discussions on specific areas of HIV care and quality improvement so as to recognise and amplify their voices. Other Sites that were not involved in the pilot training have also identified consumer representatives and have expressed the need for capacity building. Ongoing consumer involvement trainings are scheduled to scale up consumer representation at all healthcare facilities.

Conclusion: A well-structured approach including capacity building was necessary to ensure meaningful consumer involvement in quality of healthcare services. Clarifying roles and responsibilities was equally vital in enhancing mutual engagement and active participation of consumers.

**Abstracts**

ISQUA17-1294
LISTENING TO WOMEN’S VOICES IN MATERNITY CARE

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Objectives: The Health Information and Quality Authority (HIQA) is an independent body established to drive safe and high-quality care for people using health and social care services in Ireland. Following recent investigations and reviews, it was highlighted that women had faced serious failings in their maternity care and a number of serious service deficits were identified. Confidence in Irish maternity services was undermined and it was clear there was a need for marked improvements.

Methods: HIQA decided to engage directly with women and their partners who had recently used the maternity services, ensuring the views of those with both good and bad experiences were heard. A Standards Advisory Group was convened with key stakeholders including women and patient advocates. 12 focus groups were conducted with service users and front-line staff across the country. HIQA also published the draft standards for an eight-week public consultation and posters advertising the consultation were displayed in the public areas of nineteen maternity units nationwide, to encourage participation.

A key challenge during this initiative was ensuring that individuals from a range of backgrounds could be a part of shaping the future of Irish maternity care. This challenge was overcome by actively seeking opportunities to involve service users where possible. HIQA produced material in an accessible format, creating a plain-English guide to accompany the published standards. It was also made possible to submit feedback on the standards through an online survey tool, Polldaddy; which proved a success as this new platform accounted for 74% of submissions received.

Results: Data recorded from the focus groups and the advisory group meetings was assessed and used to shape the draft standards. Feedback gathered from the public consultation was then thematically analyzed using NVivo and reviewed for inclusion in the final standards. Overall, the findings suggest that women and their partners welcomed the opportunity to partner with HIQA in developing these standards and were hopeful that the safety and quality of maternity services would improve, as the standards are aligned with the 2016 National Maternity Strategy (2). Together, these co-designed national standards and the maternity strategy provide a framework of best practice, enabling services to provide consistently safe, high-quality maternity care and in turn work towards restoring public confidence in the service.

Conclusion: Of the key lessons learned during this initiative, was the importance of taking the time to explore the views and experiences of women, their families and support networks to help improve maternity services; a documented feature of maternity care system change in the United States (1). Listening to the voice of women and their partners and co-designing the standards based on their experiences greatly enhanced the standards and as a result they are more credible and hopefully will be easier to implement as they are also now very practical.
ISQUA17-1828
PATIENT ADVISORS AT THE BED SIDE FOR HAND REPLANTATION PATIENTS: WHAT ADDED VALUE FOR QUALITY OF CARE?
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Objectives: Since May 2014, the centre for expertise in surgical reattachment of severed upper limbs at the Centre hospitalier de l’Université de Montréal has been inviting former patients to support new patients at the Centre in their care process. In this innovative model of patient partnership, co-designed by former patients, former patients return to the rehabilitation center on a voluntary basis to meet with current patients during post-surgery hospitalization and/or key moments of the rehabilitation process, in order to discuss the various obstacles and challenges encountered. Considered full-fledged team members, those ‘patient advisors’ are invited to meet new patients on a voluntary basis four times over the one-year rehabilitation process to: 1) share their experience; 2) ensure that patients are involved in developing their treatment plans; and 3) improve treatment adherence.

Methods: To assess the contribution of patient advisors and identify factors that can help or inhibit their intervention, we analyzed all documentation produced since 2014; conducted interviews with professionals (n = 7), patient advisors (n = 7), and patients (n = 15); and held a group discussion with patient advisors.

Results: From July 2014–June 2016, 110 patients were admitted to the Centre, of whom 40 had at least 3 interactions with a patient advisor. Disabilities of the Arm, Shoulder and Hand (DASH) Outcome Measure results showed a 33.8% decrease in patients’ perceptions of the severity of their disabilities after their meeting with patient advisors. Moreover, adherence to treatment plans increased by 50% with patient advisor collaboration. Several patient advisor roles emerged from our qualitative analysis: listening to patients; supporting the health care team by simplifying the information conveyed; helping to make the overall process more user-friendly for the patients during a very stressful and emotional time; and finally, breaking patients’ loneliness and increasing their motivation regarding the rehabilitation process. Recruiting patient advisors has not always been easy, but tele-health technology has facilitated interaction with patients. This intervention, which has been proven to be feasible after a time-and-cost analysis, is evidence that such interventions are not very expensive.

Conclusion: A patient advisor program shows promise for enhancing partnership between patients and their team, increasing patients’ adherence to treatment, and increasing quality of care. Care team members have a key role to play, as they are responsible for offering and promoting patient advisor partnership to their patients.

References

ISQUA17-1150
PATIENTS’ EXPERIENCES OF ADVERSE EVENTS: A DATA LINKAGE STUDY OF AUSTRALIAN ADULTS AGED 45 AND OVER
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Introduction: Adverse events can be described as injuries “related to medical management, in contrast to complications of the disease”.1 Evidence of the patient experience of AEs is fundamental to creating effective health policy and service responses, yet we lack this knowledge.

Objective: To provide the first large-scale cohort investigation of the experiences of patients in New South Wales hospitals in relation to AEs.

Methods: A survey was developed based on previous validated patient experience survey tools and administered to a sample of 20,000 recently hospitalised patients from the 45 & Up database. The sample was identified by the Centre for Health Record Linkage using data linkage. The survey captured quantitative and qualitative data regarding: (1) patients’ experiences in hospital; (2) the nature and frequency of any AEs experienced; (3) the impact of AEs on patient outcomes; (4) whether the patient experienced an open disclosure process (formal or informal); (5) whether the patient made a complaint or initiated legal action.

Results: 7661 patients responded with completed surveys. Of these, 7% reported an adverse event. Clinical process or procedure (29%) and medication (18%) AEs were most common. Fifty-eight per cent of patients considered the harm they experienced to be moderate or severe. Only 17% of those reporting an event reported formal open disclosure in which the organisation arranged a meeting to discuss the adverse event. Those who received formal open disclosure generally described this favorably.

Conclusion: Minimising harm to patients is a challenge for health services and providers. Our data demonstrates that patients can identify adverse events occurring in their care and could contribute to identifying events, providing contextual information and identifying quality of care issues, if this data is routinely collected along with other incident monitoring.

References
Methods: the intervention as intended (engagement, acceptability and uptake). We planned to test as proof of concept its value with women and staff, and the feasibility of delivering secure help for serious safety concerns. We used participatory methods to co-design the script and storyboard, working with a user group of women (n = 34) who had sought help for serious safety concerns during pregnancy and the postnatal period. Obstetricians and midwives (15), clinical leads (3) and user group representatives (8) also participated in the design of the film. We collected survey data on participants’ perceptions of the value of both process (involvement) and product (the animation). We measured adoption and dissemination of the animation as evidence of feasibility and acceptability.

Results: Working with a cultural partner and using arts based methods enabled us to develop new insights into dimensions of our research. Rather than focusing on specific ‘red flags’ of impending critical perinatal illness, the script makes explicit the generic authority and legitimacy of women’s own tacit knowledge and ability to self-diagnose. The animation confronts gender stereotypes and social norms about speaking up, and emphasises the importance of lay advocacy. The film includes a social script for women, to help structure their help seeking and enable response from maternity staff, which was developed from women’s and staff’s hindsight into ‘what works’.

The co-production process and product (storyboard and script) enabled active interaction with the evidence, meaningful engagement with stakeholders, and new conversations about the nature of the problem and potential solutions. Of the women who participated in the project, 86% said they were glad to have been part of the film’s development; 75% were pleased with script and storyboard; and 65% felt their voices had been heard.

Evidence of successful uptake can be demonstrated in two ways: Multi-language versions of the film have been adopted in triage settings in local Trusts. We have secured support from Tommy’s charity for a national social media campaign.

Conclusion: This study has demonstrated the benefits of arts-science collaborations for effective translation of research evidence, particularly in addressing the role of social norms and hierarchies in patient-provider roles in safety. Next steps include testing impact, including unintended consequences, and how best to enable staff to support women’s contributions to safety.

ISQUA17-1680 CALLER EXPERIENCES AND COMPLIANCE SINCE THE INTRODUCTION OF AN INFORMATION SHARING CLOUD FOR NHS 111 IN LONDON, UK

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Objectives: A key priority of NHS England London is to improve the delivery of urgent and emergency care (UEC) by expanding NHS 111, a free-to-call, non-emergency medical helpline. This includes the implementation of the Patient Relationship Manager (PRM) system, a cloud-based clinical record system designed to share information and assist in directing NHS 111 calls to the most appropriate healthcare service. One particular function allows NHS 111 staff to access details of previous calls for those who ring NHS 111 back within 96 hours (repeat callers). A collaborative team of researchers under the governance of Healthy London Partnership evaluated the impact of the PRM system. The aim of this part of the evaluation was to measure callers’ experiences of using NHS 111 and compliance with advice since the implementation of the PRM system.

Methods: An existing Patient Reported Experience Measure (PREM) was updated and cognitively tested to capture users’ experiences of specific features of the PRM system from adults (over 17 years) and parents who called on behalf of their child (under 17 years) in London. The PREM captured callers’ experience of the NHS 111 telephone interaction, as well as the experiential factors that could influence their decision to follow, or not follow, the advice given by NHS 111 staff. The PREM was implemented using a telephone survey methodology with parents and adults who called three NHS 111 providers across London included in this phase of the evaluation, between May and July 2016. 1,532 questionnaires were completed (779 adults and 753 parents) in a four-week fieldwork period.

Results: Overall, 70% of callers stated that they “got what they needed” from the NHS 111 service. Although a large proportion of callers (89%) stated they fully followed the advice they received from NHS 111 staff, it is important to understand what factors are associated with callers complying or not. Sixteen per cent of callers who were not clearly told why the advice/action was right did not follow the advice, compared to only 2% of those who were told. Almost a third (30%) of callers who felt the advice was not correct reported not following it,
relative to only 2% of those who felt it was right. A composite score created from four experiential questions revealed a positive experience of the call was associated with callers complying with advice. Repeat callers had a significantly better experience of their follow-up call than one off callers ($U = 174088, p < 0.05$). That said, only 50% of repeat callers felt that the call handler “definitely” had information from their previous call. This is important to highlight as a significantly greater proportion ($p < 0.05$) of those who felt that the advisor had information from their previous call followed the advice they received (91%), relative to those who felt the call handler did not have such information (80%).

**Conclusion:** The NHS 111 service was introduced to increase efficiency in directing users to appropriate UEC. PREM results highlighted some of the factors related to callers following the advice they received. These included receiving a thorough explanation, feeling the advice was right, and having a positive experience of the call. Repeat callers who felt the advisor had information about their previous call were more likely to comply with advice, and had a better overall experience than one off callers. This highlights the importance of information sharing and the subsequent effectiveness of the PRM system.

**ISQUA17-1369**

**IMPROVING PULMONARY REHABILITATION: THE ROLE OF PATIENT VOLUNTEERS**

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**Objectives:** This case research focuses on a patient volunteer intervention piloted with a pulmonary rehabilitation programme (PR) provided in acute and community services within Heart of England NHS Trust in the UK.

The objectives of this study are to:

- evaluate the impact of the patient volunteer intervention introduced to a pulmonary rehabilitation (PR) programme
- identify the barriers and enablers to implementing the intervention
- record the learning from both healthcare professionals and patient volunteers involved in piloting the intervention

**Methods:** In order to evaluate the impact of the introduction of volunteers to PR programme a mixed methods study was designed. A combination of patient questionnaires, focus groups, semi-structured interviews and quantitative service data were used. Patient questionnaires were used to gain feedback on the PR programme and the introduction of volunteers from discharged/previous and current patients. Two focus groups were conducted with patients to establish how the intervention was viewed favourably by patients, volunteers and healthcare professionals. The feedback from patients was extremely positive particularly in response to the ‘meet and greet’ role of the volunteers for new patients. Patients also valued the opportunity to hear the experiences of the volunteers who had already completed the programme. Staff spoke about releasing more time to spend with patients due to not having to deal with some of the activities related to administration and setting up of classes. The process of recruiting and training volunteers was the area where the staff participants felt there needed further development in order to support the roll out of the programme.

**Conclusion:** The intervention of including patient volunteers in the PR programme has been evaluated using a mixed methods approach. Not only by combining different data sources but also including patients, volunteers and staff members within the study. The qualitative and survey data reported a positive impact of volunteers on the service. Interestingly, as yet the service data from this pilot study has not shown any recognisable difference. The DNA and non-completion rates have remained constant. However the patient feedback data have shown an increase in the levels of satisfaction. It is expected as the intervention is rolled out to all classes within the region then the DNA and completion metrics will begin to show the positive experiences recorded by patients. It is the intention to expand the patient volunteer intervention to other critical transition points for respiratory patients. Volunteers are currently being recruited for maintenance classes and for inpatient wards, where volunteers can help bridge these important transitions for patients.

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**ISQUA17-1421**

**COMPARISON OF HOSPITALISATION AND MORTALITY FOR PATIENTS WITH HEART FAILURE IN ENGLAND AND LOMBARDY REGION (NORTHERN ITALY)**

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**Objectives:** Heart failure (HF) is a common, serious condition that for many patients leads to multiple hospitalisations. Emergency readmission within 30 days is common outcome measure for HF and other chronic conditions but uses an arbitrary timeframe and loses information about multiple admissions. Researchers are beginning to explore the potential of multistate models, which handle the competing risk of death, for this condition. We used them to compare admission patterns and mortality rates both overall and by age and sex in England and Lombardy: as these two regions have some key similarities in their healthcare systems, any outcome differences could suggest areas for mutual learning.

**Methods:** We used administrative hospital data for all of England and for the Italian region of Lombardy for 2006 to 2012, all linked to national death registrations. Each patient’s first emergency admission for HF during the period was identified; patients with previous HF admissions were excluded by tracking back five years. Patients were followed up in the data to 2012 for further emergency HF admissions
ISQUA17-1767
ARE MORTALITY ALERTS ASSOCIATED WITH OTHER INDICATORS OF HOSPITAL QUALITY IN ENGLAND? A NATIONAL CROSS-SECTIONAL STUDY

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Objectives: Since 2007, Imperial College mortality alert surveillance system has generated monthly mortality alerts based on statistical process control charts for 122 individual diagnosis and surgical procedure groups using routinely collected hospital administrative data for all English acute NHS hospital trusts. The value of hospital mortality in relation to quality of care has been questioned but concerns tend to focus on summary measures. The strength of the Imperial system is the use of time series surveillance methods in specific diagnosis and procedure groups to detect sustained higher than expected death rates, above the random variation. We aimed to assess whether these mortality alerts were associated with external measures of hospital quality.

Methods: We investigated the association of mortality alerts (for all conditions, acute myocardial infarction (AMI) and septicaemia) occurring with measures of quality relating to trust structure, processes and outcomes using regression techniques. Trust structure measures were provision of acute beds (acute bed occupancy); staffing levels (nurse to bed ratios); funding (trust financial data), staff training (GMC National training survey) and litigation risk assessment (Litigation authority risk assessment data). Our trust process measure was ‘PCI within 90 minutes of arrival at heart centre’. Patient outcome measures were patient satisfaction (National Inpatient Survey data); harm (Patient Safety Thermometer); and summary measures of hospital mortality (SHMI and HSMR). We controlled for false discovery rate (a practical approach when multiple testing).

Results: Ninety three NHS trusts were notified of 197 alerts triggered over the study period; 8 alerts for were for acute myocardial infarction; 19 for septicaemia. Trust acute bed occupancy was on average 2.2 (95% confidence interval: 0.9 to 3.6) percentage points higher in trusts which had a mortality alert compared with non-alerting trusts. Nurse bed ratio was −0.28 (−0.42 to −0.14) lower in alerting compared with non-alerting trusts. The proportion of alerting trusts in financial deficit was higher compared with non-alerting trusts risk ratio 1.72 (1.02 to 2.76). GMC National training satisfaction scores were lower in trusts that alerted for AMI. Mortality alerts were not associated with risk assessment ratings and there was insufficient evidence to detect an association between mortality alerts and our MINAP process measure. Mortality alerts were associated with patient satisfaction which was on average −1.32 (−2.14 to −0.51) percentage points lower in alerting compared with non-alerting trusts. Mortality alerts were also associated with summary measures of hospital mortality but were not associated with patient harms.

Conclusion: Mortality alerts appear to reflect aspects of quality suggesting that there is value in a mortality alerting system in highlighting poor quality of care.

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ISQUA17-3302
THE ASSOCIATION BETWEEN HOSPITAL–COMMUNITY CONTINUITY OF CARE PATIENTS WITH CHRONIC DISEASE AND CLINICAL OUTCOMES

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Objectives: Transition of the patient from one physician to another throughout the therapeutic process; particularly in the transition from hospital to community, is a known weak point in the provision of safe, high quality care. The phenomenon is more prominent in patients with chronic illnesses, in light of the fact that these patients are usually receiving numerous medications and that their care is more fragmented. These patients therefore require closer supervision in disease management. Efforts are being made in Israel by the Health Funds to improve the maintenance of continuous treatment. The goals of this study were to evaluate the level of care continuity in chronic disease patients from four Health Funds, hospitalized at one medical center. Second, we have set out to learn about the association between maintaining continuity and clinical outcomes.
Methods: Enlistment of patients with chronic obstructive pulmonary diseases (COPD) or congestive heart failure (CHF), who had been hospitalized in the Department of Internal Medicine at Sheba Medical Center, due to worsening of their disease. During hospitalization, information was collected regarding patient admission, co-morbidities and socio-economic factors. Subsequently, information was collected regarding patient discharge. Telephone interviews were conducted with patients three months after discharge, to gather details about maintenance of discharge recommendations. Finally, patient charts (in the community) were reviewed by the research team, with the goal of confirming file updating and references to discharge recommendations.

Results: 632 patients were enlisted; 220 with COPD and 401 with CHF; average age was 11.3 ± 74.9. Of this group, 28.1% had a readmission within one month; 5.4% deceased within one month; 12% deceased within three months.

The information gathered from all patient files led to the formulation of an index that reflects the extent of continuity maintenance (maximal score 6). The average score amongst participants in this study was 1.7 ± 3.5. No significant difference was found in this score between the various Health Funds. Logistic regression found the index to be an explicit factor protecting against mortality within one month (OR = 0.63; CI = 0.50-0.75); mortality within three months (OR = 0.63; CI = 0.46-0.84); and readmissions within one month (OR = 0.81; CI = 0.73-0.90).

Conclusion: This study found that maintenance of continuity of care in Israel requires improvement. Attempts made by the Health Funds to improve processes, did not show differences between the various funds. We have found a clear association between the level of continuity of care and patient outcomes. We thus assume that improvement in continuity of care will lead to improvement in outcomes, such as repeat hospitalizations and mortality.

ISQUA17-2135

DRIVING BETTER DECISIONS USING STATISTICAL PROCESS CONTROL: A NATIONAL QUALITY PROFILE

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Objectives: The aim of the National Quality Profile is to present and analyse information on the quality of care in a format that allows for the evaluation and promotion of improvements in quality of care.

The Health Service Executive (HSE) provides all public health services in Ireland. It publishes a large volume of data on a monthly basis, but challenges remain with using this information. The practice of comparing a current value to a target or a previous value fails to filter out noise (random variation within a normal range), which can lead to an overreaction to the perceived change. Furthermore, this practice fails to highlight signals of change which can lead to failure to react promptly.

Methods: A screening tool based on the Irish definition of quality (HIQA, 2012) was created and used to screen all HSE published indicators to determine their suitability for inclusion. Senior quality leaders ranked the indicators from the most to least important measure of quality of care. The highest ranking indicators were then analysed using Statistical Process Control (SPC) methods. Plan-Do-Study-Act (PDSA) cycles were used to identify the presentation style that best allowed senior leaders to evaluate the quality of care.

Methods included observation of senior management meetings, monthly surveys and interviews with senior leaders. Following ten PDSA cycles, the National Quality Profile was considered to be fit for purpose. Each indicator is presented in SPC charts showing the trend over time. Data are also presented in SPC funnel plots to show the variation across the HSE. Occurrences of special cause variation are annotated on the charts (Figure 1). The ISBAR (Identify, Situation, Background, Assessment, Recommendation) communication tool is used to explain the indicators, including occurrences of special and common cause variation.

There were no ethical considerations as data are anonymised and already published.

Results: Presenting indicators in SPC charts shows evidence of improvements in quality of care that were missed by only comparing the current month to a previous value. The use of funnel plots to display the variation within the HSE shows occurrences of special cause variation, both better and worse than expected, that were also missed. Failure to detect improvements and special cause variation represents a missed opportunity to learn from successes and to identify areas where improvements are required. In addition, SPC charts show measures experiencing common cause variation being categorised as red, amber or green in a heat map which may be leading to overreaction.

Conclusion: The key benefit of the National Quality Profile is the provision of timely, reliable and comprehensive information that describes quality of care in a way that demonstrates changes and can be used to promote improvements. Health care leaders are better informed about changes in quality of care by having access to this information. SPC charts can reliably distinguish potential signals from random variation. This permits appropriate reaction to significant signals when present, while also ensuring that normal variation is not interpreted as a signal requiring action.

The next steps are to further develop the National Quality Profile through engagement with key stakeholders; the automation of the creation of SPC charts to ensure the sustainability of the National Quality Profile; and the provision of data disaggregated to the most suitable level for the needs of different customers within the HSE.

Reference

Abstracts

ISQUA17-1379
A CLINICAL RISK MANAGEMENT SYSTEM(CRMS) BASED IP-SDM CARE MODEL IN GENERAL HOSPITAL
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Objectives: For an interprofessional approach to shared decision making (IP-SDM), two or more professionals collaborate with patient in identifying best options, clarifying patient preferences and enabling patients to take more control over treatment plan. High-quality and cost-effective healthcare service are seen as two key elements in inter-professional care and the engagement of patients as partners in their own care. However, the high cost, time consuming and poor efficiency of IP-SDM model makes that IP-SDM is not routinely implemented in clinical practice and effective. Clinical Risk Management System (CRMS) is an approach to identify the clinical risk for in-hospital patients and relocates the medical resource to the high-risk patients. CRMS-based IP-SDM model can be implemented in general hospital systemically and efficiently. However, little is known about the satisfaction of the medical professionals while implementing CRMS-based IP-SDM systemically in a general hospital.

Methods: We evaluated the healthcare professionals, patients and their families who engaged in CRMS-based IP-SDM since 2011 to 2013. A total 153 doctors and nurses and 341 patients and their families completed a questionnaire based on the theory of satisfaction. The performance information of hospital also was collected since 2010 to 2013 to compare the related factors before and after implementing CRMS-based IP-SDM.

Results: Since 2010 to 2013, the number of admitted patients increased 9.7% and Case-Mixed Index for disease severity is no difference. After implementing CRMS-based IP-SDM, the medical malpractice cases reduced 74%. To engage in medical care team and participate clinical decision discussion get the highest scores in patients and families’ satisfaction evaluation. To improve the communication among medical professionals, to resolve the clinical problems efficiency, and to improve patients’ safety in practical way was more concerned in healthcare professionals.

Conclusion: Implementing CRMS-based IP-SDM in general hospital can create a more safe, cost-effective and medical professionals satisfied environment. The cooperation among medical professionals and the engagement of patients as partners need to be supported by a new medical care system which can balance the care quality, hospital performance and patient safety.

References

ISQUA17-3186
ELECTRONIC HEALTH RECORD OF E-MIS LINKS ROUTINE SERVICE DATA TO DECISION MAKING FOR IMPROVED QUALITY OF CARE IN BANGLADESH
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Objectives: The e-MIS project is a multi-partner initiative to support the Ministry Of Health and Family Welfare (MOH&FW) in Bangladesh to design and pilot an automated health information system. As part of this system, we developed and tested automated e-registers for the service providers at the peripheral level health facilities, called Union Health and Family Welfare Centers (UH&FWC). The e-registers and dashboard allows individual client-based tracking system along the continuum of care, which also allows monitoring of the quality and timeliness of services.

Methods: We designed and tested electronic registers for health workers at the community and facility levels, linking individual client records using a population registry and unique health identification numbers. The registers related to maternal and newborn care (MNC) services were converted into e-registers using an Android application on computer Tablets (TAB). After the initial testing, the e-registers are scaled up in 68 UH&FWCs of Habiganj district, covering a population base of ~2.7 million. The data recorded is accessible through internet cloud ensuring the continuum of care and allow supportive supervision to improve service quality. The e-MIS system links routine data, builds the electronic health records and uses the dashboard monitors focusing on the quality of care.

The e-registers and dashboard allows individual client-based tracking of all MNC services, including the adherence to the minimum clinical standards for each of the services provided at each encounter with the provider, compared to the aggregate based reporting in the paper-based record-keeping and reporting system.
Results: We analyzed a total of 15,320 ANC contacts that were recorded in the e-registers in Habiganj district from November 2016 to January 2017 for adherence to minimum standards of quality of antenatal care services. We observed 100 instances where the pregnant mother’s blood pressure (BP) was higher than 140/90, indicating possibility of preclampsia/eclampsia. In 80% cases the BP was more than 160/100. Even though the national guidelines requires immediate referral of such cases to the next level facility, only 34% of cases were referred. In 6% cases, albumin was present in urine, but yet the mother was not referred.

<table>
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<tr>
<th>Not Referred</th>
<th>BP higher than 160/100</th>
<th>Albumin Present</th>
<th>Albumin + Edema Present</th>
</tr>
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<tbody>
<tr>
<td>66%</td>
<td>50%</td>
<td>6%</td>
<td>2%</td>
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The e-MIS dashboard developed for the first level supervisor identifies such deviations and allow immediate corrective actions with the service provider to improve adherence to the standard guidelines and protocols. In e-register a Decision Support System (DSS) is also being built that will notify the provider of the potential risks and remind them for timely referral.

Conclusion: The e-MIS initiative has helped service providers and supervisors to link routine service data to service quality, timeliness and adherence to protocols and minimum standards. It is also improving individual client-based tracking to ensure care along the continuum. The initiative provides useful insights for countries seeking innovative solutions for measurement and monitoring of quality of care through routine information systems and for developing fully automated health information systems in low-resource and complex service delivery settings.

ISQUA17-1976
MEDICATION ADMINISTRATION PRACTICES ON THE WEEKEND VERSUS WEEKDAYS?: A DIRECT OBSERVATIONAL STUDY OF 227 PAEDIATRIC NURSES

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Objectives: Paediatric inpatients are particularly vulnerable to medication-related harm. Virtually no research on weekend medication practices has been published. The aim of this study was to compare nurses’ medication administration practices during the weekend with those on weekdays to identify implications for practice.

Methods: We undertook a direct observational study of 227 nurses as they prepared and administered medications across 8 wards in a major Australian paediatric hospital between April and June 2016. Following informed consent, trained observers recorded all details of drugs administered to patients using a handheld tablet with specially designed data collection software (POSSUM – precise observation system for the safe use of medicines). Nurses’ compliance with procedures, such as checking a patient’s identification (ID), as well as interruptions to nurses (defined as ceasing a medication task in response to external stimuli not related to the medication task underway), and multi-tasking (e.g. conducting two tasks in parallel) were recorded. Observations were conducted between 7:00 and 21:00.

Results: In total 1676 medication doses during the week and 471 on the weekend were observed (total 2147 administrations to 781 individual patients). Analgesics (24%) and antibiotics (16%) accounted for 40% of all administered drugs. Analgesics were more likely to be observed being administered during the week compared to the weekend (respectively 25%[95% CI:23–27] versus 20% [16–23], p = 0.02), and antibiotics were more frequent on the weekend (15%[13–17] versus 21% [17–24]; p = 0.003).

Compliance with correct patient ID checks significantly varied by ward (ranging from 40% to 84% of all administrations). This variation was consistent on the weekends and weekdays. We found no significant difference in compliance with patient ID checking on the weekend (62% [58–66]) compared to weekdays (63% [61–65]).

The rate of interruptions to nurses during the week was significantly higher than on weekends (respectively 55/100 administrations [50–60] versus 37 [30–44] p < 0.0001). The rate of multitasking on weekdays was also significantly higher than that on weekends (26/100 administrations, [23–29] versus 15 [11–19] p < 0.0001).

Conclusion: Compliance with core medication safety procedures did not significantly differ between weekends and weekdays. However, there was considerable variation between wards which persisted across both time periods suggesting that safety compliance may be a reflection of ward culture. For nearly 40% of drugs administered to children, correct ID checks were not performed. This represents a significant hazard for children in hospital. The lower rate of interruptions during the weekend should reduce the risk of errors shown to be associated with interruptions. The variance in the use of analgesics and antibacterials on weekends versus weekdays is worthy of further investigation. The next stage of this research is to compare medication error rates on the weekend with weekdays.

References

ISQUA17-1988
THE COMPREHENSIVE COST OF ILLNESS OF CEREBROVASCULAR DISEASE: COMPARISON BETWEEN OPPORTUNITY COST AND REPLACEMENT APPROACH

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Objectives: As for the social burden of disease which needs long-term care we already suggested new calculation method, that is, comprehensive cost of illness method (C-COI) in 33rd ISQua
Methods: C-COI consists of five parts; medical direct cost, morbidity cost, mortality cost, long term care (LTC) direct cost and informal care cost (family burden). Informal care cost is “unpaid care cost” by family, relatives and friends in-home and in-community, and is calculated by two approaches. Opportunity cost approach uses the earnings of the caregiver itself. We used average income of caregivers classified by their age and sex. Replacement approach assumes that an informal caregiver substitutes for a paid caregiver who would have provided the same type of caregiving services. We used prevailing wage of caregivers. We calculated C-COI of CVD at 2008, 2011 and 2014 using Japanese official statistics.

Results: C-COI of CVD in opportunity cost approach amounted to 6.61 trillion JPY in 2008, 6.65 trillion JPY in 2011, and 6.50 trillion JPY in 2014, whereas C-COI of CVD in replacement approach amount to 7.62 trillion JPY, 7.53 trillion JPY, and 7.46 trillion JPY, respectively. Informal care costs of both approaches are shown in the following Table.

Table: Informal care cost of both approaches billion JPY

<table>
<thead>
<tr>
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<th>Opportunity cost approach</th>
<th>Replacement approach</th>
<th>Gap between both approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings of caregiver</td>
<td>1,729</td>
<td>1,714</td>
<td>1,651</td>
</tr>
<tr>
<td>Share of C-COI</td>
<td>26.1%</td>
<td>25.7%</td>
<td>25.4%</td>
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</table>

Conclusion: Informal care cost calculated by replacement approach is 1.51–1.58 times as much as the cost calculated by opportunity cost approach. This reflects that average age of family caregivers is older than that of paid caregivers. The gap between both approaches means compression of monetary value of informal care by aging. Recently increase of LTC direct cost has become a serious problem in Japan. When policies to decrease LTC direct cost; that is the expenditure from LTC insurance, are taken, they may mean just cost-transfer from LTC direct cost to informal care cost and compression of the social burden if opportunity cost approach is taken. Considering the present situation, the room of family to accept LTC burden has become smaller.

ISQUA17-1389

PSI 12 IN ORTHOPAEDIC SURGERY: RESULTS AND PERSPECTIVES OF A NATIONAL FRENCH PROGRAMME FOR IMPROVEMENT

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Objectives: Improving care quality, patient safety and outcomes in total hip (THA) and total knee (TKA) arthroplasty is a shared objective between healthcare organisations (HCOs), professionals and patients. Patient safety indicators are measured in many countries. The PSI 12 performance has been assessed in TKA and THA stays using the French databases, with a predictive positive value (PPV) of 81%. In December 2016, the 1st French national measure of thromboembolism events (TEE) encoded in TKA and THA stays has been released by the French national authority for health (HAS) to HCOs. The objective is to contribute to patient safety improvement by driving HCOs with high TEE levels to analyse their practices regarding coding, thromboprophylaxis and ultrasound use.

Methods: Retrospective analysis was performed on 190,904 inpatient stays and 759 HCOs with at least 10 targeted stays, defined as adult patients having a THA or a TKA encoded in the complete 2015 French medico-administrative database. Main exclusions were: patients transferred from another HCO, having a hip fracture, benefiting from palliative care, and/or having a hip or knee surgery one month before admission. HCOs results were adjusted for age, sex, replacement site, 9 comorbidities and the median length of stay by site. Ratio of deep vein thrombosis and/or pulmonary embolism observed on expected number was calculated using indirect standardization and released in a funnel plot. Outliers were defined as being out of the 3 SD limits. Rate of TEE for THA and for TKA was calculated, and compared to the published benchmarks, respectively 1/200 (5%) and 1/100 (10%). Rate of ultrasound use was provided; and compared to the expected rate of 10%.

Results

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Results: Number of HCOs (rate in %)</th>
</tr>
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<tbody>
<tr>
<td>Ratio &gt; 1</td>
<td>203 (26)</td>
</tr>
<tr>
<td>Outliers</td>
<td>66 (9)</td>
</tr>
<tr>
<td>Of which, are &gt;3 SD</td>
<td>55 (7.2)</td>
</tr>
<tr>
<td>TEE rate for 1000 THA stays &gt;5%</td>
<td>204 (27)</td>
</tr>
<tr>
<td>TEE rate for 1000 TKA stays &gt;10%</td>
<td>304 (40)</td>
</tr>
<tr>
<td>More than 10% THA stays with encoded ultrasound</td>
<td>145 (19)</td>
</tr>
<tr>
<td>More than 10% TKA stays with encoded ultrasound</td>
<td>259 (34)</td>
</tr>
</tbody>
</table>

Conclusion: Detection of TEE in computerized databases provides useful information for inpatient quality and safety management, and defines room for improvement, including the reduction of ultrasound systematic use which exposes asymptomatic patients to the potential iatrogenic effects of the anticoagulant drugs. The indicator and detailed information provided to HCOs, help outliers to identify the site that is responsible for the atypical TEE rates, and proceed to patient records and practices analysis. Identified causes could be: coding of pre-admission TEE, detection of asymptomatic deep vein thrombosis by systematic ultrasound use, under-use of anticoagulant drugs. This deep analysis should lead to improvement actions in HCOs with confirmed high ETE rates, which will be monitored within the French national hospital accreditation programme. Coding guidelines are also provided to improve TEE quality coding, and consequently, the PPV of this alert tool. Perspectives are PPV reassessment at a large scale, analysis of healthcare professionals and HCOs feed-back, and assessment of the feasibility of outpatient TEE measure.
ISQUA17-2286
IS HIGH QUALITY OF CARE ASSOCIATED WITH HIGHER COSTS? - A NATIONWIDE COHORT STUDY AMONG HIP FRACTURE PATIENTS

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Objectives: Fulfilment of process performance measures reflecting clinical guidelines recommendations for hip fracture care have been shown to be associated with a lower 30-day mortality and readmission risk. However, it remains largely unknown whether improvements in quality of care will require increased spending or whether improvements in quality of care will lead to a reduction in adverse patient outcomes, including fewer complications and readmissions, and less inappropriate use of health care and thereby to lower costs. We therefore examined whether fulfilment of process performance measures are associated with in-hospital costs among hip fracture patients.

Methods: We performed a nationwide cohort study including 20,458 hip fracture patients ≥65 years based on prospectively collected data from the Danish Multidisciplinary Hip Fracture Registry. Quality of care was defined as fulfilment of seven process performance measures based on recommendations from the national multidisciplinary guideline for in-hospital hip fracture care: Systematic pain assessment, early mobilisation, basic mobility assessment before admission and discharge, post discharge rehabilitation program, anti-osteoporotic medication and prevention of future fall accidents. The process performance measures were analysed individually. In addition, quality of care was also modelled as a proportion of all fulfilled performance measures for the individual patient (0–25 %, 25–50 %, 50–75 %, 75–100 %). The outcome was defined as the sum of costs of the individual patient, including both orthopaedic and non-orthopaedic care based on the Danish Reference Cost Database. Total cost was examined within the index admission and within the first year. A natural log-transformation was used to correct for the right-skewness in cost data, and the cost differences were reported as ratios between arithmetic means. Data were analysed using multivariable regression techniques controlling for covariates and cluster effects at unit level.

Results: Fulfilment of nearly all process performance measures were all associated with lower total costs within the index admission. The adjusted ratio ranged from 0.91 (95% CI: 0.91–0.92) to 0.99 (95% CI: 0.98–0.99), corresponding to adjusted mean differences between EUR304 to EUR3538 for the individual process performance measures. Fulfilling between 50% to 75% or more than 75% of the process performance measures were also associated with lower total cost. The adjusted ratio were 0.98 (95% CI: 0.97–0.98) for receiving between 50% to 75% and 0.94 (95% CI: 0.94–0.95) for receiving more than 75% of the performance measures, corresponding to adjusted mean differences of EUR2645 and EUR3548, respectively. The association were weakened when taking into account all costs related to hospitalisations within the first year. However, most of the individual process performance measures as well as the composite score remained associated with lower cost.

Conclusion: Our study underlines the importance of meeting process performance measures reflecting clinical guideline recommendations for in-hospital care of hip fracture patients as this may lead to lower 30-day mortality and lower risk for readmission without increasing the total hospital costs.

Reference

ISQUA17-2143
MANAGING TOP RISKS IN HEALTHCARE THROUGH A SHARED INTEGRATED (ENTERPRISE) RISK MANAGEMENT APPROACH

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Objectives: Many leaders of healthcare organizations have indicated that industry-related integrated risk management (IRM) programs are complex and not well-suited for healthcare. Healthcare organizations in Canada are working together to implement an IRM to track top risks utilizing shared online risk register to efficiently track and manage key organizational risks and to share knowledge and best practice recommendations across the healthcare system.

Methods: IRM has been identified as an important requirement to monitor and improve quality and safety in the leadership and governance area by the national healthcare accreditation body, HIROC, together with IRM Steering Committee comprised of risk management experts from various healthcare organizations, developed a web-based IRM Risk Register program in 2014. The output of this initiative were comprised of 1) a comprehensive guide synthesising knowledge of IRM best practices; 2) the taxonomy of key risks in healthcare organizations; and 3) the shared Risk Register application. 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, 95 healthcare organizations ranging from teaching hospitals to community health centres to medical regulatory authorities are actively participating in the program. A national database of risks is being materialized and there are self-identified 1735 risks in the Risk Register. Of the 1735 risks, 628 are in active status, 550 are in initial review status and 557 are closed. Knowledge and leading practices gleaned from the risk register entries are analysed, de-identified and published/shared on a regular basis in the form of Community of Practice newsletters, online risk profile resource documents and...
Objective: Pain management is a major challenge following surgery. Certain pain medications (prodrug opioids) need metabolic conversion to render them effective for pain management. New evidence suggests that selective serotonin reuptake inhibitors (SSRIs), the most commonly prescribed antidepressant medication, could inhibit the conversion of prodrug opioids, leaving an already vulnerable population at greater risk for poor pain management and increased opioid misuse. Leveraging the power of computational resources for processing the vast amount of medical information residing in EHRs, we aimed to characterize the prevalence of the prescribed combination of SSRIs and prodrugs post-operatively and further examine its effect on postoperative pain.

Methods: Using electronic health records (EHRs) from a single academic medical institute, we identified patients receiving 5 pain-intensive surgeries using ICD-9/10 codes. We define the fields within EHR and the logic applied to it to specify our variables of interest, e.g., depression, pain, or medications. While structured data are mapped to defined terms, free text are further processed. First we identify clinical terms of interest (e.g., clinical terminology or institution-specific synonyms) and then we include rule-based or machine-learning logic required to transform the relevant free-text to a term category (e.g., ensure a term is not negated). Using these data, we developed descriptive statistics to illustrate the prevalence of combined use of these medications. Maximum pain score at discharge and within 30-days post-discharge were dependent variables used in separate multivariate regression analyses to examine the effect of the combined use of antidepressant and prodrug opioids on post-operative pain.

Results: This study included 8811 patients undergoing 5 surgical procedures at a large academic US hospital, 2008–2016. We found 9% were on SSRIs during their hospital stay and 4% received both an SSRI and Prodrug post-surgery. Our sample was predominantly white (62%), women (52%) with a mean age at surgery 59.4 years. Our modeled estimates suggest that patients receiving the combination of medications had higher discharge pain scores (Odds Ratio [OR]: 1.31) and follow-up pain scores (OR: 1.37) after controlling for important patient and clinical characteristics.

Conclusion: Prescribing a combination of SSRIs and prodrug opioids post-operatively is common and results in poor pain control. Leveraging clinical data captured in EHRs may improve the efficiency of pain management through the identification of patients in need of personalized regimes. This study adds to evidence of consequential drug interactions, while the high prevalence of concomitant use suggests that more attention to medication prescribing choices is warranted for post-operative pain management.
A. ASIEDU1*, A. NELSON2, P. GOMEZ3, and F. EFFAH1

IMPROVE NEWBORN OUTCOMES AND QUALITY FREQUENCY LEARNING EXPERIENCES TO QUALITATIVE EVALUATION OF LOW-DOSE HIGH-FREQUENCY LEARNING EXPERIENCES TO IMPROVE NEWBORN OUTCOMES AND QUALITY OF CARE, GHANA

A. ASIEDU1*, A. NELSON2, P. GOMEZ3, and F. EFFAH1

1Monitoring, Evaluation and Research, JHPIEGO, East Legon -Accra, Ghana, 2Monitoring, Evaluation and Research, JHPIEGO, Monrovia, Liberia, and 3JHPIEGO, Baltimore, United States

Objectives: Intrapartum stillbirth and newborn mortality in the first 24 hours of life remain high in Ghana. A low-dose/high frequency (LDHF) training package on care during labor and the postnatal period was designed to give health workers in maternity wards the knowledge and skills needed to address these problems. The intervention included two 4-day on-site (low-dose) trainings followed by weekly (high-frequency) midwife-led practice sessions, and one year of mMentoring, or use of SMS messages about content covered during the low-dose sessions and in-person and telephone supervision by regional mentors. Parallel to a cluster-randomized evaluation conducted between March 2014 and March 2017, a qualitative study was conducted to understand the experiences of health workers and stakeholders involved in implementation of the LDHF training approach. The main aim of this study was to investigate acceptability and sustainability of the LDHF training approach.

Methods: A combination of semi-structured in-depth interviews and focus group discussions was used to investigate experiences and opinions about the LDHF training approach in providing quality maternal and newborn care services. In total, 20 in-depth interviews and nine focus group discussions were conducted with individuals who participated in and benefitted from the implementation of the LDHF training package at 40 facilities in three regions of Ghana. Findings were analysed using thematic content analysis methods. Coding and analysis of themes from the codebook was done using the Atlas.ti version 7.0 qualitative analysis software. Ethical approval and oversight was provided by Johns Hopkins Bloomberg School of Public Health Institutional Review Board and the Ghana Health Service Ethics Review Committee.

Conclusion: Implementing pharmacy automation technologies in an outpatient or community pharmacy setting reduces medication errors, increases productivity in settings fulfilling certain criteria, but does not affect job satisfaction. When deciding processes to automate, due considerations in prescription load, degree of order customization and context of practice should be given to ensure maximum benefit and cost effectiveness of implementation.

ISQUA17-3007
ADVANCING PATIENT CENTERED CARE THROUGH SOCIAL AUDIT MECHANISMS IN RURAL ZAMBIA: EVIDENCE ON PEDIATRIC QUALITY OF CARE

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Objectives: To gain an understanding of the effect of social audit mechanisms to improve patient centered care for children in rural ambulatory clinics

Methods: To address the major disease burden in children under five, the integrated management of childhood illness (IMCI) clinical practice guidelines designed by WHO and UNICEF for resource constrained contexts have been mandated nationally for routine screening and treatment for all children under five presenting in outpatient clinics. In rural settings, due to a plethora of system constraints, optimal quality has not been achieved. Social audit mechanisms offer opportunities for joint appraisal of structural and clinical quality, patient and provider satisfaction and more importantly shared decision making to improve healthcare quality. We performed an experimental trial in four rural districts in Zambia from 2013–2016. Social audit mechanisms, including community score cards and community health councils were integrated in clinics in two districts. Two other matched districts integrated community health councils and received interventions through the ongoing district systems strengthening programs. All primary care facilities in the district
were included, and five children were randomly sampled from each outpatient clinic. Trained teams conducted observations of patient screening and caretaker counseling, followed by exit interviews with caretakers. Quality of care was determined by adherence to the IMCI clinical standards for patient screening and counseling.

Results: The final sample included 90 outpatient visits for children aged 1–59 months from 19 facilities. The quality of patient screening was significantly higher in clinics receiving the systems strengthening interventions than those receiving only the social audit interventions based on the IMCI assessment index (5.4 vs 4.3; p < 0.034). Caretakers of children in clinics with the district strengthening mechanisms had a 0.5 point higher mean counseling index (1.5 vs 1.00; p < 0.005). Though clinics receiving the systems strengthening interventions and community councils illustrated better compliance to IMCI standards of care, clinics receiving the community score card and community health council interventions, showed significantly higher child caretaker satisfaction with waiting times, (90.9% vs 55.6%; p < 0.002), and knowledge of return dates for follow up visits (34.1% vs 2.2%; p < 0.000). After adjusting for relevant covariates including child age, provider type, IMCI training, which are reported to be key predictors of quality of patient care in previous studies, the systems strengthening interventions emerged as significant predictors, along with frequency of supervision visits, and IMCI training. The dual objective of achieving universal coverage and optimal quality, will require complementary interventions for systems strengthening and social audit mechanisms, as clinics receiving community score card interventions also illustrated higher mean utilization in the past month, than those without (259.4 vs 198.2).

Conclusion: Conclusions: Social accountability mechanisms have been shown to be effective in ensuring people centered care, however, in extremely resource constrained settings, efforts must be accelerated to ensure optimal system capacity to enhance clinical quality of care.

ISQUA17-1913
REDESIGNING THE NAMIBIAN HIV QUALITY IMPLEMENTATION MODEL TO IMPROVE QUALITY OF CARE SYSTEMS

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Introduction: The Namibia HIV quality of care (HIVQUAL) program was initiated in 2007 by the Ministry of Health and Social Services (MoHSS) to monitor and improve the quality of HIV care provided in public health facilities. 37 sites were selected to participate including all 34 hospitals and 3 healthcare centres. Quality of care indicators were selected and performance was reviewed bi-annually using six months’ worth of data. Annual Organisational Assessments (OAs) were introduced to assess quality management (QM) structures and were to be conducted at the sites by national quality improvement (QI) team as external assessors.

Peer learning networks were introduced where at the end of each performance measurement (PM) period, facility QI teams comprising of a doctor/pharmacist, nurse and data clerk would congregate to present their HIVQUAL performance reports. Sites were required to submit data to the national QI team prior to the learning network; a practice which they complied with until 2015 when several sites stopped submitting data. Furthermore due to inadequate staffing, the national QI team was unable to conduct annual OAs in all 37 sites. In addition, there was minimal consumer involvement at the sites and as well as at peer learning networks.

Objectives: To restructure the Peer Learning Network model to ensure timely submission of data, conducting of annual OAs and active involvement of consumers.

Methods: Restructuring of Peer learning network was initiated in January 2016 by MoHSS and relevant stakeholders who came up with a set of interventions to address the gaps. It was agreed that only sites that submitted data on time were to be invited to the peer learning sessions.

In addition to site presentations on PM data, technical support was to be provided to; identify quality gaps, design and initiate QI projects. The national QI team would conduct OAs at the peer learning session since key informants were already attending the meeting instead of going to the sites. Each participating site was required to nominate a consumer to participate in the learning network.

Results: PM data submission from the sites improved from 0% in October 2015 to 100% by April 2016 (n = 37 sites). The same trend continued in October 2016 PM data review period. Conducting of annual OAs improved from 0% in 2015 to 100% by September 2016 (n = 37 sites). As a result, each site drafted an annual QM work plan and initiated at least one QI project. A dashboard capturing OA results and QM site plans was developed to monitor progress.

Consumer involvement in learning sessions improved from no representation in 2015 to having consumer representation in 39% of sites (n = 37 sites) in 2016. Two consumer focus group discussions were conducted involving 15 consumers.

Conclusion: Every system is perfectly designed to give exactly the results it achieves. Redesigning the HIV QI implementation model led to significant improvement in timely submission of PM data, conducting of annual OAs, active consumer involvement in QM activities and initiation of QI projects.

ISQUA17-3268
REMOTE FACILITATION OF QUALITY IMPROVEMENT PLANS USING WHATSAPP MOBILE APPLICATION IN KWARA STATE, NIGERIA

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1SafeCare, and 2PHARMACCESS, Lagos, Nigeria

Objectives: Kwara State is located in the North-Central zone of Nigeria. It is predominantly rural with an estimated population of
2.6 million persons (National Bureau of Statistics). In 2015, a quality improvement initiative commenced in health facilities implementing the Saving Lives @ Birth program which is aimed at improving maternal and child health outcomes. Baseline assessments were conducted in ten facilities using SafeCare Essentials tool and tailored quality improvement plans (QIP) were developed for each facility. Monthly facilitation visits were conducted to mentor facility quality teams on the implementation of activities in the quality improvement plans. However, distance and poor road network were limiting factors for routine monthly visits for QIP facilitation. A remote facilitation pilot using mobile technology was launched in August 2016. A study was also conducted to investigate the cost-effectiveness of this mode of facilitation, benefits and challenges.

**Methods:** Mobile internet penetration in Kwara was 66% in the first quarter of 2016 according to the National Bureau of Statistics and all facility quality leads had access to internet-enabled phones. With its extensive global penetration including Kwara and ease of use, WhatsApp mobile application was the technology of choice for the remote facilitation pilot in ten health facilities (four private and six public).

A generic quality improvement plan was developed for participating facilities. SafeCare Quality Managers moderated remote facilitation group sessions for 1 hour weekly. During sessions, facility quality managers were mentored on one or more activities in the generic quality improvement plan. Evidence of activities implemented were posted as pictures or documents on the group forum or shared via email. New QIP activities to be implemented were assigned at the end of each session. A log was also maintained by each facility and the moderator to track completion of QIP activities.

**Results:** The average time spent during on-site facilitation visits was estimated as 2.5 hours monthly and WhatsApp facilitation 4 hours monthly.

1. Efficiency improved in terms of manpower hours and fuel consumption. Over a six-month period, manpower hours lost commuting was estimated as 207 man hours. Comparing the time spent on facilitation of ten facilities; the average time for remote facilitation was 4 hours monthly while on-site facilitation was estimated as 150 man hours, thus saving additional 146 man hours. Using a fuel consumption rate of 7 litres/100 km for a Toyota Hilux, cost of fuel over a six-month period was estimated at 325 Euros. However, six-months internet data plan for the moderator cost 8 Euros only.

2. WhatsApp platform fostered cross learning and replication of best practices in quality improvement among health facilities.

3. Group sessions promoted competition between facility quality managers on completing QIP activities and better relations.

4. Relatively high quality scores at follow-up assessments ranging from 43% to 71%.

**Conclusion:** Remote facilitation using WhatsApp is a cost-effective facilitation tool to mentor facility quality teams on implementing QIP activities. Participating facilities had good results at follow-up assessments with quality scores ranging from 43% to 71%. Overall, remote facilitation through WhatsApp fostered peer to peer learning, replication of best practices, competition and better interactions among facility quality managers.

**ISQUA17-2624**

**TELEMEDICINE IN THE HIMALAYAS- REACHING THE UNREACHED**

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**Objectives:** In order to make quality healthcare accessible to the unreached populations of Keylong and Kaza in the Himalayan state of Himachal Pradesh(HP), Apollo Telehealth Services(ATHS) has successfully set up the world’s highest altitude Telemedicine Centres at 13,500 feet and are seamlessly delivering the much needed emergency, specialty and primary tele-consultation services to this disadvantaged population.

**Methods:** Through Public Private Partnership(PPP) with the Govt. and deploying cost effective technology, ATHS has established Tele-Emergency and Tele-Specialty services. The ATHS team braved landslides, sub-zero temperatures and impossible road conditions. Helicopters were used to airlift the team and equipment. The limited medical resource team was trained at Apollo Hospitals, Chennai. Well-integrated Teleconsultation and Tele-emergency units at the Community Health Centers in Kaza and Keylong were set up, complete with remote diagnostic devices and seamless connectivity using satellite connections, to enable Tele-Health services with Apollo Hospitals at Chennai.

**Results:** In 2 years, the programme has delivered more than 5600 speciality consults and more than 450 emergency cases have been stabilized. Hundreds of ambulance trips and helicopter evacuations have been avoided.

**Conclusion:** This is the only high altitude telemedicine programme in India that is delivering specialised healthcare services to a remote population of 34,000. By using technology the initiative has reduced rural health practice isolation and enabled healthcare deliveryin the
remote parts. This has successfully bridged the difference between the haves and the have-nots in terms of healthcare and strengthened the healthcare system of the country.

**ISQUA17-3128**  
**ASSESSMENT OF EARLY MORTALITY IN PATIENTS ADMITTED TO THE GENERAL MEDICAL WARD AT A DISTRICT HOSPITAL IN BOTSWANA**

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**Objectives:** Botswana has made significant gains in providing widespread access to medical care since its independence.1 However, measuring quality of care in the inpatient setting has not been a focus of public health efforts. Based on a prior study at our district hospital in Botswana2 as well as our clinical experience, early mortality is common among patients admitted to the adult medical wards. We aimed to quantify and examine cases of patients who died within 48 hours of admission in order to identify opportunities for intervention that might reduce preventable early in-hospital mortality.

**Methods:** Retrospective chart review was performed on all patients who died within 48 hours of hospital admission to the general adult medical wards of Scottish Livingstone Hospital (SLH), the secondary referral center for Kweneng East district, Botswana, from December 2015 through April 2016. Root cause analysis (RCA) on each case was performed by two independent investigators using a template for RCA based on the Vincent Framework3 adapted to the Botswana setting. Summaries, including presenting signs and symptoms, probable causes of death, care management problems, contributory factors and the likelihood of preventability of death were assembled for each case.

**Results:** Of 514 admissions during the study period (December 2015-April 2016), 31 patients (6%) died within 48 hours of admission to the adult general medicine wards. Respiratory distress was the most common presentation (74% of cases), followed by encephalopathy (63%) and hypotension (41%). Septic shock was identified as the probable cause of death in 74% of cases. A delay in antibiotics, inappropriate fluid management, and breakdown in communication between care providers were the most frequent care management issues, all present in 56% of cases. A lack of knowledge and skills among providers was associated with these care management issues in 93% of cases. Of the 27 deaths, we estimated that 5 deaths (18%) were either likely or very likely preventable, and 11 deaths (41%) were either unlikely or very unlikely preventable. The preventability of 11 deaths (41%) was uncertain.

**Conclusion:** In this study of inpatient mortality in a district hospital in Botswana, death within 48-hours of hospital admission was most commonly associated with clinical symptoms of septic shock. 18% of deaths were estimated to be preventable, and in 40% of deaths preventability was uncertain. We identified associated care management issues that are now being used to create a quality improvement intervention at SLH targeting the early identification and management of sepsis in an effort to reduce preventable early mortality among hospitalized patients.

**References**


**ISQUA17-3166**  
**IMPROVING EFFICIENCY IN HEMATOLOGY LABORATORY**

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**Objectives:** It was observed since past one to two years that growth in section of Hematology of Clinical Lab was hampered for new and specialized tests. Improvement in report turnaround time is restricted to 24 hrs. for Complete Blood Count (CBC) test which is affecting about 4000 patients per month. In order to improve customer service, there was a need of an innovative approach. In this scenario, the objective or the goal of the project arises as:

“Improving efficiency in section of Hematology through reducing turn-around time from 24 hrs. to 12hrs. for all Complete Blood Count (CBC) samples received by November 2014.”

**Methods:** Methodology used was Lean Six Sigma Roadmap which includes following:

Define, Measure, Analyze, Improve, Control (DMAIC)

**Results:** Reporting of CBC results reduced from 24–12 hrs. with report completion rate of about 99%.

With the induction of barcoding and automation:

- The average sample analysis time was reduced from 1.3 minutes/sample to 0.64 minutes/sample
- The average rate of slide preparation per sample was reduced from 1.24 slides/sample to 0.34 slides/sample.
- Slide rejection and re-staining is significantly reduced by factor of 1/6th

New process has completely eliminated the requirement of print out with the provision of abnormal results flagging. Hence annual saving of 0.2 Million Rupees and saving of 31 labor hours/month by avoiding unnecessary printout.

**Conclusion:** This was a Lean Six Sigma Green Belt Project which utilizes the methodology of DMAIC (Define, Measure, Analyze, Improve & Control). This methodology proved to be very useful in
identifying wastes as well as improving the efficiency of processes. The concept of “walk through the process” was very effective in identifying gaps.

The team concludes as follows:
- Barcode printing and scanning reduces delay in process of CBC reporting as well as enhance tracking of sample at every step.
- Throughput of analyzer reduces from 80 samples to 150 samples per hour.
- Slide preparation and staining reduces from 100% to 40%.
- Slide rejection rate decreased to 2% from 70%.
- Printing of initial results reduces from 100% to 10%.
- Manual platelet counting was substituted with automated optical platelet count which in turn saves about 2hrs. per sample time of technologist.
- Decrease in slide rejection rate speed up the process of CBC reporting.
- Eliminating the step of printing initial results saves time of one staff which was then utilized to start the reporting of Malaria Thick Smear in the same capacity.

ISQUA17-2417
STRENGTHENING QUALITY IMPROVEMENT WORK IN HOSPITALS BY USING WHATS APP: EXPLORATORY QUALITATIVE STUDY FROM INDIAN HOSPITAL

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Objectives: Teamwork and group discussion are key for effective quality improvement (QI) and can yield improved patient outcomes, but convening in-person meetings with all staff can be challenging. Mobile technologies can support communication within a team when face-to-face meetings are not possible. WhatsApp, a mobile messaging platform, was implemented as a communication tool by a neonatal intensive care unit (NICU) team in an Indian hospital seeking to reduce nosocomial infections in newborns caused by intravenous procedures. The main objective of the study was to explore WhatsApp’s role in intrateam and team-coach communication during the implementation of a QI project.

Methods: An exploratory qualitative study was conducted with one QI team; 10 QI team members were purposively selected and interviewed along with a QI coach. Interview topics included experience with improvement and perceptions of WhatsApp as a communication tool. We also accessed 18 weeks of the WhatsApp transcript (May-August 2016) including images and files shared in the group. Interviews were coded using in vivo, process, and structural coding strategies which further were categorized into themes and sub-themes.

Results: WhatsApp was effective for disseminating information, including guides on how to do QI, clinical guidance, and performance indicator data. The decision of who to include in the WhatsApp group and how members engaged in the group may have reinforced existing hierarchies among staff. Using WhatsApp created a work environment in which members were accessible all the time, breaking down barriers between personal and professional time. The continual influx of messages was distracting to some respondents and how respondents managed these messages (e.g., using the silent function) may have influenced their perceptions of WhatsApp. The coach used WhatsApp to share information, schedule site visits, provide real-time guidance on improvement, and prompt action on behalf of the team. As a coaching tool, WhatsApp also helped in identifying problems in teamwork and participation in QI. However, WhatsApp was not effective as a platform for group discussion to generate change ideas or analyze the performance indicator data.

Conclusion: WhatsApp was useful for facilitating communication within a QI team and with a coach in certain aspects of QI although it was not an effective replacement for in-person meetings. Certain considerations need to be addressed prior to implementation especially the QI team’s decision to use a mobile application, engaging team members, hierarchy and power dynamics among staff that may affect participation, and the role of the team leader. The findings suggest that the implementation of mobile messaging platforms, and other mHealth interventions, needs to be scaled-up and rigorously evaluated to better understand how these technologies impact health outcomes.

ISQUA17-3096
SEPSE PROTOCOL MANAGEMENT IMPACT IN REDUCING MORTALITY RATE IN HOSPITAL SAO LUCAS IN RIBEIRAO PRETO, BRAZIL

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Objectives: To show the impact on the reduction of mortality in hospitalized patients with the implantation and management of a sepsis protocol.

Methods: Brazilian epidemiological studies, coordinated by the Latin American Sepsis Institute (ILAS), indicate that about 17% of the Intensive Care Units (ICU) beds in Brazil are occupied by patients with sepsis, with a mortality rate varying between 30% and 70% for this disease due to the heterogeneity of Brazilian health institutions. The World Sepsis Statement signed by the Global Sepsis Alliance (GSA) and its affiliates, such as ILAS, states that the disease remains the primary cause of death from infection, despite advances in modern medicine. The high prevalence, mortality rate and morbidity due to sepsis, in addition to high costs, justifies the concern and effort to implement institutional measures of assistance improvements in order to reduce these rates. In 2012, preliminary studies performed at the hospital under study to assess the need for protocol implementation demonstrated that sepsis mortality rate was not different from Brazilian studies, corroborating for immediate implantation to ensure greater safety and quality of care. This is a descriptive study with a quantitative approach performed in a general, private, medium-sized hospital in the interior of the State of São Paulo, which has 95 beds and a predominantly surgical profile of high complexity. The study was carried out from January 2015 to
December 2016. In the year 2015, 295 patients were enrolled in the protocol and the diagnosis of sepsis was confirmed in 191 (65%) of the cases. In 2016, 463 patients were entered and 257 confirmed (53%). The main actions implemented were: Institutional Protocol development with reference to the Brazilian Program for Patient Safety (PBSP) linked to IQG Health Services Accreditation; Definition and monitoring of markers; Dissemination of the criteria for the identification of eligible patients to the protocol; Multidisciplinary campaigns and training; Events for dissemination and involvement of the clinical staff; Visual flag installation in the Ready service to speed test results; Preparation and dissemination of a simplified and easily accessible antibiotic therapy manual for medical staff; Definition of empiric antibiotic therapy.

Results: The actions implemented during all these years began to present better results only after 2016. With the consolidation of the protocol in the entire organisation, and an improvement in the time of antibiotic administration (the main marker of the protocol), was observed that it went from the average of 56% administration conformity in the first hour in 2015, to an average of 82% compliance in 2016. Consequently the improvement of protocol effectiveness in preventing deaths from sepsis jump from 47% in 2015 to 71% in 2016.

Conclusion: The results show that the implementation of a sepsis identification and treatment protocol was a high impact tool in reducing mortality rates related to sepsis.

**ISQUA17-3126**

**MEASURING AND IMPROVING THE QUALITY OF PRIVATE MATERNITY CARE: LESSONS LEARNED FROM A PRIVATE SECTOR QI PROGRAM IN INDIA**

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**Objectives:** Quality improvement (QI) for childbirth care is a priority for India. Private sector contributes to up to 47% and 24% of care during institutional births in urban and rural areas respectively in the country. Focus on QI for childbirth care among private maternity providers, is limited due to the private sector’s unorganized and unregulated structure, perceived lack of motivation for measuring quality, and non-availability of practical, standardized measurement tools. With support from MSD for Mothers, Jhpiego partnered with the Federation of Obstetrics and Gynaecological Societies of India (FOGSI) to improve private maternity providers’ engagement in quality improvement program. This paper presents key results and lessons learned on engaging and sustaining private sector’s focus on quality improvement for maternity services.

**Methods:** We implemented a streamlined, quality measurement and improvement approach based on a prioritized set of standards of care focused on intrapartum and immediate postpartum period. To address gaps identified through assessments, focused action plans including short training, in-facility mentoring, advocacy for prioritizing resources, and improve data recording and reporting were developed and implemented. To improve motivation for measuring and improving quality of care, the program included peer assessments and recognition via a FOGSI quality seal. Jhpiego implemented this program in 140 private facilities ranging from single obstetrician-led practice to corporate hospitals in the Indian states of Uttar Pradesh and Jharkhand between year 2012 and 2015.

**Results:** The program successfully engaged 146 out of 200 total eligible facilities (72%) in the target cities for the entire duration. Of these, only six (4.1%) dropped out. All remaining (140) facilities completed five rounds of quality assessments over two years. 94% partnering facilities standardized data recording for childbirth care practices by means of a birthing register and 96% shared data on quality.

Compliance to standards of care improved across the board. Out of total 146 facilities, at baseline, only 3% of participating providers demonstrated >70% rate of compliance with the standards of care. After two years of implementation, 84.5% of providers (82% in Jharkhand and 87% in Uttar Pradesh) met >70% of the standards. Overall compliance to the standards improved from 42% at the baseline to 78% in the latest assessments. The greatest improvements were made between the baseline and first assessments. On average, facility scores on performance standards jumped by 38% in that time. Additional improvements occurred more gradually, with scores improving an additional 12% on average by the second assessment, another 9% on average by the third assessment, and another 9% on average by the fourth assessment.

**Conclusion:** FOGSI played an important role in engaging and motivating private providers to measure quality. Engaging providers in adapting tools and measurement processes to suit their needs improved ownership of the process. Peer assessment and linked, public recognition are important motivators to sustain quality measurement and improvement for private maternity providers. Another key takeaway was that the private sector is willing to sustainably engage with quality improvement initiatives and is open to sharing data on content of care contrary to the current understanding of private sector’s motivation in India.

**ISQUA17-2039**

**PATIENT-CENTERED CARE AND LEADERSHIP STANDARDS COMPLIANCE: A LATENT CLASS ANALYSIS**

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**Objectives:** The Healthcare Unit (HU) accreditation Program of the Andalusian Agency for Health Care Quality aims to recognize that the HU is oriented and centered on both the supporting health actions and the needs and expectations of citizens and professionals. The purpose of this study is to analyze compliance patterns on the standards constituting the first two blocks, which are fundamentally focused on the participation of users and professionals and clinical leadership aspects.

**Methods:** Cross-sectional data was studied from 421 assessed HUs from 2011 to 2016. Latent class analysis was used to examine patterns of standard compliance and multinomial logistic regressions
were performed to identify characteristics associated with these patterns.

**Results:** A three-class model representing unique combination of the 15 non-compulsory standards from the HU Certification Program demonstrated the best fit (Bayesian Information Criterion = 4,617.906; Akaike Information Criterion = 4,407.159; Chi-square goodness of fit = 536.951.3). Class I (18.5% of units) and Class III (36.5% of units) were characterized by having a high rate of specialized units and belong to more recent certification projects. Class II (51.0% of units) presented the highest proportion of primary care units. When comparing standard compliance behavior, Class I had the best general performance on standards relating to the establishment of an individualized health management plan (100%), involvement of professionals on the agreed HU objectives (98%), the implantation of action lines according to comprehensive Health Plans (91%), the issuance a comprehensive activity report (87%), the assessment of the person needs to facilitate access to resources (74%), incorporation of the patients opinion on the organization (71%), promotion of citizen participation as an element of continuous improvement (57%) implementation of a Patient Safe Strategy (45%), or a Quality Plan implementation (41%) amongst others. There was only one quality standard where Class I did not show the best performance when compared with the other classes. The standard related to optimal information dissemination on health promotion activities to the citizen was more likely to be accomplished by class II (79%) that the Class I (70%). Class III showed a lesser compliance than class II, except for the standard related to the issuance a comprehensive activity report (68%), and the standard about the establishment of an individualized health management plan (86%).

**Conclusion:** Those units classified into the Class I, which also showed the highest overall compliance probability in all the standards, were more likely to be hospital units rather than primary care units. Comparing Class I to Class II and to Class III, significant differences were shown on standards about a proper Quality Plan implementation (40%, 4% and 0% respectively) and guaranteeing a Patient Safe Strategy (45%, 3% and 0%). The results suggest how these two items could be predictors of belonging to Class I, which is the one that shows the best overall compliance of patient-centered care and governance/leadership standards. Leading Quality and Patient Safe strategies may drive to engage Healthcare Units in other quality initiatives in healthcare. Further analysis need to be performed to explore the reasons behind the compliance behavior on Patient Centered care and leadership related standards.

**ISQUA17-1573**

**CONSECUTIVE CYCLES OF ACCREDITATION: PERSISTENT LOW COMPLIANCE ASSOCIATED WITH HIGHER MORTALITY AND LONGER LENGTH OF STAY**

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**Objectives:** To examine the association between compliance with two consecutive cycles of hospital accreditation and patient-related outcome

**Methods:** We conducted a nationwide population-based study covering all 25 public, somatic Danish hospitals between 2012 and 2015. A team of surveyors comprised of peers assessed compliance with The Danish Healthcare Quality Programme (DDKM) during two onsite surveys with three years interval. For each survey, hospitals were awarded either fully or partially accredited based on the surveyors’ findings.

We derived consecutive accreditation as a composite score according to the hospitals achievements in each cycle of accreditation. Hospitals that were partially accredited in both cycles were designated as ‘low compliant hospitals’ (n = 14) and hospitals fully accredited in at least one of the two cycles were designated ‘high compliant hospitals’ (n = 11).

We identified all patients diagnosed with one of the 80 diagnoses accounting for 80% of the deaths occurring within 30 days of admission. Patients were included with their first admission six month from the first day of the hospitals’ onsite survey.

Patient-related outcomes included 30-day all-cause mortality, length of stay (LOS), and acute unplanned all-cause readmission within 30 days after discharge (AR). We compared outcomes between patients admitted at high and low compliant hospitals. For 30-day mortality, we computed odds ratios by logistic regression and for LOS and AR, hazard ratios by Cox proportional hazard regression. All analyses were adjusted for six potential confounders (age, gender, comorbidity, primary diagnose, type of admission, and marital status) and included cluster effect at hospital level.

**Results:** The study cohort for 30-day mortality consisted of 277,559 patients of whom 125,485 (45.2 %) were admitted at high compliant hospitals and 152,074 (54.8%) at low compliant hospitals.

The 30-day mortality risk was 3.95% (95% CI: 3.84–4.06) for patients admitted at high compliant hospitals and 4.39% (95% CI: 4.29–4.49) at low compliant hospitals. We found, that patients admitted at low compliant hospitals had a substantially higher 30-days mortality risk compared with patients at high compliant hospitals, adjusted odds ratio of 1.26 (95 % CI: 1.11-1.43).

The mean LOS was 4.02 days (95% CI: 3.98–4.06) for patients admitted at high compliant hospitals, and 4.49 days (95% CI:...
4.45–4.53) at low compliant hospitals. Patients admitted at low compliant hospitals had a longer LOS compared to patients at high compliant hospitals; adjusted hazard ratio of 0.88 (95% CI: 0.82–0.95). The estimates did not change substantially when restricting the analyses to patients with a LOS between 1 and 33 days.

In all, 13.6% (95% CI: 13.5–13.7) of the patients experience an AR. No evidence was found for the risk of AR between admissions at high and low compliant hospitals. Nor when restricting to patients with a short LOS of less than 3 days.

**Conclusion:** Persistent low compliance with DDKM accreditation was associated with higher 30-day mortality and longer LOS.

**ISQUA17-2093**

**SERVICE AND PROFESSIONAL REGULATORS - MOVING FROM UNDERSTANDING TO STRUCTURED INTERACTION FOR ENHANCED PATIENT CARE**

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**Objectives:** “A failure of communication between the many agencies to share their knowledge of concerns...Assumptions that monitoring, performance management or intervention was (the) responsibility of someone else...Relentless focus of healthcare regulator on policing compliance with standards”

So stated Robert Francis in a presentation in 2012 on the Mid Staffordshire Hospital review he carried out, and published in 2010. While the responsibility lay with the hospital and its workforce, including statutory regulated professionals; these comments refer to the regulators of service and of professions.

We ask how best to have greater co-working between these regulators to improve patient safety. Too often, change has come from bad practices – Shipman, Royal Bristol Infirmary – Best practice requires us to be proactive in addressing the need for tighter agreed interactions between service and professions’ regulators – where can we work closer together?

Many Bodies have memorandums of understanding (MOUs), but how effective are these when dealing with challenging issues? One good example is work between one regulator of professions, who is working with one regulator of services, to strengthen a voluntary code of professional conduct for employers in relation to their responsibilities for their regulated professions. We plan to seek information on good practice and other suggestions, that all regulators can learn from, through a survey.

Should there be more legally robust links between Bodies? How can processes/procedures be improved? We plan to review what is currently in place; and to look at the impact on patients’ safety.

**Methods:** We propose to present a theoretical model as to how such interactions/relationships may work, through considering data exchanges, overarching frameworks at national level and other innovative practices.

We have conducted a survey of regulators of doctors, nurses, social workers and some health and social care professions, as well as regulators of services in Ireland, UK and Ontario Canada. This survey will be completed by the end of February. The focus has been on what current interactions are taking place between these agencies, and what models would they suggest to improve working together, for patient safety.

The presenters from Canada and Ireland are using their varied experiences and knowledge of professional and service regulation, to assist the research and practice currently available.

**Team working on the presentation/research**

Deanna Williams, Ontario Canada, former regulator of pharmacists and now Risk Officer for Retirement Homes Regulators Authority in Ontario, Canada

John Sweeney, Health Care Informed, Ireland, who was involved in the initial setting up of service regulation in Ireland and now provides support to service regulators in Ireland, Australia, Brazil and the Middle East.

Ginny Hanrahan CORU Ireland, regulator for 15 health and social care professions in Ireland and previously a senior manager in a regulated tertiary referral teaching hospital.

**Results:** We will present the results at the ISQUA conference, but initial response, are indicating some practical ways to improve the cross sectoral work to enhance patient safety.

**Conclusion:** This research is a first step in looking at ways to improve working relationships between service and professional regulators, to the betterment of people who use the services and professionals who regulate

**ISQUA17-3267**

**DEVELOPMENT OF QUALITY FRAMEWORKS FOR PEER REVIEW OF MEDICAL SPECIALISTS**

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**Objectives:** Intercollegiate quality evaluation or peer review among medical specialists in the Netherlands is organized by scientific societies as an integrated part of quality management on a national level. Participation in the peer review every five years is obligatory for (re)registration in the national register of medical specialists. However, these peer reviews were performed without explicit quality criteria or a framework. This resulted in variation between reviewers and between medical specialties. Therefore, the objective of our undertaking was to develop practical quality frameworks for nine participating scientific societies.

**Methods:** The scientific societies of nine medical specialties voluntarily participated: allergology, clinical chemistry, dermatology, lung disease, medical microbiology, neurology, neurosurgery, nuclear medicine and psychiatry. The quality frameworks were developed by a working group of medical specialists per specialty in four joint meetings and up to six individual meetings. Input for the quality
frameworks was obtained from a national blueprint for a quality framework, other existing frameworks, input from patient organisations and other relevant parties. The frameworks were sent for review to all members of the scientific societies and consequently tested during two peer reviews per speciality. Improvements to the quality framework were made where appropriate and approved at the general assembly.

Results: All nine scientific societies created a quality framework. The same design was used for all frameworks: four quality domains (evaluating care, team performance, patient perspective, and professional development) with multiple aspects (e.g., evaluation of patient records, multidisciplinary meetings, measuring patient satisfaction and knowledge sharing). A grading system was developed with five levels, ranging from excellent (being an example to others) to very poor (the necessity to improve the aspect within a maximum of six months). Differences in settings necessitated adaptations to the framework, e.g., for regional laboratories for medical microbiology or private clinics. In addition, the development of the quality frameworks resulted in changes in other parts of the peer review methodology, e.g., the regulations and the format for the peer review report. In addition, a manual for developing a quality framework for peer review was developed.

Conclusion: Using a uniform design, relevant frameworks for peer reviews of medical specialists were developed. The combination of joint and individual meetings resulted in learning from one another and consequently applying this knowledge for the participant’s own quality framework. These quality frameworks will support uniform decision making on where quality improvement is required from the groups of medical specialists.

**ISQUA17-1226**

**REGULATORY CONCEPTUALISATION AND ASSESSMENT OF HEALTHCARE IMPROVEMENT CAPABILITY IN THE UK**

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Objectives: Regulation is a system level policy used to improve healthcare quality. However, regulation is criticised as ineffective and reactive. In response, regulatory agencies are increasingly concerned with the assessment of improvement capability. Assessing improvement capability is important because organisations with more improvement capability may be more adept to deal with problems and bring about improvement for themselves, while those with limited improvement capability may need more external support and intervention. However, little is known about regulatory perspectives of improvement capability and there are few valid and reliable assessment instruments. Therefore, this study aims to understand how improvement capability is conceptualised and assessed by six national healthcare regulatory agencies across the four countries of the UK.

Methods: Hospital care was the study focus as this accounts for the majority of UK healthcare expenditure and a comparative qualitative study was conducted. All six UK healthcare organisational regulatory agencies participated in the study. Three data sources from each agency were used, including regulatory policy documents (n = 90), interviews from a cross-section of regulatory staff (n = 48), and assessment reports (n = 30) during the period 2013–2015. Content and thematic analysis was used to robustly analyse the data using an a priori coding framework. The framework was inductively developed from a comprehensive literature review of 70 instruments used for the assessment of improvement capability and consisted of eight dimensions. They were: Organisational culture; Leadership commitment; Employee commitment; Service user focus; Stakeholder focus; Process improvement and learning; Strategy and governance; and Data and performance. Manchester Business School ethics process was followed and approval granted.

Results: The study finds that regulatory agencies want to assess improvement capability accurately, to support the development of more effective system level interventions to ensure improved healthcare quality. The analysis shows that the dimensions of process improvement and learning and strategy and governance were most frequently used. Other dimensions were found less frequently with service-user focus being the least frequent, and this skewed pattern was consistent across agencies. Three themes emerge from the empirical data. First, it is problematic to define and operationalise improvement capability. Policy document and interviews stress the importance of developing improvement capability but do not articulate consistently what is meant by improvement capability. Second, assessments rely on out-of-date and infrequently measured data. Third, there is variable understanding of improvement capability, leading to variation and assessment bias through self-confessed knowledge gaps.

Conclusion: The study set out to consider how regulatory agencies assess improvement capability. The analysis shows that whilst agencies aim to assess improvement capability, two dimensions are used more frequently than others. This may be due to the difficulty in operationalising improvement capability dimensions, due to measurement, knowledge and practice gaps. The study highlights the need for regulatory agencies to further conceptualise improvement capability to inform assessment and development. This will strengthen agencies assessment, diagnosis and prediction of performance trajectories and support the development of tailored regulatory interventions.

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**ISQUA17-3314**

**HOW DO HOSPITAL BOARDS ENACT QUALITY GOVERNANCE? A MIXED METHODS STUDY OF 15 ORGANISATIONS IN ENGLAND**

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Objectives: Hospital boards in England have statutory responsibility for upholding the quality of care provided by their organisations. Research has established a link between board practices and quality
of care; however little is known about how boards enact quality governance and lead quality improvement (QI). The objectives of this study were to explore how quality governance is enacted by hospital boards and to identify the characteristics of boards with a highly developed approach to quality governance.

**Methods:** We did fieldwork in 15 healthcare provider organisations in England as part of an evaluation of a board-level organisational development intervention (QUASER). The data comprised interviews with board members (n = 66), observations of board meetings (60 hours) and documents (30 sets of board meeting papers and 15 Quality Accounts). We analysed the data using a framework we developed from existing research on the link between board practices and quality of care. Our analysis mapped the variation in how quality governance was enacted at board-level. We then used our findings to construct a measure of quality governance maturity. We used this measure to rate each organization in our study on the basis of the maturity of their approach to quality governance. We then compared organisations with a ‘high’ and ‘low’ quality governance maturity. This study received exemption from NHS Research Ethics processes. Informed consent was obtained from all participants.

**Results:** We found that boards of organisations with more highly developed quality governance prioritize QI, balance attention to short term priorities with a long term investment in QI, use data for QI, not just quality assurance, engage staff and patients in QI, and have a culture of continuous improvement. These characteristics were often enabled and facilitated by board-level clinical leaders.

**Conclusion:** This study contributes to an understanding of how quality governance is enacted by boards, and, in particular, the role of board-level clinician-manager ‘hybrids’. Our findings can help organisations improve their board-level quality governance.

**ISQUA17-3046**

**REGULATORY ACTION TO REDUCE BURNOUT AND BARRIERS TO TREATMENT-SEEKING AMONG PROVIDERS**

**M. STAZ**, **H. CHAUDHRY,** and **A. HENERGER**

**FEDERATION OF STATE MEDICAL BOARDS, Euless, United States**

**Objectives:** Participants at this session will be better able to:

1. Describe how burnout affects provider wellness and presents threats to competence and patient safety,
2. Explain how regulatory processes can impede provider willingness to report and seek treatment for issues of mental health, substance use, or other symptoms of burnout, and
3. Discuss an emerging evidence-informed medical regulatory initiative from the United States that highlights best practices for identifying potential risks to patients without increasing stigma associated with treatment-seeking among providers.

**Methods:** The presenter will describe the current state of physician burnout, including prevalence among medical specialties, contributing factors, and proposed solutions. The position of the medical regulatory authority with respect to burnout will then be considered, using illustrations from discussions of the Federation of State Medical Boards’ (FSMB) Workgroup on Physician Wellness and Burnout. The chief responsibility of any medical regulatory authority is to protect the health and safety of patients through licensing, disciplinary, and other regulatory processes for physicians. In scenarios involving burnout, however, protection of public health occurs by focusing first on the health of the provider. This is a challenging shift of perspective for many regulators and forces them to achieve a difficult balance between seeking enough information from physicians to be capable of adequately identifying risks to patients, without increasing stigma around burnout and treatment-seeking, thereby inadvertently causing a barrier to wellness among physicians.

Application questionnaires used during licensing processes are an area being looked at in the United States by the FSMB, as this is the primary means by which medical regulators gather information about physicians seeking licensure. Participants in this session will be provided with an overview of licensing processes in American jurisdictions with emphasis on levers for assessing potential risks to patients based on provider health.

Best practices will be highlighted for phrasing questions in a way that does not lead to greater stigma about symptoms of burnout, including focusing only on impairment that can interfere with a physician’s ability to practice medicine safely, rather than seeking information about a history of illness that may not impact patient care. Regulators must also be mindful of recent data demonstrating a reluctance on the part of providers to report symptoms of burnout for fear they may impact their ability to obtain unrestricted licensure.

**Results:** Session participants will be shown concrete examples of licensing and registration questions that address impairment, but avoid contributing to further stigma around burnout or present barriers to reporting and treatment-seeking.

**Conclusion:** Medical regulatory authorities’ duty to protect the public includes a responsibility to ensure physician wellness. While numerous systems factors contribute to the prevalence of burnout among healthcare providers, regulators are working to address burnout by focusing first on the processes related to licensure and discipline that are under their sole purview. Lessons from this ongoing work will be applicable to other areas of healthcare governance, including accreditation and employment processes.

**Reference**


**ISQUA17-1718**

**LOTS TO LEARN: ACCREDITATION LESSONS FROM OTHER INDUSTRIES.**

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**Objectives:** Regulation of the health-care industry is considered to be an important tool to improve quality of care, however, the literature evaluating the effectiveness of accreditation internationally is
mixed. The study explores and assessed the effects of regulation & accreditation in non-healthcare industries, with an aim to provide learnings relevant to healthcare. Accreditation provides significant opportunities to drive improvement in patient care. However, the accreditation process is costly and time consuming and has a large opportunity cost for patients if the accreditation system are not maximised to drive improvement in care and reduce harm.

We present five key learnings from other industries, which we believe could transform accreditation with the aim of maximising improvements in patient care.

**Methods:** The review of literature was conducted using the Oxford CASP criteria, based on a research protocol agreed by the authors. A diverse range of data bases were sourced using key search terms and specified selection criteria. The study categorised findings into models of Regulation and Accreditation/Regulating and Models in Practice from Banking and Finance, Education, Manufacturing, Nuclear Power and Aviation.

**Results:** The review demonstrates that the system of Accreditation in healthcare is less mature than what is seen in other industries. There are 5 key learnings from this review of other industries:
- Assessing safety requires not just assurance, but also assessment of quality improvement and culture.
- A diverse toolbox available to regulators to assess assurance, improvement and culture.
- Regulation and accreditation must identify and address key risks and gaps in operational performance.
- Lessons for healthcare from the both high risk and low risk industries.
- Models of regulation have not been trialled properly by implementation, such that assessment of successes or failures has not been as scientific as they could have been.

**Conclusion:** The large proportion of resources dedicated to accreditation of hospitals presents a considerable opportunity cost for patients and healthcare systems, unless the accreditation system is maximised to drive improvement in patient care. We reviewed the practice for regulation and accreditation in other industries to see if there are learnings applicable to health care. No single model is perfect under every condition or context. Moreover, there are important differences between health care and other industries, in the realms of culture, professional autonomy and customer focus and empowerment. The study provides important lessons from the more mature regulatory systems in other industries and present an opportunity to drive better care for patients.

**References**
The review is based on more than 50 scientific papers – reference list will be presented at the conference.

**ISQUA17-1632**

**QUALITY IN LONG-TERM CARE: AN EXPANDED VIEW.**

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**Objectives:** Regulation and accreditation drive the quality agenda in long-term care (LTC), and are associated with compliance with legislation. Traditional models of regulation and accreditation in LTC are deterrence based, and are ineffective in improving quality; time consuming; expensive; and onerous for smaller facilities. ‘New Governance’, is a tri-partisan approach to quality, which is offered in the literature as a means to involve interested parties, traditionally excluded, in the quality agenda in LTC. The approach is characterised by participation; flexibility; responsiveness; dynamic learning; and self-enforced regulation. However, ‘New Governance’, rather than being a means to improve the interdependence between legislation and enforcement, to facilitate a more dynamic approach, has been critiqued. It is perceived, by some, as a means to de-regulate the LTC sector. An expanded approach is needed which not only embraces the need for compliance with legislation, but is still collaborative and values the perspectives of different stakeholders. This work argues that traditional mechanisms for achieving quality in LTC do not account for person- and family-centeredness or contextual factors.

**Objectives:** Regulation and accreditation comprise only one component of quality in LTC. This research proposes an expanded view for achieving quality in this clinical setting, by viewing regulation and accreditation as part of a wider approach.

**Methods:** We systematically explored the literature in LTC for the common mechanisms to achieving quality in LTC: deterrence, compliance, and responsiveness. Deterrence is formal and sanctions based; compliance is less formal, more supportive and development focused; and responsiveness is a hybrid of the two. Deterrence approaches are costly, achieve rapid change, but make assumptions that organizations are breaking the rules, leading to defensive behaviour from LTC providers. Compliance strategies are less costly, but are easier to undermine or circumvent; and although change may be slower it can be more sustainable.

**Results:** The results led to the development of an expanded framework to improve quality in LTC by viewing regulation and accreditation as part of a wider approach to quality improvement. This framework is mindful of person- and family-centeredness and the contextual nature of LTC. Banerjee & Armstrong (2015) describe a multi-level approach to regulation, arguing quality is influenced at the global; federal; provincial; and local levels across the LTC landscape. They also suggest that Donabedian's Model of Quality Improvement (Donabedian, 1966) can be used as a basis to evaluate quality in LTC. By linking these concepts, this work offers an expanded view to understanding and improve quality in LTC. The “Quality in Long-Term Care Framework”, is a matrix based on Donabedian's domains of structure, process, and outcome, but also incorporates the multi-level approaches to quality, described by Banerjee & Armstrong (2015).

**Conclusion:** This framework, offers an expanded view of overall quality in this sector, providing an inclusive view of quality from a number of perspectives, including the perspectives of residents and families. Although the scope of this work was based on examining mechanisms for achieving quality in LTC, it has the potential to be adaptable to meet the needs of other populations and in other care settings.

**References**
Abstracts

**ISQUA17-1772**

**IMPROVING CARE FOR OLDER ACUTE INPATIENTS: AN ECONOMIC EVALUATION OF THE DELIRIUM CLINICAL CARE STANDARD**

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**Objectives:** Delirium, an acute confusional state, is a medical emergency, can affect up to 30% of acute admissions, and is associated with increased morbidity and mortality. This study will evaluate whether implementing the Delirium Clinical Care Standard (Standard) is cost-effective in improving the diagnosis and management of delirium in acute care in Australia.

**Methods:** This study uses a mixed methods design to evaluate Standard implementation in an acute care public hospital. For the quantitative arm, the medical records (n = 1250) of patients over 65 years and admitted to four study wards (medical, surgical, and intensive care) during month 1 and month 4 of the study period will be reviewed by trained nurse researchers. The Standard will be implemented in month 2 by an acute care public hospital in accordance with their planned quality improvement strategy, using a Logic Model approach to build an implementation plan. For the qualitative arm, nursing staff (n = 10) on study wards will be interviewed in month 2 and 4 to investigate implementation issues. Patients with resolved delirium (n = 10), and family members and carers (n = 10) will be interviewed in Month 4 to investigate the patient experience in delirium and inform the assessment of the Standard. An economic evaluation will determine the costs and benefits of the Standard, using activity based costing methods and outcome data collected from the medical record reviews.

**Results:** The main outcome will be the incidence of delirium before and after implementing the Standard. Other outcomes of interest include the timing and use of cognitive screening tests, identification of high risk patients, length of stay, discharge disposition, psychotropic drug use, age appropriate anaesthetic use, and compliance with the Standard in terms of providing personalized care plans for patients at high risk of developing delirium. These outcomes, and the results of the economic evaluation, will be presented to the hospital staff, health departments, and health safety and quality bodies as part of the quality improvement and implementation best practice process.

**Conclusion:** Delirium is a largely preventable medical emergency requiring prompt diagnosis and treatment. The Standard comprises international evidence based interventions for identifying, preventing, and treating delirium. This study will provide data for scaling up implementation of the Standard on a national scale, and for collaboration in international efforts to reduce this important hospital acquired condition. The study also provides a blue-print for designing, implementing, and improving, other clinical care standards.

**Reference**


**ISQUA17-1430**

**THE VOICE STUDY: EMBEDDING THE PATIENT VOICE OF OLDER ADULTS IN THE EXPLORATION OF THEIR EXPERIENCES DURING CARE TRANSITIONS**

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**Objectives:** Older adults with multiple chronic conditions typically have more complex needs, and often seek care across different sectors. These older adults may also have multiple care transitions during their health care journey. Poor care transitions often lead to fragmentation in care, decreased quality of care, and an increase in adverse events. Emerging research recommends the strong need to engage patients and families to improve the quality of their care. The objectives of this study were to: (1) describe the experience of older adults with multiple chronic conditions and their caregivers during transitions of care; (2) explore the strategies that patients and their caregivers currently use to navigate their care transition experiences; (3) understand the aspects of their care transitions that patients and their caregivers attribute with safety and quality problems; and (4) understand the aspects of care transitions that patients and their caregivers attribute with improving the safety and quality of their experiences.

**Methods:** This study used participatory visual methods informed by a socio-ecological perspective.

**Sampling and recruitment:** We used both purposive and theoretical sampling. The inclusion criteria were: patients managing at least one chronic condition; patients receiving primary care services for greater than 90 days; patients who experienced at least one transfer across sectors within the past 90 days; men and women aged 50 years or older; and patients who were legally competent. Family members at least 18 years of age or older were also invited to participate.

**Data collection tools and methods:** We conducted 60 to 90-minute audio-recorded photo walkabout sessions in the patients’ home. Immediately following the photo walkabouts, further discussions with patients/families took place to collect further data about their experiences. Ethical approval was obtained from the local Research Ethics Board.

**Data analysis:** Two individuals independently reviewed and coded each transcript. The data was then analyzed for similarities across the transcripts using an iterative process until consensus on the coding and analysis was reached. ATLAS.ti (SSD GmBH, Berlin) was used to manage the visual and textual data and supported the thematic analysis of the photo walkabout narratives and photo elicitation table top discussions.

**Results:** We conducted a total of nine photo walkabouts between February and September 2016. Overall, patients and families identified the importance of active involvement in managing their own care transitions; described their positive experiences during care transitions; described their successes with accessing community services and resources; as well as their challenges with accessing these...
services and resources; shared insights into how they felt a lack of meaningful engagement during discharge planning; and identified some systemic barriers during care transitions.

**Conclusion:** Based on patient and family members, the study identified three main recommendations specific to older adults managing chronic conditions during care transitions for policy makers, care providers, patient and families to collaboratively implement.

**Disclosure of Interest:** C. Backman Grant / Research support from: The Beryl Institute, M. Crick: None Declared.

**ISQUA17-2923**

**EXPLORING THE INFLUENCE OF BEHAVIOURAL DRIVERS ON PROCEDURAL VIOLATIONS IN COMMUNITY PHARMACIES**

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**Objectives:** Community pharmacy (CP) staff must balance the conflicting goals of managing patient safety and meeting performance targets. As a consequence, procedures are not always followed. Previous research suggests that behavioural drivers (such as whether someone’s colleagues deviate from procedures and time pressure) may influence an individual’s decision to deviate from procedures. Research suggests that different “types” of violations exist and that the behavioural drivers for each type of violation differ. The aim of this study was to further explore the effect of behavioural drivers on the different types of violations in CP.

**Methods:** A questionnaire was developed based on the COM-B model (1). The model incorporates five key behaviour change theories and explores the influence of habit. The questionnaire explored the influence of capability, opportunity and motivation on different types of violations. Paper copies of the questionnaire were sent to pharmacies in the North of England and electronic copies were sent to a professional leadership body for registered pharmacy technicians. 275 responses were included in the analysis, 193 (69.9%) of participants were female and the average age was 38.16 (SD 12.11). There were 166 (60.2%) pharmacists and 109 (39.8%) support staff.

A 2 × 2 × 4 between-subjects analysis of covariance was performed on the dependent variable (the frequency of violation). The independent variables were gender (male vs female), role (pharmacist vs support staff) and pharmacy type (independent vs small chain vs medium chain vs large chain vs supermarket). The covariate was length of experience. Sequential regressions were conducted to explore the influence of habit on violations.

**Results:** The findings showed different types of violations were influenced by different factors. The frequency of the optimising violation (selling pharmacy medication meant for short term use regularly to the same patient) was significantly influenced by motivation (p < .001), opportunity (p = .008) and habit (p < .010). Men were more likely to make an optimizing violation (p < .001) and pharmacists were more likely to make an optimizing violation than support staff (p = .001). The frequency of the situational violation (not conducting a full accuracy check of medication against a prescription) was significantly influenced by opportunity (p < .001) and habit (p < .010). The frequency of the routine violation (loaning medication to a patient without a prescription) was significantly influenced by motivation (p < .010). Pharmacists were more likely to make a routine violation (p = .033), and the frequency increased with experience (p = .001). The frequency of the exceptional violation (purposefully dispensing out of date medication) was significantly influenced by habit (p < .010).

**Conclusion:** Our study is the first to explore the influencing factors on violations on a larger scale in CPs and show that motivation and opportunity are key influences on procedural violations. These findings provide important insights into why work as imagined in procedures is not always reflected in the work as done in practice. As habit was shown to be a significant predictor at times, implementation intentions may be a useful intervention for supporting staff in complying with procedures.

**Disclosure of Interest:** C. E. L. Thomas Grant / Research support from: NIHR, D. L. Phipps Grant / Research support from: NIHR, D. M. Ashcroft Grant / Research support from: NIHR.

**Reference**


**ISQUA17-3085**

**BALANCING DIAGNOSTIC ERRORS WITH CONSERVATIVE DIAGNOSIS: DEVELOPING A NEW PARADIGM FOR MORE APPROPRIATE DIAGNOSIS**

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**Objectives:** The US National Academy of Medicine report has focused worldwide attention and opened unprecedented opportunities to address diagnostic errors and delays. However, there is a need for a more dialectical view and understanding of diagnosis, one that incorporates the problem of over-diagnosis—going beyond merely balancing trade-offs between diagnosis errors and delays (under-diagnosis) and over-diagnosis and wasteful over-testing. This more nuanced view must treat these related problems as two sides of the same coin, with the unifying concept being better and more appropriate diagnosis. Some diagnoses are being made and treated well beyond their effect on patients’ health and well-being, with diagnostic interventions causing harm that outweigh any benefits, yet other diagnoses that would help relieve suffering are being missed entirely. To address this long-standing problem, we aim to develop a series of principles conservative diagnosis principles and practices.
Methods: Principles were developed modeled off of previously-published Principles of Conservative Prescribing. A series of focused brainstorming meetings were held to collect expert opinion and formulate concepts for more conservative, careful, appropriate diagnosis. Primary care and specialty physicians were convened and feedback was gathered at several national conferences including the Lown Institute Road to Right Care, the Society to Improve Diagnosis in Medicine Conference, and Diagnostic Error in Medicine-After the IOM Report: What’s Next Conferences.

Results: Broad practice and policy categories were developed that serve as the foundation for Principles of Conservative Diagnosis and include 1) need to develop a new model for patient “caring” that avoids equating more testing with taking patients’ concerns seriously; 2) creating new science of clinical uncertainty; 3) rethinking common symptoms, especially nonspecific symptoms seen in primary care; 4) (re)prioritizing diagnoses based on treatment imperatives and effectiveness; 5) taming time to facilitate more time with patients and watchful waiting; 6) better appreciating test limitations; 7) leveraging continuity relationships; 8) incorporating diagnostic safety lessons and anticipating “don’t miss diagnoses” and pitfalls; 9) new approaches to timely cancer diagnosis; 10) transforming the role of specialists and EDs from current status of promoters of non-conservative diagnosis; 11) prospective guidelines for approaching common problems; and 12) understanding, overcoming barriers, fragmentation, lack of coordination as key drivers of suboptimal diagnosis.

Conclusion: Striking a balance between missed/delayed diagnosis with overdiagnosis and over-testing represents a linear view. A more dialectical approach must focus on more appropriate diagnostics rather than just fewer tests (rather than “less is more,” “more is less!”). This new approach should be based on general principles, not just lists of tests to avoid. These general principles incorporate fundamentals of a good diagnosis (careful exam, listening to the patient, avoiding known biases, understanding limitations of diagnostic tests) with the critical approaches based on the precautionary principle, primary care principles, key patient safety lessons, and a healthy scepticism of market-oriented medicine. Key principles must enhance the patient’s role in co-producing a diagnosis, appreciate/minimize patient and provider anxieties, as well as identify when early definitive diagnosis represents the best and most conservative strategy.

ISQUA17-1570
IMPLEMENTING EVIDENCE BASED TOOLS TO REDUCE TELEMETRY AND VENTILATOR ALARM FREQUENCY IN AN ICU SETTING

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Objectives: Alarm fatigue has been on the top of healthcare related hazards in the recent years (ECRI). The Joint Commission (JC) has considered alarm safety to be a national safety goal since 2013. It has been shown that the majority of alarms in ICUs are non-actionable or wrong, and this is thought to be the major cause of alarm fatigue.

Methods: This project aimed to reduce alarm fatigue by reducing the number of non-actionable alarms. The project was conducted in a 220 beds acute care hospital. Baseline data was collected using secret observations, focus groups, personal interviews and a questionnaire. Secret observers were given a check list to classify the attitudes of staff after an alarm goes on. The data was then collected and analyzed. The focus group aimed to brain storm with the team about the alarm fatigue problem and potential solutions.

Results: Baseline observation data of 631 alarms showed that 44% were only silenced, 21% ended up with clinical interventions, 20% were never attended, 11% required no actions, 2 % ended by changing alarm limits and 1% were solved by fixing connection problems. Seventy percent came from bedside monitors, 18 % from mechanical ventilators and 12 % from pumps and other equipment. Focus groups and personal interviews helped to uncover problems related to alarm management. Main findings of focus group and interviews were: lack of standard approach to alarm settings, tendency to “over-monitor” patients, lack of standards to re-evaluate alarm limits, noise at disturbing levels, frequent non-actionable alarms caused a lot of interruptions, frequent detachment of ECG sensors, use of oversized or undersized blood pressure (BP) cuffs, BP cuff and pulse oximeter on the same extremity, alarm limits not tailored according to patients’ needs. After securing leadership support, a multidisciplinary team was established. The team developed an alarm management policy which helped to outline the basic actions to be taken to reduce false alarms, prevent unnecessary monitoring and re-evaluate patients’ needs for monitoring and customize alarms’ limits. Rules to prevent artefact and improve signal quality were defined and staff were educated. Inventory of all ICU equipment with alarms was established and all checked for malfunction and calibration need. Check box was added to patients’ monitoring charts to make sure that monitoring needs and alarm limits are revised daily. Post intervention observations at the pilot ICU unit showed bedside monitors alarms reduction from 70% to 52%, never attended alarms reduction by 70 %, only silenced alarms reduction by 27 %. Also, alarms ending up by changing alarm limits increased by 200% and alarms ending up with clinical interventions increased by 48%.

Conclusion: A significant reduction in non-actionable and wrong alarms was achieved by establishing a multidisciplinary team and organization specific policy to standardize approach, customize alarm limits and reduce artefacts. More time is spent on actionable alarms. Engaging frontline staff is essential to achieve applicable solutions.

References
ISQUA17-1548
BROKEN WINDOWS THEORY AND ITS APPLICATION TO HEALTHCARE
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Objectives: The challenge of improving the quality and safety of patient care remains one of the most pressing yet complex and intractable problems for modern health service organisations. Previous research has already examined how specific aspects of the healthcare system, such as institutional context and organisational culture, affect the quality and safety of patient care. However, some of the ‘less obvious’ aspects of the system, such as hospital disorder, may also have important implications for hospital staff behaviour and ultimately the quality, safety and efficiency of patient care. This study draws its empirical focus from Broken Windows Theory (BWT) which was originally developed to explain the association between neighbourhood disorder and crime [1]. According to this theory, broken windows and other visible signs of disorder (e.g., graffiti, litter) signal to people that no one cares about the place; thus, people are likely to choose these sites as places to partake in criminal or antisocial activities. Recently, BWT has been applied beyond public spaces in neighbourhoods, to more enclosed spaces, such as the workplace [2], and provide support for the idea that taking care of the ‘small things’ (e.g., time usage, a tidy work space) makes it easier to keep the “big things” in check (e.g., patient safety). The aim of this study has three key goals: (1) to develop and test two new methods to assess visible signs of disorder within a hospital context; (2) to investigate the convergent validity between the two methods; and (3) to explore the relationship between physical disorder (assessed by these two measures) and organisational context, organisational culture, safety and quality, as well as hospital performance.

Methods: Four major metropolitan hospitals of varying size and geographic locations across Sydney will take part in this study. Methods will involve observation of physical disorder in four major Sydney hospitals across Sydney. Two measures will be used to assess disorder: (1) observation checklist completed by trained observers; and (2) photographs of hospital spaces rated on disorderliness by an external panel of professionals. Measures of physical disorder will then be related to routinely collected hospital measures of organizational culture, quality and safety of patient care, and hospital performance.

Results: Based on previous research in neighbourhood contexts we predict that hospitals with higher visible signs of disorder will have: poorer safety and quality outcomes; higher waiting times for treatment and higher lengths of stay; and be less financially efficient. Results will be examined and discussed outlining the relationships between physical disorder, organisational context, organisational culture, safety and quality, and hospital performance.

Conclusion: Broken windows theory may have considerable promise to shed light on the relationship between the hospital physical and social environment and patient outcomes. We are the first to apply these theories to the hospital context, and we anticipate the data will allow for insights in hospital organisational culture that are new and important, with potential implications for improving the delivery of patient care in the longer term through interventions targeted toward affecting hospital order and pace.

References

ISQUA17-2770
LEARNING TO CROSS BOUNDARIES: DECONSTRUCTING QUALITY IN CARE TRANSITIONS (QICAT)
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Objectives: Quality in care transitions (QiCaT) is an emerging domain of patient safety and quality improvement research, focusing on the delivery of patient care across a multitude of primary, secondary, and specialist services. Being an integral and essential aspect of all care systems, the quality of care transitions has, to date, been largely under-researched or subsumed within other research agendas, such as continuity of care or integrated care. There is a need for a distinct conceptual foundation and roadmap for quality in care transitions. The study has a twofold objective:

1. To propose a heuristic model for how quality in care transitions can be understood using ‘horizontal’ and ‘vertical’ dimensions.
2. To identify the research needs associated with the ‘horizontal’ and ‘vertical’ dimensions of care transitions.

Methods: The QiCaT model development draws on an integrative analysis of two sets of data material:

1. Recent literature reviews within the field of QiCaT including conceptual synonyms such as handover, handoff, transfer, continuity, coordination, and integration.
2. Selected research studies (N = 13) throughout seven countries (Australia, Canada, Denmark, German, Netherlands, Norway, UK) showcasing different perspectives to, and dimensions of QiCaT.

The analysis has been theory-driven seeking to integrate different clinical, organizational, and social science perspectives, to better conceptualise and explain the quality of care transitions, including the identification of relevant research methodologies and analytical perspectives.

Results: Our heuristic model of QiCaT elaborates both ‘horizontal’ and ‘vertical’ dimensions. The horizontal dimension draws attention to the interaction of clinical systems and processes across the patient pathway and journey, such as hospital and home. The vertical dimension locates these transitions within a wider system of care considering the influence of upstream organizational and system factors. Through analysing the interaction between both these dimensions, the quality in care transitions can be better understood.

The following dimensions are identified as vital to QiCaT:
Abstracts

Strategies for Patient Safety and Quality Improvement in Primary Care

O. H. MAHOMED*, and D. KALONJI
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Objectives: To determine the incidence, nature, and trends of the voluntary reporting of adverse health events at a regional hospital in KwaZulu Natal between 2011 and 2014.

Methods: An observational analytic cross-sectional study was conducted at a regional/tertiary hospital in eThekwini District, KwaZulu-Natal Province. A retrospective review of inpatient adverse health events reports, including patient clinical records and minutes from Adverse Health Events meetings for the period April 2011 – April 2014 were analyzed. Chi square statistic and multivariate logistic regression were used to determine associations.

Results: The overall reporting rate of adverse health events was 3.8 incidents per 1 000 patients. Sixty-five percent of reported incidents involved female patients. The mean age of patients was 34.5 years (SD 17.4 years). Sixty-one percent of the reported incidents occurred in acute admission and internal wards and 33% in operating rooms. Seventy percent of reported incidents were received from surgical disciplines. Sixty-four percent of the reported incidents occurred within five days of admission. There were five main adverse events identified. Peri-natal incidents (25%) were associated with patients < 31 years of age and were more likely to occur at night (p<0.05). Absconding (18%) was associated with male patients from acute admission and general wards (p<0.05). Patient falls (11%) were associated with older patients and were more likely to occur in medical disciplines (p<0.05). Pressure ulcers (7%) were strongly associated with a length of stay of longer than five days (p<0.05). Obstetric organ injury (6%) was mostly attributed to patient factors (p<0.05). The majority of contributing factors were attributed to patient and staff factors.

Conclusion: The low reporting rate of adverse health events indicates under-reporting. The nature and the root causes of adverse health events reported are in line with those reported across international studies and reporting systems.

References

ISQUA17-2942
THE INCIDENCE, NATURE, AND TRENDS OF ADVERSE HEALTH EVENTS AT A REGIONAL HOSPITAL BETWEEN APRIL 2011 TO APRIL 2014

O. H. MAHOMED*, and D. KALONJI

Objectives: To determine the incidence, nature, and trends of the voluntary reporting of adverse health events at a regional hospital in KwaZulu Natal between 2011 and 2014.

Methods: An observational analytic cross-sectional study was conducted at a regional/tertiary hospital in eThekwini District, KwaZulu-Natal Province. A retrospective review of inpatient adverse health events reports, including patient clinical records and minutes from Adverse Health Events meetings for the period April 2011 – April 2014 were analyzed. Chi square statistic and multivariate logistic regression were used to determine associations.

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Conclusion: The low reporting rate of adverse health events indicates under-reporting. The nature and the root causes of adverse health events reported are in line with those reported across international studies and reporting systems.

References

ISQUA17-3305
DEVELOPING AND IMPLEMENTING A NATIONAL PAEDIATRIC EARLY WARNING SYSTEM FOR MANAGING CHILD CLINICAL DETERIORATION

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Objectives: A 2013 patient safety review by the Irish Health Information and Quality Authority identified several care deficiencies including a failure to act or escalate concerns about deterioration to appropriately qualified clinicians. The Minister for Health subsequently mandated the Department of Health’s National Clinical Effectiveness Committee commission and quality assure a number of National Clinical Guidelines; including early warning scores for adult, maternity and paediatric healthcare settings. This lead to the establishment of an Irish Paediatric Early Warning System (IPEWS) steering committee and appointment of a national PEWS coordinator with the remit of developing, and rolling-out, a national Clinical Guideline for PEWS which consisted of a number of components and phased initiatives.

1. To develop a single, national IPEWS, associated guideline document underpinned by best available evidence and targeted training programme
2. To support implementation of the IPEWS nationally in all inpatient paediatric hospital sites

Methods: The process of developing and implementing the Irish national PEWS Clinical Guideline has been iterative and dynamic with use of multiple phases and methods, including

- Conduct of a systematic literature review on PEWS
- Development of age-appropriate PEWS scoring tools and observation charts
• Development of a PEWS education/training programme
• Pilot evaluation of PEWS in four settings
• Redesign of PEWS scoring tools/observation charts with involvement of human factors experts
• Development of a suite of PEWS parent communication resources
• Baseline evaluation of hospital safety culture before national PEWS implementation
• Consultation for improving safe use of modifications within the scoring system
• Development of a national standard for ongoing multidisciplinary training
• Development of an electronic audit tool linked to nationally reportable key performance indicators

Results: The National Clinical Guideline no.12 PEWS was endorsed by the Irish Minister for Health in 2015 (updated November 2016) to provide the framework for implementation of the Irish PEWS. Now, in early 2017, PEWS has been implemented in 32 hospitals in the public sector and a number of private hospitals, following a centrally-coordinated, regionally-facilitated “Train the Trainer” programme with ongoing support from the National PEWS Coordinator and PEWS Steering Group. Valuable lessons have been learned throughout the process and several critical success factors identified; governance support for key local leads and champions, strong and ongoing training programme, frequent audit for quality improvement, frontline ownership of the change and a supportive, collaborative, multidisciplinary team culture at local level.

Conclusion: There has been an emphasis on the requirement of a systems approach to enhance the multifaceted elements of a successful early warning system; including implementation with quality improvement methods, standardisation and improved individual and team situation awareness that has been identified as a critical success factor in preventing inpatient deterioration. The Irish PEWS continues to evolve over time and with experience. We view IPEWS as a foundational paediatric safety programme which will take time to embed and reach full potential. Work is required to examine the national impact of the system on paediatric clinical outcomes and on hospital safety culture and staff working practices.

ISQUA17-1836
CLEAN HANDS SAVE LIVES: USING A DATA-DRIVEN APPROACH TO IMPROVE AND SUSTAIN HAND HYGIENE COMPLIANCE
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Objectives: The Mount Sinai Health System’s (MSHS) commitment to decreasing hospital-acquired infections includes the implementation of a comprehensive, data-driven hand hygiene initiative. To achieve higher levels of compliance a coordinated change management approach was used in conjunction with the Joint Commission’s Center for Transforming Healthcare’s Targeted Solutions Tool (TST).

1. Describe how to implement a data collection process to anonymously and accurately collect hand hygiene data.
2. Explain how multidisciplinary involvement in developing and implementing solutions contributes to improved hand hygiene compliance.

Methods: The methodology of the TST was implemented across the health system within a centralized governance structure that enhanced accountability. A cohort implementation approach was used to launch the initiative on units across 6 hospitals in the health system. Anonymous observers were trained to collect compliance data as well as information on the reasons for non-compliance. The initiative includes a Baseline and Improve phase. All data are entered into the TST web portal. Between August 2014 and December 2016, 77 units across 6 hospitals collected 135,406 observations.

Results: Hand hygiene compliance at MSHS improved from 63% at Baseline to 80% (p<.001). Each of the six hospitals participating in the initiative showed improvement between the phases of 10-29% (p<.001 for each hospital). All staff types (clinical and non-clinical) improved compliance between the Baseline and Improve phases of the project, with both Nurse and Physician compliance increasing 15%. Staff from the Laboratories had the largest improvement between Baseline and Improve with a 33% improvement (p<.001). Nurses and Physical Therapists had the highest overall compliance in the Improve phase at 85%. Compliance significantly improved for both day (64% to 79%, p<.001) and night (59% to 80%, p<.001) and for washing on entry (59% to 77%, p<.001) and washing on exit (67 to 83%, p<.001) between Baseline and Improve.

In addition to compliance rates, the TST allows for the measurement of reasons for non-compliance. Improper use of gloves is the top reason for non-compliance in both the Baseline and Improve phases and accounted for 29% of system-wide non-compliance. Other top reasons for hospital-wide non-compliance include: hands full of supplies/medicine (27%) and frequent entry and exit (16%).

Conclusion: The Mount Sinai Health System has demonstrated success in improving compliance through a system-level coordinated change management approach to hand hygiene compliance. This approach included clear expectations for improvement, defined roles and responsibilities for stakeholders, standardized data collection processes and strong leadership support. The success of this work has been dependent on the broad inclusion of different types of staff in data collection and solution development.

ISQUA17-2949
HORIZON SCANNING: INTERNALISING THE IMPACT OF THE GOOD, BAD AND UGLY IN HEALTHCARE
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Objectives: National University Hospital (NUH) is a large tertiary teaching hospital with comprehensive range of clinical services, 1250 beds and over 8000 staff. Growing complexity of our systems, elderly & chronic disease patients, scarce resources, production pressures and long turnaround times pose risk in delivering safe care to our patients. Hospital has implemented an Enterprise Risk Management System, in which clinical risk domain is managed via a multi-pronged approach.

Methods: In addition to the voluntary incident reporting system, adverse event tracking via chart reviews, patient safety strategy, & tracking signals from the risk dashboard, NUH implemented “horizon scanning” as part of its risk management strategy. A clear definition of what
medication safety in community pharmacy have been increasingly focused in Japan as community pharmacy routinely handles with prescription of such high risk drugs as anti-coagulation drug, anti-tumor drug and so on. Nationwide pharmaceutical near-miss reporting and learning system has been operated by the Japan Council for Quality Health Care (JQ) since 2009 aiming at enhancing medication safety in community pharmacy. Near-misses reported in 2015 were put on analysis for creating preventive knowledge.

Methods: Near-miss which occurred or was identified in community pharmacy is routinely collected from registered community pharmacy on voluntary basis in the reporting system. JQ collects, tabulates data of those events and compiles annual report and monthly case report. On observation of the reports, several focused areas are identified and put on further analysis to withdraw lessons for prevention.

Results: The pharmaceutical near-miss reporting system collected 4,779 near-misses in 2015. The breakdown of collected near-misses revealed that 78.0% near-misses (3,727 cases) are those related to dispensing such as wrong quantity, wrong strength, wrong form of drug and so on. What was most highlighted was that increasing number of cases were related to clarification by pharmacist on questionable prescription issued by hospital/clinic. The government policy on medication to patients has been that prescription and dispensing are separately allocated to hospital/clinic and community pharmacy. Clarification on questionable prescription was stipulated in “Article 24 of Pharmacist Law” as a vital role of pharmacist. The near-miss related to clarification accounts for 21.8% (1,040 cases) of reported cases. It was revealed that patients’ health conditions were possibly affected if dispensed along with original prescription in 64.6% (672 cases) near-misses among 1,040 near-misses related to clarification. Therefore, near-misses related to clarification were focused and put on in-depth analysis in terms of background human factors, the way to identify error on prescription, brand names of drug and so on. As a result, prescribed drugs are frequently deleted (26.0%, 270 cases) and/or replaced with correct drugs (34.8%, 362 cases) by adequate clarification which was triggered by identifying duplication of drugs on prescription sheet or inconsistency of latest prescription with past prescription records of patients. Near-misses with failed clarification were later found questionable on the following reasons. i) Pharmacist reviewed dispensing record., ii) Family gave pharmacist question on the medication, iii) Patient visited pharmacy for the next dispensing. Therefore, it was suggested that confirmation of patient’s name, current health condition, past side effect, patient’s age and confirmation of pharmacy are effective for prevention.

ISQUA17-1596
PREVENTION OF WRONG MEDICATION THROUGH ENHANCED CLARIFICATION BY PHARMACIST ON QUESTIONABLE PRESCRIPTION

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Objectives: Medication safety in community pharmacy has been increasingly focused in Japan as community pharmacy routinely handles with prescription of such high risk drugs as anti-coagulation drug, anti-tumor drug and so on. Nationwide
Conclusion: The nationwide pharmaceutical near-miss reporting system is now widely welcomed and utilized in Japanese pharmaceutical society, medical society and relevant societies. It is successful in a sense that it has been offering scientific data of near-misses such as those related on inquiry on questionable prescription.

Reference

ISQUA17-2869
HOW TO C:A DIFFERENCE: A MULTIDISCIPLINARY APPROACH TO C. DIFFICILE
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1Mount Sinai Health System, and 2MOUNT SINAI HOSPITAL, New York, United States

Objectives: Clostridium difficile has surpassed other pathogens in causing healthcare-associated infections. Hospital-onset C. difficile is associated with patient morbidity including increased lengths of stay, readmissions and excess medical expenditures. Reported rates, as defined by the National Health and Safety Network, are unacceptably high. In 2016, the Mount Sinai Health System (MSHS) identified hospital-onset C. difficile infection (HO-CDI) as a leadership priority. In order to disseminate and implement best practices across a diverse health system, leadership partnered with infection prevention and capitalized on system-wide and local expertise, spearheaded a diverse health system, leadership partnered with infection prevention and rolling out a multidisciplinary harmonized process to reducing patient harm. Development of dashboards and a clinical governance structure facilitated both learning and collaboration. Despite diverse patient populations and individual institutional limitations, the elevated and intensive focus on decreasing patient harm allowed for a dramatic reduction in CDI. Future efforts will focus on long-term sustainability, as well using a similar approach for the reduction of other healthcare-associated infections.

ISQUA17-3144
MEDICINES RECONCILIATION IN PRIMARY CARE FOLLOWING HOSPITALISATION
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Objectives: Medication reconciliation is an effective way of reducing errors at transitions of care. Much of the focus in the UK has been on medicines reconciliation on admission to hospital, until national guidance[1] a NHS England patient safety alert[2] and changes to the NHS England Standard Contract broadened this to primary care. The objective was to assess the completeness, timeliness and reconciliation in primary care of medicines information on hospital discharge summaries.

Methods: Clinical Commissioning Groups (CCGs) across England were invited to participate in a collaborative project during January 2016 for patients discharged during the previous three months. CCG pharmacists identified patients retrospectively from GP prescribing systems and collected data using a standardised tool based on national standards, developed by a multidisciplinary group and validated through a series of pilots. Anonymised data were entered onto an excel spreadsheet by the CCG pharmacists and submitted electronically for collation and analysis.

Results: 47 CCGs participated and submitted data for 1454 patients (3-404 per CCG). Key findings are summarised in the table. Although many discharge summaries were generated (89%) and transferred (72%) electronically, only 43% were received by the GP practice on the same day.

Overall patient demographics were stated on most of the discharge summaries, except allergy status which was only documented in 75.8% of cases. Majority of the medication details were stated except formulation (60.3%) and instructions for ongoing use or supply (72.5%). Reasons for initiation of new medicines was documented in half of the 79% where at least one new medicine was started. Apparent unintentional omissions of pre-admission medicines were noted for a third of the patients. Intentional changes
were actioned on the GP system within 7 days of the discharge for 42.5% of patients primarily by the GP (51.5%), CCG or practice pharmacist (6.6%), or receptionist (5.6%). At least one change was actioned incorrectly for 5.5% of patients.

<table>
<thead>
<tr>
<th>Medication Changes</th>
<th>Number of Patients/Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Medicines</td>
<td>79% of patients; 3,164 medicines</td>
</tr>
<tr>
<td>Dose Changes</td>
<td>23% of patients</td>
</tr>
<tr>
<td>Intentional Stop</td>
<td>33% of patients; 1,565 medicines</td>
</tr>
<tr>
<td>Medication Missing</td>
<td>10,039</td>
</tr>
<tr>
<td>Discharge Summary</td>
<td>1,454</td>
</tr>
<tr>
<td>Dose Action</td>
<td>42.5% yes; 12.5% no; 42% no action</td>
</tr>
<tr>
<td>Format</td>
<td>89% electronic; 11% handwritten</td>
</tr>
<tr>
<td>Transfer Method</td>
<td>72% electronic; 12% posted; 16% unable to identify</td>
</tr>
<tr>
<td>Number of Days</td>
<td>43% on the same day (range 0 – 38 days)</td>
</tr>
<tr>
<td>Proportion of Patients</td>
<td>42.5% yes; 12.5% no; 42% no action</td>
</tr>
</tbody>
</table>

**Conclusion:** Medicines reconciliation in primary care is as important as on admission to hospital. Our evaluation revealed errors and discrepancies across both care settings, and that despite increasing use of electronic discharge summaries only 43% were received on the same day. There is scope to maximise transfer and action on information to improve safety.

**References**

**ISQUA17-2125**
PROVIDING FAMILY PLANNING POST PARTUM COUNSELING USING BALANCE COUNSELING STRATEGY APPROACH IN 9 DISTRICTS IN INDONESIA
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**Objectives:** Family Planning is a key element of reproductive health that allows preventing/limiting pregnancy but also reduces maternal and neonatal mortality. Nearly two-third women have an unmet need for family planning in the first year after giving birth. In 2015, the total birth in Indonesia is 4,880,951 this is an increase on 1.49% from previous year (Indonesia Statistic 2015), although the adoption of Postpartum Family Planning (PPFP) is very low.

**Program Intervention:** selected providers from 44 facilities in 3 Provinces were trained to provide Post Partum Family Planning counseling using Balance Counseling Strategy. The 3 days training give providers skill for offering the basket of choices available for family planning to enable clients to make better choices according to their need and condition. The aim of the training is that each provider will counseled all post partum women before discharge.

**Methods:** Data was collected from October 2015 to December 2016 from Counseling before Discharge Register provided by project. The Register document name, date of counseling, topic of counseling provided: umbilical cord care, breastfeeding, post partum health, danger sign for post partum mother and newborn, post...
part of family planning chosen and signature of postpartum women. 

**Results:** The percentage of post partum women receiving PPFP counseling before discharge have increase tremendously since the beginning of project. From October 2015, only 4% received counseling before discharge, after receiving PPFP training, the percentage gone up to 59% by June 2016, after introducing Balance Counseling Strategy by December 2016 the percentage has increase to 87.8%.

**Conclusion:** Counseling is a well recognized strategy to improve demand generation for family planning methods. By using Balance counseling strategy the provider were able to provide client-centered approach high quality services, improving the client-provider interaction which leads to improved client satisfaction with method, better use and continuation of appropriate method and the time consume during counseling was shorter however its accommodate client’s need.

**Reference**
Indonesia Statistic www.bps.go.id

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**ISQUA17-2215**
A CONCEPTUAL MAP FOR PATIENT-CENTRED CARE REQUIREMENTS: ENHANCING THE APPROACH OF SYSTEMS TO ACHIEVING PATIENT-CENTRED CARE

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**Objectives:** Genuine patient-centred care (PCC) is a sought after but challenging ideal for healthcare delivery. PCC can lead to improvements in the quality of health systems, clinical safety and self-management by patients. In many settings and circumstances, achievement of PCC fails to occur despite the rhetoric. This study aimed to identify and operationalise organisational requirements for PCC through developing a conceptual map (Trochim and Kane, 2005).

**Methods:** A participatory concept mapping methodology was used to develop the conceptual map. Stakeholders from patient and carer, health professional, health service manager, education and professional organisational leader groups participated. Stakeholders contributed to 1) the development of statements regarding what patient-centred care requires, 2) the sorting of those statements into a conceptual map, and 3) rating those statements according to importance, feasibility, and how well they are achieved. Analysis included development of a similarity matrix, multidimensional scaling, hierarchical cluster analysis, selection of number and labels for clusters through qualitative and quantitative analysis, and quantitative representation of rating data. Ethics approval was obtained from the local Human Research Ethics Committee.

**Results:** The research identified 123 statements relating to what PCC requires. The statements were sorted into 13 clusters which were labelled: shared responsibility for personalised health literacy; patient provider dynamic for care partnership; collaboration; shared power and responsibility; resources for coordination of care; recognition of humanity – skills and attributes; knowing and valuing the patient; relationship building; system review evaluation and new models; commitment to supportive structures and processes; elements to facilitate change; professional identity and capability development; and explicit education and learning. These clusters were grouped into three overarching themes that represent a cross-sectoral approach to PCC: humanistic and partnership elements; career spanning education and training elements; and health systems, policy and management. Preliminary rating data illustrates the usefulness in further characterising the statements on the conceptual map according to their importance, feasibility, and how well they are achieved.

**Conclusion:** The requirements for PCC have been articulated using concept mapping, a methodology which enables ideas and their complex relationships to be visually represented. We found that PCC requires a cross-sector approach, between service delivery, patient involvement, education and training, and health systems, policy and management. This shared conceptual understanding of the requirements for PCC offers mechanisms for actioning PCC at organisational, team and individual levels.

**Reference**

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**ISQUA17-2981**
TRAINING HEALTHCARE WORKERS TO IMPROVE THE QUALITY OF MATERNAL, NEWBORN & CHILD HEALTHCARE SERVICES IN MARGINALIZED SETTINGS

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**Objectives:** Despite the progress in maternal, newborn and child health (MNCH) care services in Pakistan, certain system-level barriers are still prevalent. One of such barriers is poor quality of health care services that deters community from utilizing essential services thus contributing towards poor outcomes. It was conceptualized that multifaceted trainings (pre-service, in-service, hands-on experience and supportive supervision) will improve service quality and ultimately delivery.

**Methods:** The study included program data from April 2014-December 2016. The USAID funded Maternal and Child Health Integrated Program (MCHIP) was implemented in 16 districts of Sindh province. The MNCH centers were classified into four categories; basic health units led by public-private partnership (PPP), public facilities, private facilities and community midwives (CMWs) led centers.

Training: Competency based trainings were used to enhance skills and performance of healthcare workers. The training approach included group based training of service providers, class room teachings, hands-on practice on mannequins and real clients in

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**Reference**
www.bps.go.id
Clinical settings. Standardized learning resource packages were developed based on evidence-based national and international guidelines.

Quality Improvement and Patient Safety (QIPS): Jhpiego’s Standards-Based Management and Recognition—performance and quality improvement approach was adapted to produce a self-assessment checklist. The assessment was conducted bi-yearly followed by data-driven action plan. The assessment methodology was validated through lots quality assurance sampling process. QIPS score was calculated as percentage of elements that met the standard criteria.

Statistical analysis: Training packages were recorded as binomial variable. Difference in QIPS score was calculated by subtracting the scores of baseline and last assessment. Data was skewed and had indelible outliers. Hence median and interquartile range was used for univariate analysis and Man-Whitney U test was used for bivariate analysis. Statistical significance cut off was set at 0.05. Analysis was stratified by type of facilities. SPSS version 24 (IBM, Chicago, USA) was used for analysis.

Results: There were 112 CMW led clinics, 93 DOH facilities, 109 private facilities and 327 public private partnership led facilities. Preliminary analysis indicated that significant improvement in quality of antenatal, labor and delivery and postnatal care was observed in CMW centers that received trainings (p-value < 0.001) as compared to those CMW centers that did not receive trainings. Similar results were observed among PPP led facilities. Ironically, no difference in quality score was observed in public and private facilities.

Conclusion: The improvement in CMW and PPP led centers could be explain through Nolan’s model which states that “any initiative seeking system wide changes needs three essential elements; will, ideas and execution”. Our capacity building methodology was willingly accepted by CMWs and PPP facilities. The firm administrative support from the decision makers of these centers helped in aligned execution of the activities. Contrarily, the idea was not accepted with utter will by public and private facilities, hence smooth execution was hindered due to multiple factors including schedule conflicts, prolong training durations and indifferent attitude towards transformation for improvement.

Reference

ISQUA17-1734 EFFECTIVENESS OF AN EDUCATION OF POINT-OF-CARE ULTRASOUND GUIDELINE IN AN EMERGENCY DEPARTMENT

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Objectives: This study was aimed to determine the effect of point-of-care ultrasonography assisted physical examination (POCUS-PE) implementation using a systematic education program on image acquisition and decision making in a department of emergency medicine.

Methods: The education of POCUS-PE involved an appropriate technique of image acquisition and making an accurate diagnosis subsequent POCUS results. The quasi-experimental, uncontrolled before-and-after study was performed to evaluate the education effect. POCUS orders for eligible patients, length of stay (LOS) in ED, and return visits (RV) to ED between the before period (March 1st, 2015–February 28th, 2016) and the after period (March 1st, 2016–February 28th, 2017) were compared. Piecewise regression was used to assess trend differences of LOS and RV between the periods.

Results: A total of 16,942 and 16,287 patients were included before and after the education, respectively. During study periods, 966 (6%) and 2,801 (18%) POCUS were ordered, respectively (rate difference = 12%; P <.001). Before the education, LOS was 6.55 (interquartile range: 6.2-6.75) and the trend slope of LOS was -0.01, the median RV rate was 6.4% (interquartile rage: 6.15-6.65%) and the trend slope of RV was -0.01. After the education, the median LOS was 5.25 (interquartile range: 4.85-5.45) and the trend slope of LOS was -0.15, the median RV was 5.25% (interquartile rage: 4.95-5.35%) and the trend slope of RV was -0.11.

Conclusion: The education of POCUS-PE in ED successfully increased use of POCUS, and reduced the LOS and the RV rate in ED.
ISQUA17-2709
MEDICAL STUDENT PERCEPTIONS OF ACADEMIC STRESS AND SATISFACTION WITH THE REVISED CURRICULUM QUALITY AT IAU SAUDI ARABIA

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Objectives: In 2014 the College of Medicine (COM) at Imam Abdulrahman Bin Faisal University (IAU) began implementing a revised, innovative, Problem Based Learning (PBL) centered undergraduate medical curriculum. Adoption of the revised curriculum (RC) is part of an effort to translate the College’s mission statement into action, improve the quality of medical education and ultimately achieve program accreditation from the Saudi Education Evaluation Commission-Higher Education Sector (EEC-HES). The main objective of this study is to evaluate student perceptions of academic stress due to the adoption of modern educational methods and its impact on student satisfaction with the overall quality of the curriculum.

Methods: A cross-sectional survey was conducted in May 2016 among medical students who had completed two years of study under the RC. A sample of 195 students was interviewed. A pre-tested survey questionnaire was given to students as part of the course evaluation. A total of 58, stress perception and satisfaction items were included. Each scale item was measured with a 5-point Likert-type scale. Data was analyzed using SPSS. Cronbach's alpha coefficient was used to measure scale reliability. Pearson Chi-Square test was used to measure statistically significant associations and a significant p-value cut-off point was set at < 0.05.

Results: Cronbach's alpha coefficient 0.92 for 58 stress perception and curriculum quality satisfaction scale items infers high reliability. Gender distributions among students were 39.5% male and 60.5% female. While a majority of students revealed positive perceptions on RC quality, students’ overall satisfaction with RC quality was 82.6% as compared to 17.4% who were dissatisfied. For assessment methods, the highest level of student dissatisfaction was reported with the Short Answer Question (SAQ) exam 56.4%, the weekly quiz 50.8%, Vertically Integrated Assessment (VIA) exam 36.9%, Extended Matching Question (EMQ) exam 31.8%, Assignments 31.7% and the Multiple Choice Question (MCQ) exam 24.1%.

Even considering the higher level of student satisfaction (82%) with the Objective Structured Clinical Examination (OSCE), 76.9% of students felt the exam was very stressful for them. However 76.4% of the students said the OSCE was comparatively less stressful than MCQ exams. While studying the RC, 10.3% of students experienced concentration difficulties, 61% sleeplessness due to worry, 76.4% felt they were constantly under strain and 39.5% felt unusually depressed. Additionally 50.3% of students felt a sense of lack of self-confidence and 56.9% thought they would fail the year. The SAQ assessment method was found to be significantly (p< 0.05) associated with unhappy and self-reported depressive feelings among students.

Conclusion: Although students expressed a higher level of overall satisfaction with the quality of the RC, their dissatisfaction with the quality of specific individual disciplines and assessment methods, provides ample opportunity for Continuous Curriculum Quality Improvement (CCQI) which should not be ignored. Since academic related stress among students was found to be very high, and many reported feeling depressed, were afraid of failing exams, and losing self-esteem and confidence, urgent efforts should be made to address these issues. The IAU-COM should provide students appropriate academic counseling and establish a student mentoring system through student portfolio to support improved learning environments and promote more efficient and effective student learning.

ISQUA17-2958
SCALING UP QUALITY IMPROVEMENT IN NURSING EDUCATION THROUGH A SYSTEM APPROACH: THE INDIA EXPERIENCE

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Objectives: To demonstrate a sustainable quality improvement model for nursing education and support it’s scale-up to address the issue of shortage of skill nursing Human Resource for Health in India.

Methods: In 2010, Jhpiego adopted a standards based quality improvement approach for strengthening nursing education. Project interventions aimed at standardizing nursing education across 162 public sector nursing institutions in ten states of India and creating an enabling policy environment and establishing institutional mechanisms for sustainability.

Baseline institutional assessments revealed a dismal scenario with average score of 24% standards achieved. Institutional action plans were made to address the identified gaps. Monthly supportive supervision visits (SSVs) were conducted for provision of onsite support, capacity building, facilitating translation of knowledge and skills into practice by nursing faculty and service providers. 6-monthly repeat assessments helped measure progress.

Interventions at institutional level included establishing standardized training infrastructure, faculty development program, use of structured resource materials and leveraging virtual learning for wider dissemination. Clinical skills standardization training for service providers, strengthening supply chain management and promoting compliance to quality of care protocols were undertaken to ensure adequate clinical experience for student nurses.

The project informed policy and regulatory mechanisms by sharing evidence with decision makers and creating networks for sharing of experiences, learning resources, and innovative approaches like virtual training. Lessons learnt were used to conduct advocacy with INC for incorporation of components like competency based training, effective teaching skills, quality assurance, and promoting inter-professional education in the existing curriculum.

Sustained buy-in by GoI has resulted in an increased allocation (220 fold) of funds from $0.15 million in 2011 to $35.08 million in 2015 for strengthening nursing cadre and a decision to scale up this quality improvement model to all public sector nursing institutions across the country.
Results: The average standards achieved increased from 24% to 67%. >50% of the targeted institutions have achieved the agreed benchmark of 70% standards with about 48% having a well-established skills lab and 80% a fully equipped computer lab and library. More than 95% of clinical practice sites have a functional newborn care corner and adhere to GoI’s quality of care protocols. The success of this pilot in almost 25% of India’s public sector institutions has helped GoI take a decision for nation-wide scale up to all 689 government nursing institutions and make necessary budgetary allocations. INC is now working towards introduction of standards and competency based trainings and evaluation at scale in over 6000+ private nursing institutions.

Conclusion: Systems approach, evidence based interventions, creating stakeholder networks and an enabling policy environment are key to successful scale up of quality improvement in nursing education. GoI’s efforts in this direction will ensure availability of a highly skilled and competent nursing workforce and steer the country towards its commitment to Universal Health Coverage.

ISQUA17-2648
APPLICATION OF QUALITY CONTROL CIRCLE METHOD IN IMPROVING SUSTAINED QUALITY IMPROVEMENT ACTIVITIES

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Objectives: To standardize the sustained quality improvement activities and realize the spiral development of practice – theory – practice. More quality and safer medical services and better medical experience will be available to the patients. It is widely known that quality control circle (QCC) is one of the most effective methods in improving medical quality. By the end of 2016, more than 600 QCC activities have been carried out in Zhongshan Hospital affiliated to Fudan University, and reached some significant results. But undeniably, the quality of those activities was unbalanced and this restricted the results of QCC activities to some degree. Data released by China Federation for Hospital Quality Control Circle (CFHQCC) showed that in the QCC activities in medical institutions in Mainland China, there were four typical cruxes, including theme selection, real cause analysis, countermeasures development and standardization. So it was necessary to improve the quality of QCC activities themselves.

Methods: Check chart was designed according to the key points made by CFHQCC. The current status information was collected and the cumulative percentage was calculated by using it. According to the 80/20 rule, reducing mistakes in cause analysis and in status grasping was the focused improvement. Through brainstorming, cause analysis was carried out considering four aspects, including manpower, method, machine and environment. Through evaluation method, 7 and 6 main causes were selected respectively from the results of fishbone diagram analysis. The current status information focused on these 13 main causes was collected according to “three phenomenon principles”. 3 real causes were selected respectively according to the 80/20 rule including unreasonable design of check chart, new QCC member as a leader of certain step, lack of standards, incomplete analysis, unreasonable design of check chart of real cause analysis and wrong aspects selected in cause analysis. For each real reason, at least 2 countermeasures were developed through brainstorming and all the alternative countermeasures were evaluated from 3 aspects of feasibility, cost and benefit. 7 countermeasures whose total score was greater than 105 points calculated by the 80/20 rule were selected. After the integration, 5 countermeasures were finally selected, including edition of QCC member’s handbook, establishment of Wechat group to communication and instruction, standard courseware, standard templates and drawing tools available in intranet, training courses to the director and QCC members and establishment of Wechat public number where knowledge of QCC was pushed. The countermeasures were carried out one by one according to the plan from the Gantt chart and the effects were confirmed respectively.

Results: The number of mistakes reduced from 350 to 146. Besides of 5 countermeasures, a SOP of QCC activity was also established. QCC members’ abilities including problem solving, self-cultivation, communication, conscientiousness, confidence, teamwork, knowledge of QC and enthusiasm were also greatly improved.

Conclusion: It is feasible to use QCC method to improve sustained quality improvement activities. The problems in cause analysis and in status grasping were both solved and the rest problems in countermeasures development and in standardization will be solved during next QCC activity. Thus the quality of QCC activities themselves will be greatly improved by continuously shoring up areas of weakness. So QCC is one of the effective methods in improving sustained quality improvement activities.

ISQUA17-2732
ADVANCING BED MANAGEMENT DASHBOARD SYSTEM TO IMPROVE INPATIENT PATIENT EXPERIENCE IN 509 BEDS HOSPITAL IN INDONESIA

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Objectives: Pelni hospital performance in 2014 with 312 beds, average bed occupancy ratio (BOR) of 71.82%, bed turn over rate (BTO) 65.6 patients per year, turn over interval (TOI) 1.56 days and average length of stay (LOS) 3.99 days increased in average 116% from 2013. Escalated bed capacity to 337 beds in 2015 BOR 84.89%, BTO 88.8 patients per year, TOI 0.62 day and average LOS 3.49 days adapting to change. Increased in elective patient from 30 admission per day in 2014 to 49 admission per day in 2015. Inpatient admission from emergency department also increase from 50 patient per day in 2014 to 75 patients per day in 2015. It all created queue and stagnation. Patient’s complaints about admission process 35% in 2015; inpatient patient’s satisfaction 80%.

Existing bed management modul in 2014 only had information about bed capacity and availability, lack of required information
Objectives: Health care systems are challenged due to a multi-morbid and aging population, new technology, and expensive drugs in the context of public savings. Quality Improvement (QI) is regarded as a tool to maximise effectiveness and efficiency in health care and is prioritised in most healthcare systems, where PDSA cycles are becoming central in national QI strategies. Before the health systems start to enroll these vast strategies, it is important to document whether the PDSA method provide an effect in terms of better clinical practices and outcomes.

The scientific literature indicates that the PDSA method have not been used properly. Improper use of the method is a challenge for the internal and external validity of the method and makes it difficult to establish a relation between the use of PDSA and the effects on QI projects. However, in the recent years there has been an increased focus on uniformity in use and report of QI methods, with updated guidelines such as the SQUIRE 2.0.

The aim of this paper is to investigate whether the recently published QI studies are conducted according to key principles of the PDSA method.

Methods: A systematic literature search was performed in the PubMed, Embase and CINAHL databases for PDSA-based studies, published in English in peer-reviewed journals from 01.01.2015 to 22.11.2016. Empirical studies using PDSA to improve quality in a clinical healthcare setting were included. Conference abstracts, opinion articles and editorial letters as well as studies in which PDSA was not used as the main method for QI, were excluded from the study selection. The selected studies were assessed against a framework. First in accordance to how thoroughly the application of the PDSA method was documented. Secondly, those with sufficient documentation were further assessed against the key features: use of iterative cycles, prediction-based tests of change, testing from small to large scale and use of data over time. The assessment was performed by two independent reviewers.

Results: 106 of 176 individual studies identified met the inclusion criteria. 3/5 of these documented PDSA cycles sufficiently for inclusion in full analysis against the framework. Among these studies, about 2/3 documented the use of iterative cycles, though only very few had separate information on stages of cycles. About 1/3 both set an aim and established a baseline before testing a change. Approximately half of the studies used data over time. A substantial number of studies lacked information on sample size and almost none documented the use of small-scale, incremental testing. Detailed results will be presented.

Conclusion: In spite of a substantial growth in QI studies in recent years, it does not seem like authors report in a consistent and thorough way in accordance with the method. The variance in the application is too great to start drawing meaningful causal relations between the use of the method and the effects of the studies. This variation may compromise the internal and external validity of the PDSA method and further emphasise the need to use and document in accordance with the key principles. There still seems to be a need for improvement in quality improvement.
ISQUA17-1218
PRECISION MEDICINE PLAN TO IMPROVE THE DIAGNOSIS AND CARE OF KAWASAKI DISEASE

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Objectives: Kawasaki Disease (KD) is an acute febrile systemic vasculitis and mainly affected children less than 5 years old. It has been the major cause of acquired heart disease in children from developing countries. The most important complication of KD is coronary artery involved that will cause activity limitation in the whole life. It will also bring anxiety and stress to family who had KD patient. In this study, we used precision medicine plan to diminish medical cost, to shorten diagnosis duration, and to improved clinical care satisfaction.

Methods: The average diagnosis days in year 2015 was 7.4 days after disease onset and with 78.6% response to initial intravenous immunoglobulin (IVIG) treatment in the Kawasaki Disease Center of Kaohsiung Chang Gung Memorial Hospital in Taiwan. Anxiety scale (ranged from 0-100mm, Wewers & Lowe,1990) showed status of extremity anxiety with average scale of 79.1mm in family. The satisfactory scale including physician care, nursing, team care and education tool survey showed only 68.7%. We found the major problems were from searching admission ward for KD patient, waiting for physician check and for making diagnosis of KD. Process cycle efficiency (PCE) was 5.8%. Our precision medicine care were included KD specific admission ward with specific nursing and physician care, team care to diminish the diagnosis duration, interesting and useful education tools and set up the clinical treatment protocol.

The clinical characteristics of KD include fever lasting for more than 5 days, as well as at least 4 of the following 5 symptoms: diffuse mucosal inflammation with strawberry tongue and fissure lips (1 mouth), bilateral non-purulent conjunctivitis (2 eyes), unilateral cervical lymphadenopathy (3 fingers check lymph node), indurative angioedema over the hands and feet (4 limbs), dysmorphic skin rashes (5 much skin rashes). The 5 KD characteristic symptoms may be not easy to remember or keep in mind for parents or first line clinician. Easier way to remember the 5 characters of KD is important for parents and clinician to identify KD earlier. In order to help remember the 5 KD character symptoms, we created the “Kuo mnemonic” for rapid memory of KD diagnosis criteria that is modified from our previous review.

Results: After the precision medicin care, in year 2016, we found the diagnosis days was shorten from 7.4 to 5.8 days after disease onset. IVIG treatment response showed significant increase from 78.6% to 90%. The anxiety scale of family were significant improved from 78.3mm at diagnosis to 30.1mm after treatment (p<0.0001, paired t test). The satisfaction scale improved from 68.7% to 95.1%. PCE also showed markedly improved from 5.8% to 6.9% (19% improvement). We have set up the KD clinic for outpatient check and specific ward for KD patients. The figure showed our KD team.

Conclusion: In this study, we reported that precision medicine care with education tool, team care and treatment standard protocol setup can improved treatment outcome and anxiety condition of family. It will also improve medical cost through diminish IVIG treatment failure rate and coronary artery involved.

References

ISQUA17-2582
THE RELATIONSHIP BETWEEN QUALITY IMPROVEMENT AND RESILIENT HEALTHCARE; NUANCES, COMPLEXITIES AND TRADE-OFFS

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Objectives: “Quality improvement is the complex mix of efforts, skills and approaches of multiple groups—healthcare professionals, patients and their families, researchers, payers, planners and educators—to make changes designed to create better patient outcomes (health), better system performance (care) and better professional development (capacity)” (Batalden & Davidoff, 2007). Essentially, it is a co-production involving all stakeholders.

Resilience is a complex construct drawn originally from resilience engineering. Applied to patient safety in healthcare by Hollnagel, Wears, Braithwaite and colleagues, it describes the capacity of the system to adjust and sustain required functions under expected and unexpected circumstances. Another way of describing resilient healthcare is it is the capacities to respond to internal and external pressures, monitor threats and risks, anticipate future occurrences, and learn from the past to understand, and plan the future (Hollnagel et al., 2013; Braithwaite et al., 2015). Essentially, it is the collective ability of the people in the system to moderate the way things are done to make care better and safer.
Methods: The question arises about the relationship between quality improvement and resilience. To date most work in resilient healthcare has applied the construct to patient safety. Yet the broader activities and approaches involved in improving the quality of healthcare have not been considered adequately within a resilient healthcare frame; and vice versa. In this presentation, we seek to examine quality improvement and resilience and the interaction between the two.

Results: We will be looking through these two different lenses on the work of improving care delivered to patients and explore synergies and tensions. We will draw on three books we have published on resilient health care to explain to participants the nuances, complexities and trade-offs of care delivered in resilient settings.

Conclusion: We will provide a case study of a clinical micro-system (Mohr & Batalden, 2002) and analyse the nuances, complexities and trade-offs involved in improving the quality of care with a resilience healthcare approach.

References


ISQUA17-3242

APPLYING THE CONCEPT OF ‘HARD CORE’ AND ‘SOFT PERIPHERY’ OF INTERVENTIONS TO SHARE LEARNING FROM QUALITY IMPROVEMENT EFFORTS

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Objectives: Unpacking the black box of complex interventions is critical to support their evaluation, attribution and replication. Complex innovations are often described as consisting of a ‘hard core’ and ‘soft periphery’.1 Despite growing use of these concepts multiple contrasting definitions exist.

Denis’ defined the ‘hard core’ as “elements that are well-defined and fixed” and the ‘soft periphery’ as “components that are less clear and flexible to adaptation by the adopting system”; Greenhalgh2 as “irreducible features of the innovation” and “supporting structures and systems that might vary in different organizations and settings” and the UK Medical Research Council as “active ingredients” and “adaptable components”.

This study aimed to critically appraise these different definitions of ‘hard core’ and ‘soft periphery’ and consider how the concepts could be operationalised.

Methods: Qualitative methods were used to explore a complex intervention that was successfully implemented across five hospital sites in London, UK (2014–2016). The intervention was based on evidence for reviewing potentially inappropriate prescriptions in older people3 and was implemented using a quality improvement approach.

Interviews were conducted with team members (n = 7). Document analysis included official documents (meeting minutes, highlight reports, and reviews), and the outputs from QI tools. Data was thematically analyzed using NVivo 10 database and findings triangulated with implementation teams through a focus group.

Results: The elements of the complex intervention were categorised under four domains; accessibility of the evidence base to frontline clinicians; the process by which the evidence base was enacted in practice; the dependent processes and systems that need to be functioning well to support the process of enactment; and dependent sociocultural issues that needed to be address to support enactment. (Figure 1)

Only a very small proportion of time was reported to have been invested in adapting the evidence base into accessible formats for clinicians, whilst a high proportion of time was invested in the ensuring that supporting systems and processes were working effectively and addressing sociocultural issues.

Reflections on existing definitions:

Denis: Other than the original evidence based publication, no elements were completely fixed across sites and all were subject to degrees of local adaptation.

Greenhalgh: Drawing a line between the irreducible features of the intervention and supporting structures and systems was challenging and could be interpreted in multiple ways.

MRC: It was impossible to distinguish the active ingredients of the intervention from the adaptable components. Many of components that were highly adapted also made significant contributions to the successful implementation of evidence based medicine review.

All of the elements presented in Figure 1 could be interpreted as the irreducible principles of the intervention, each of which had to be adapted locally to ensure overall success.

Figure 1:
interventions and to support the sharing of learning from one initiative to another.


References

ISQUA17-2743
APPLICATION OF QUALITY CONTROL CIRCLE TO DEVELOP AND APPLY A NEW POSTOPERATIVE FLAP OBSERVATION STANDARD

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Objectives: The monitoring of postoperative flaps is crucial to ensure successful grafts. Flap vascular crisis, as the most severe complication, may result in a second flap transplant surgery or even amputation for patients. Although many new technologies have been developed and used in monitoring flaps, flap observation is still the universal method. However, flap observation in the world varies in frequency and accuracy. It is a necessity to update new evidenced based observation methods to achieve better flap observation outcomes. The objective of this study is to develop a new evidence-based postoperative flap observation standard and apply it into clinical settings by using Quality Control Circle methodology[1].

[1] In this context, a “quality circle or quality control circle” is a group of healthcare providers, who meet regularly to identify, analyze and solve work-related problems

Methods: A project team using QCC management techniques was established to conduct activities. This included:

Setting up a flap observation improvement team, investigation of current problems in flap observation in the terms of method, system, personnel, equipment and funding from September to November, 2015.

Then we designed new strategies including developing Sudoku observation, color assessment tool, increased observation frequency, SBAR communication and nurse training and applying them into flap observation programme from February to March, 2016.

The clinical data, including false positive rate, false negative rate, flap salvage rate, communication accuracy rate between nurses and doctors, flap related knowledge of nurses and average hospitalization length and cost of patients were collected and analyzed.

Results: After using new flap observation strategies, the false positive and negative rate of flaps in 51 patients were decreased to 11.1% and 7.14%, respectively. There was no flap loss. Communication accuracy rate between nurses and doctors and flap related knowledge of nurses were significantly increased (p<0.01). There were also obvious decrease in the average hospitalization length and cost of patients (15.23 days and 57780.86 yuan, respectively).

Conclusion: After conducting OCC, the newly developed postoperative flap observation standard can effectively improve the outcomes of flap observation.

ISQUA17-1986
QUALITY IMPROVEMENT EFFORTS TO REDUCE SEVERE HYPOGLYCEMIA IN A LARGE HOSPITAL SYSTEM

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Objectives
1. To reduce severe hypoglycemia events in hospitalized patients by determining current state of hypoglycemia prevention and management and comparing to best practices.
2. Determine if a national hypoglycemia benchmark was available.
3. Identify and support a glycemic control team at each facility to assist with glycemic control improvement efforts.

Methods: Baylor Scott & White Health is a not-for-profit health care system in Texas with over 20 hospitals. A Diabetes Council was formed to oversee glycemic control initiatives across the care continuum. One of the first priorities was to address hypoglycemia, a common problem in hospitalized patients that is associated with increased morbidity, length of stay, and mortality. After an assessment of current state, availability of best practice benchmark was then pursued. Once that was determined, the measure definition and metrics were developed and reports built. The council took the time to validate the data and the reports before disseminating to facility leaders. As soon as agreement was achieved, target goals were set for each facility based on current performance. Each facility was also charged to identify glycemic control champions responsible for creating teams who will then lead improvement efforts. Interventions included standardization of low and high glucose values and when to contact the provider, revision of the hypoglycemia management standing delegated order Nursing Instructions, development of the basal insulin order set, retired a progressive sliding scale order set, revision of hypokalemia treatment order set as well as education on point of care fingerstick blood glucose in critically ill patients.

Results: Decrease in severe hypoglycemia patient days by 12% in the first year and an additional 11% in the second year in both critical care and noncritical care.

Conclusion: Severe patient day hypoglycemia events were reduced in hospitalized patients through use of metric reports that included benchmarks and targets individualized by facility as well as through standardization of order sets and processes. These reports are disseminated monthly to a facility glycemic control champion who assists with identification of areas of opportunity and interventions for improvement.
ISQUA17-2026
MULTIDISCIPLINARY INTERVENTIONS TO REDUCE PERITONITIS INFECTION IN PERITONEAL DIALYSIS UNIT, QATAR

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Objectives: Peritonitis is the most frequent encountered complication, it is also the main cause of hospitalization, drop out and mortality in the peritoneal dialysis population. Fahad bin Jassim kidney center (FBJ-KC) is the main center providing dialysis in Hamad General Hospital (HGH- HMC), Qatar. The last 6 months it was observed that there is an increase in the Peritonitis related infection rate in FBJ-KC. The project initiated in October2016 by the multidisciplinary team. The aim of project to reduce the incidence of peritonitis by 50% in peritoneal dialysis unit by end of December 2016.

Methods: Multi disciplinary team was formed and lead by the nephrologist, the team consisted director of nursing, head nurses, PD nurses, vascular coordinator, patient educator, quality reviewer and social worker. Survey was conducted to identify the causes of peritonitis Re assess the ability of the patients to learn and the skills to perform procedure Implement peritoneal dialysis procedure check list to ensure the correct steps of the procedure during the monthly follow up visit in the PD unit Re training of PD steps at each visit for the PD patients Encourage the patients to use mask during the exchange and dressing procedures Evaluate home environment and social status by assessment check list form and helps to correct the surrounding situations through social worker service Provide educational materials in different languages Expand the Home service for the patients who are physically not able to perform procedure alone at home In service classes for the PD staffs 24 hour mobile access for PD patients to help to overcome the home environmental situations through social worker In between retraining programs for the patients.

Results: After intervention of 3 months, we reduced the peritonitis rate to zero by end of December. Reduced the admission related to peritonitis and thus reduced the treatment cost in peritoneal dialysis population. The current peritonitis ratio is 1:48 at the center.

Conclusion: We are able to exceed the project aim after 3 months of intervention. Able to look out the problems of patients at home and help to overcome the home environmental situations through social worker In between retraining programs for the patients helped to improve the skills on the procedure steps and to reduce infection. Continuous education programs increases the awareness.

References

ISQUA17-2435
QUALITATIVE EVALUATION OF THE IMPLEMENTATION OF A NATIONALLY USED MEDICATION SAFETY DATA COLLECTION TOOL IN ENGLAND

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Objectives: Approximately 10% of patients are harmed by healthcare, and 15% of these harms are medication-related (1). To improve medication safety it must be measured, however research studies are time-consuming and expensive, and voluntary reporting cannot be used for measurement. Therefore, a large multidisciplinary collaborative, within England’s NHS, developed the Medication Safety Thermometer to collect monthly medication safety data, that could be used for improvement (2). This study aimed to understand its implementation into routine practice and explore users’ views and experiences.

Methods: Fifteen in-depth interviews were conducted either face-to-face or via telephone, with pharmacists, nurses, pharmacy technicians, pre-registration pharmacists and audit clerks. Participants were selected by purposive convenience sampling from primary and secondary care settings. Interviews were transcribed verbatim and thematic analysis was based on the four constructs of Normalisation Process Theory: Coherence (if participants understood the purpose of the tool); Cognitive participation (engagement with the tool and implementation); Collective action (work undertaken that drives the intervention forwards); Reflexive monitoring (assessment of the impact of the tool). Relevant ethics and governance approvals were obtained.

Results: Coherence existed in secondary care, where users understood that the purpose of the tool was to measure medication safety and related improvement. However, other uses were reported, such as pinpointing individuals displaying poor practice. Confusion about the purpose existed in primary care, despite further training, suggesting the tool to be unsuitable in primary care. Cognitive participation depended on ownership of medication safety, as staff more responsible for harm from medication demonstrated increased engagement with further improvement work and related meetings. However, participants were often “one-man bands” with subjective support from senior levels, which had a knock-on effect to frontline teams, causing lack of engagement overall. Collective action work was undertaken to drive scale-up of the use of the tool, for example, through securing additional funding, despite uncertainty about how to use the data. Successful improvement was often at ward-level.
and not recognised wider within organisations. Reflexive monitoring showed mixed feedback from healthcare staff about the value of the tool, often due to a perceived lack of “capacity”. However, participants displayed interest in learning how to use their data, and unexpected uses of data were reported, such as judicial use, use for freedom of information requests, and to change guidelines for improving patient care.

**Conclusion:** The tool can aid improvement of medication safety, however, many organisations have not seen improvement, often because data is not analysed, understood or used. The national normalisation of the tool has allowed more rapid shared learning, however, a considerable number of difficulties exist, particularly in primary care settings, where a separate tool may be required. Issues with using the data for improvement must be addressed by organisations, before scaling up.

**References**


**ISQUA17-2076**

**GETTING FROM 22 TO 125: SCALING UP INTERVENTIONS TO IMPROVE OUTCOMES OF HIV-POSITIVE MOTHER-BABY PAIRS IN NORTHERN UGANDA**

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**Objectives:** Scale-up, described as the increased coverage of successfully proven health innovations tested in few sites to a large volume of sites[1] is one of the goals of improvement work. Although the aim of scaling up is to achieve increased coverage and benefits of interventions thus achieving impact on a larger scale[2], the process is often challenging. Challenges to successful scale up include the lack of a clearly defined mechanism for scale up and spread; resource constraints and lack of buy-in. With PEPFAR support, in January 2016, the USAID ASSIST Project initiated scale-up of proven interventions with the objectives of rapidly spreading changes which contribute to a reduction of mother-to-child transmission of HIV to less than 5% and improving the quality of prevention of mother- to-child transmission (PMTCT) services to 125 health facilities in 16 districts in Northern Uganda.

**Methods:** Innovations piloted in 22 demonstration sites (April 2014 - September 2015), through a continuous quality improvement (CQ) collaborative model, were organized into concepts and change packages. Scale-up was implemented through a wave-sequence approach to 109 sites; 16 high-volume sites were included in an improvement collaborative to facilitate intensive adaptation of the proven interventions. The first 3 waves constituted 25 sites each, while the 4th had 36 facilities. By December 2016, 102 sites were reached through coaching visits. Spread teams include champions from pilot sites, district and regional improvement coaches and ASSIST staff. Facility teams selected changes from change packages and applied them, with minor adaptations; a log of changes to track implementation was kept. The scale-up work focused on improving 4 key areas, including mother-baby pair retention, provision of a standard care package, rapid testing to monitor exposed infants’ status, and data quality.

**Results:** Baseline performance of retention of mother-baby pairs (MBP) ranged from 49% in wave 1 sites, 53% in wave 2 sites, 28% in wave 3 sites and 55% in collaborative sites. By September 2016, retention of MBP pairs was 73% in wave 1, 75% in wave 2, 45% in wave 3 and 75% in collaborative sites. The total number of MBP accessing care monthly in 91 sites increased from 1,704/3,408 (50%) to 4,585/6,485 (71%), compared to 89% in pilot sites. All scale up sites have functional MBP care points and provide a comprehensive package of services. At baseline, proportion of babies discharged as HIV positive was an average of 16% (12/75) in all sites, as of September 2016, 1.5% of HEI (3/188) were discharged as positive.

**Conclusion:** Whilst the assumption was that improvement would occur rapidly and scale-up concluded in 9 months, the scale-up is ongoing. Spread sites proved to be atypical of the demonstration sites and improvement did not occur instantly; sites were not ready, data quality, QI team formation and functionalization of MBP care points had to be done first. However, using a wave-sequencing approach, change packages, coaching visits, and support from QI champions all contributed to successful scale-up.

**References**


**ISQUA17-2144**

**DOES A CLINICAL PATHWAY ON ISCHEMIC STROKE WORK? A PRE-POST ANALYSIS IN AN ITALIAN TEACHING HOSPITAL**

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**Objectives:** In Italy, stroke is the third leading cause of mortality after cardio-vascular and cancer deaths, and the leading cause of disability in adulthood.

To reduce variability in healthcare behaviors and to optimize patient outcomes, a Clinical Pathway (CP) for patients with acute ischemic stroke (IS) was implemented in 2014 in a large Italian Teaching Hospital. This CP aimed to guarantee more timely and appropriate care, to improve integrated multidisciplinary and coordinated interventions across health settings/professionals.

The objective of the study was to evaluate the impact of CP provided to the patients affected by IS with insuring continuum of care.
Methods: A pre-post retrospective observational study in one of the biggest Italian Teaching Hospitals (regional Hub Emergency Center with approximately 75’000 yearly admissions to the Emergency Department) was conducted by collecting data from discharge records codes describing the complete case histories of patients with IS.

Metrics were taken from the CP monitoring system, to evaluate a few sustainable processes (appropriate access to the Emergency Department; timely access to Stroke Unit; Length of stay in high intensive Units; Management of the patient’s discharge) as well outcome indicators (rate of complications and readmissions after 30 days).

Absolute and relative frequencies for qualitative variables were applied and associations were tested with the application of Chi-square or Fisher exact test. The research sample consisted of a total of 1009 individuals (year 2013 with 483 and 2015 with 526 individuals).

Results: Main findings of the analysis and comparison of the 2013 and 2015 data, respectively, showed: within increased volumes of hospitals admissions (from 380 in 2013 to 515 in 2015), a decrease of transient ischemic attack (TIA) cases (−89%, \( p < 0.001 \)) and an increase of more relevant stroke cases (+34.7%, \( p < 0.001 \)) discharges were registered; an increased proportion of patient treated in Stroke Unit (+46.6%, \( p < 0.001 \)) and an increasing percentage of patients transferred from Stroke Unit to the Neurology Unit within 3 days (+70% \( p < 0.001 \)). Although we registered a decrease in the readmission rate within 30 days (−8.1%, it resulted not statistically significant).

Conclusion: Limitations would rely on the cross-sectional design, which describe the association between exposure and outcome, without determining causation. Second, we detected our metrics from the medical records and excluded those cases which were not correctly recorded.

Nevertheless, an increased ability to appropriately admit patients with stroke or TIA and an increased receptivity for IS patients result after the implementation of the CP.

ISQUA17-1593

EFFECTIVE INTERNAL AND EXTERNAL STRATEGIES TO DECREASE OVERCROWDING AND ACCESS BLOCK IN EMERGENCY DEPARTMENT

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Objectives: Taichung Veterans General Hospital, one of major medical centers located in central Taiwan, has faced long waiting times for ED patients and ED overcrowding for many years. We thus aimed to adopt multiple internal and external strategies to reduce waiting times and overcrowding in the ED.

Methods: Several internal and external strategies were developed after forming a quality improvement team, led by top hospital administrators. We adopted bed assignment processes, which included discrete privileged beds and a whole integrated-medical-care ward exclusively for ED patients, with central control of bed assignment giving a higher priority to ED patients. We monitored the patients waiting for 36 hours as an early indicator of problems, and thus were able to alert the case managers to take timely action when needed. By establishing an ED LINE group, all the related messages could be quickly and clearly delivered. In order to deal with some ED patients who were unwilling to be transferred to other hospitals because of their high levels of trust in this institution, or because they were simply used to using it, or had their medical record here, we formed strategic partnerships with nearby community hospitals with preferential transfer cost and privileged admission processes. We allied with a nearby hospital and assigned senior residents to take care of the transferred patients in a contracted ward. These residents could access all the Taichung Veterans General Hospital’s information, including image examinations, laboratory results, as well as medical records. We appointed a case management liaison to coordinate these down-stream transfers.

Results: With all the above-mentioned strategies employed, the main indicator, ED patients who waited longer than 48 hours for admission, decreased significantly from 15.3% in 2014 to 11.6% in 2015 (2014 as baseline, \( p = 0.000 \)), and to 9.0% in 2016 (2014 as baseline, \( p = 0.003 \)), with a magnitude of 41.1%. The number of patients who stayed longer than 48 hours in ED (Fig1) decreased from 7.7% in 2014 to 5.9% in 2015 (2014 as baseline, \( p = 0.000 \)), and to 3.8% in 2016 (2014 as baseline, \( p = 0.000 \)), with magnitude of 50.6%. Both the waiting time and overcrowding increased during an influenza epidemic in 2016. However, the top administration began to enforce the priority bed assignment policy in the LINE group in August 2016, and since then the number of patients who needed to wait more than 48 hours has remained below 2%.

Conclusion: Through multiple quality improvement strategies, the number of ED patients who waited longer than 48 hours for admission decreased significantly. The successful internal strategies include leading indicator of using earlier time alert, privileged beds and/or integrated medical care ward exclusively for ED patients, central control of inpatient bed assignment, and support from hospital administration leadership. Successful external strategies include strategic partnership with other community hospital for down-stream transfer, as well as case manager liaison and other processes.
that extend the highly-bounded trustfulness to these community hospitals.

**ISQUA17-2500**

**HEALTH SYSTEM TRANSFORMATION IN THE UK: MAKING IT HAPPEN**

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**Objectives:** Following publication of the United Kingdom National Health Service (NHS) Five Year Forward View in 2014, 50 Vanguards have been established across England charged with the task of designing and delivering a range of new care models (NCMs) aimed at tackling deep-seated problems of a type facing all health systems to a greater or lesser degree. They include: managing rising demand on accident and emergency services, keeping people out of hospital, effecting rapid discharge for those no longer in need of acute care, integrating health and social care, reducing silo working, and giving higher priority to prevention. The principal objective at the heart of the transformation agenda is achieving the Triple Aim: improving the patient experience of care; improving the health of populations; reducing the cost of health care.

The NHS Vanguards are being evaluated and this paper presents the findings from an initial scoping exercise as part of an ongoing evaluation of 5 Vanguards in the North East region of England. The NCMs embodied by these Vanguards span urgent and emergency, acute hospital, primary, community and social care services. Drawing upon the ‘receptive contexts for change’ framework developed by Pettigrew et al., the study aims to provide a mapping of the implementation arrangements in each of the 5 Vanguards. The objectives of the evaluation are to identify the organisational and cultural facilitators and barriers in the implementation of each of the Vanguards; explore the role and nature of multidisciplinary team working in the delivery of each Vanguard’s aims and objectives; explore the role of technology and digital solutions in the delivery of each Vanguard’s aims and objectives; assess the costs and cost-consequences as part of an economic evaluation which will provide information on the sustainability of each programme; identify key aspects that can be shared across all 5 Vanguards in the region and draw out any lessons learned from the implementation in order to inform future transformational change underway in the NHS.

**Methods:** The study has adopted a mixed-methods design combining qualitative and quantitative methods to provide contextual understanding of the complex mix of organisational, technological and economic factors shaping the implementation of the Vanguard programmes. It is being conducted in 3 stages over a period of 8 months: (1) in-depth review of local documentation, semi-structured interviews with key stakeholders involved in the implementation of each Vanguard to identify organisational and technological enablers and barriers; (2) economic evaluation; (3) overarching analysis and emerging key messages for shared learning.

**Results:** The paper reports on the key findings under each of the three themes. It also reflects on the challenges facing academic researchers of conducting research in ‘real time’ in complex, messy dynamic contexts shaped by powerful political forces.

**Conclusion:** The evaluation study’s findings are being used by the 5 Vanguards to inform the next stage of their transformation journey. They are also being picked up at a national level by NHS England in order to share the lessons with other Vanguards.

**Reference**


**ISQUA17-2839**

**COLLECTIVE LEADERSHIP AND SAFETY CULTURES: DEVELOPING AN ALTERNATIVE MODEL OF LEADERSHIP FOR HEALTHCARE TEAMS**

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**Objectives:** The traditional hierarchical leadership model is clearly failing in healthcare, the evidence for this being the references to poor leadership and dysfunctional accountability mechanisms in almost every investigation report into serious or fatal incidents. In response, this research programme draws on emerging theories of collective leadership (Collective leadership is not the role of a formal leader, but the interaction of team members to lead the team by sharing in leadership responsibilities). In contrast to traditional approaches that focus development on the individual as leader, the approach in this programme of work is on developing the team as a dynamic leadership entity with each member of the team being accountable for the performance of the team as a whole. In this phase of the research we describe the development of a suite of interventions to support collective leadership in healthcare teams.

**Methods:** This 5-year programme of research designs and implements leadership interventions with 4 team types within a group of eleven hospitals and tests the impact of these interventions on staff performance and patient safety. The overall aim is to support quality and safety cultures through the development of a new model of healthcare leadership that is associated with effective team performance. The main research questions addressed in this paper are:

- What are the common leadership needs identified by healthcare teams?
- Do leadership development needs differ according to team type?
- What interventions are needed to support the development of a collective leadership approach within teams?

**Results:** Common needs emerged across the different team types, although these varied somewhat depending on the stage of development of the teams. Role clarity and understanding was a common requirement. Trust, communication and shared goals were also considered key components for collective leadership. Efficient utilisation of performance data to drive improvement, including regular feedback and structured opportunities for learning from poor performance emerged as critical aspects for a safety culture. How and where the team learns was an additional consideration and one that poses challenges to conventional approaches to leadership development.
Conclusion: Traditional approaches to developing healthcare leaders are no longer fit for purpose. Effective healthcare delivery is highly dependent on multidisciplinary teamwork drawing on the expertise of each discipline or team member and pooling this expertise to collectively diagnose and treat patients. Traditional hierarchical leadership models have done little to encourage accountability for collective team performance and as such, present obstacles to the development of safety cultures. Training designated leaders to do the job of leading does not guarantee the performance of the team as a whole. This study has demonstrated the potential for a team-based collective approach to developing the leadership capacity of the team as a whole, co-designing interventions that are fit for purpose and responsive to the performance challenges faced by teams in their everyday clinical practice. Such an approach supports collective accountability and enhances patient safety.

ISQUA17-2294
THE DEVELOPMENT OF A TARIFF MODEL: PAY FOR PERFORMANCE

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Objectives: The South Korean government is planning to establish a Pay for performance (P4P) system that will provide incentives through medical quality evaluation for individual medical institutions, and will gradually repeal physician surcharges, which is a non-covered service that has increased out-of-pocket cost from 2015 to 2017. The purpose of this research is to derive a tariff model that considers quality improvement and compensation for loss by medical institutions according to the repeal of physician surcharges and establishment of a P4P.

Methods: Health Insurance Review & Assessment Service (HIRA) developed a relative evaluation tariff model based on a medical quality score and allotted the tariff (i.e., admission fee, consultation fee) to medical institutions. Medical quality is scored under the sections of ‘Medical quality and patient safety’ (30 indices), which evaluates medical quality in terms of effectiveness and the safety of patients, ‘Medical publicity’ (9 indices), which evaluates the medical public service for the vulnerable class and accessibility of essential medical service, ‘Health care delivery system’ (7 indices), which evaluates the responsibility performance of each institution and patients-centered care, ‘Training’ (8 indices), which evaluates the system to train professional doctors, and ‘R&D’ (5 indices), which evaluates the research achievement promotion of excellence and medical service development environment. Also, the model is derived reasonably based on a medical quality evaluation score of each medical institution by repeatedly simulating the ‘setting proper number of class’, ‘setting cut-off region between classes’, ‘tariff computation of each class’, and ‘profits and losses estimation before and after the policy for each institution’.

Results: Final tariff models for the sections on ‘Medical quality and patient safety’, ‘Medical publicity’, and the ‘Health care delivery system’ are classified into five classes (1st: within upper 10%, 2nd: within upper 20%, 3rd: within upper 30%, 4th: within upper 50%, 5th: below 50%, and disqualified: unsatisfying 50% of the evaluation indices in the section on ‘Medical quality and patient safety’) based on its total score, and the sections on ‘Training’ and ‘R&D’, in which the models are classified into three classes (1st: upper 20%, 2nd: within upper 50%, 3rd: below 50%, and disqualified: no indices). As an exception, the tariff model is separately classified for a general hospital designated by a special hospital, which cannot be compared with other medical institutions due to their specialization.

Conclusion: The P4P system has the purpose to assimilate physician surcharges, which are non-covered services, and to lessen the amount of out-of-pocket cost while improving the medical quality of the institutions. The government expects a savings of 415.9 billion KRW through reducing the number of doctors that have physician surcharges. Also, P4P is a relative evaluation system that is hard to compare directly regarding overall medical quality improvement. In spite of that, the number of indices increased from 27 (1st) to 46 (2nd), which made the qualification procedure harder, and the number of qualified institutions increased by 3%, which indicates overall medical service quality that also increased for the sections on ‘Medical quality and patient safety’, ‘Medical publicity’, and the ‘Health care delivery system’. The government is also planning to reinforce the policy through continuous monitoring of the system.

ISQUA17-3024
IMPLEMENTATION OF A STANDARDIZED DELIRIUM MANAGEMENT PROGRAM TO PREVENT, DETECT AND TREAT DELIRIUM IN SURGICAL PATIENTS

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Objectives: Delirium is an acute and serious complication affecting up to 61% of older surgical patients. A practice development project (2011–2013) was initiated to improve prevention, recognition and treatment of delirium in orthopedic and traumatology patients. Using a Plan-Do-Check-Act approach, the project team developed and implemented stepwise a nurse-led delirium management program that includes clinical practice guidelines, specialized nursing education, inter-professional collaboration and an inter-professional delirium consultation service (DCS).

The objectives of this study were (1) to describe the delirium prevalence rate, (2) to compare delirious and non-delirious patients, (3) to evaluate the benefits of the implemented delirium management program based on selected outcomes i.e. delirium recognition and prevalence rates, nurses’ strain in caring for patients with delirium.

Methods: This observational study conducted in a Swiss university hospital used an evaluation design. The evaluation included 961 retrospective and prospective extracted data sets from patients
(delirium assessment data, ICD-10 diagnosis, length of stay) who were hospitalized between January and July 2015 on four orthopaedic units, for at least one day and 59 nurse survey data collected with ‘The strain of care for Delirium Index’. Data were analyzed with descriptive methods.

**Results:** 198 (21%) of the 961 patients had at least one Delirium Observation Scale (DOS) Score ≥3 indicating a probable delirious state. Patients with a DOS score ≥3 were seen two times per week by the professional DCS, who are clinical nurse specialists with advanced knowledge in delirium. The DCS performed further assessments to verify the delirium diagnosis and recommend treatment.

Over the five months evaluation period the number of delirious patients were quite stable. A delirious state was more frequent in patients after a hip prosthesis, femur fracture -intramedullary nailing, acetabulum surgery, or spine decompression, stabilization surgery. The comparison of patients with and without a DOS score ≥3 shows patients with a delirious state were on average 16 years older, more frequently male and had one or more of the following comorbidities: cardiomyopathy, hypertension, chronic obstructive pulmonary disease, renal insufficiency, vascular and / or cerebrovascular disease, diabetes mellitus with and without organ failure, tumor without metastasis. Furthermore, compared to the non-delirious patients, delirious patients stayed twice as long in the hospital.

After the implementation of the delirium management, almost all of the 59 nurses included in the survey, felt highly supported by the DCS. Furthermore, the nurses felt less strained (85%) and more competent (95%) in dealing with delirious patients or patients at risk.

**Conclusion:** The implemented delirium management program has resulted in a systematic delirium screening, detection and treatment process, and a less strained and more competent management of delirious patients or patients at risk. The benefit of the implemented delirium management and its sustainability will be further evaluated in the upcoming months.

**ISQUA17-2156**

**CONTEMPORARY TECHNOLOGY FOR PATIENT-CENTRED INNOVATION – A MIXED METHOD EVALUATION IN SEXUAL HEALTH**

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**Objectives:** SH:24 (www.SH24.org.uk) is an award winning community interest company delivering state of the art, online diagnosis and treatment of sexually transmitted infections. It offers person-centered care to promote shared decisions through technology-enabled services. Developed using agile design and extensive user consultation it offers online information and ordering with tests and treatments by post. Users access the service via the website, telephone or text message with a ‘mix and match’ approach to service modality. The service links closely to local sexual health clinics.

Initially this was through referral of complex cases from online to clinics and later through signposting of simple cases from clinics to SH:24. We measured the impact of this innovation on user behaviour and service activity across the whole sexual health economy within two London Boroughs with the highest rates of sexual health need in the UK.

**Methods:** A mixed methods evaluation of the impact of online sexual health services on the whole sexual health economy including a 2000 participant randomised controlled trial of impact on access and descriptive analysis of routinely collected data from all sexual health providers to document shifts in activity across the whole sexual health economy.

**Results:** The introduction of online services to the sexual health economy changes patterns of use across the whole system. Online provision doubles uptake of testing for sexually transmitted infections (RR 1.87, 95% confidence interval 1.63 to 2.15, p < 0.0001) attracting those who have never previously used services (27% of online users). Early adopters are more likely to be of white ethnicity (71% online compared to 39% in clinic) and men who have sex with men (17% online compared to 13% in clinics) but online services increase access by the same proportion for all groups. 76% of users complete the online test process. In a system that has insufficient capacity to meet demand, online services increase total testing and infections diagnosed, adding to baseline system activity. Triage at clinics and re-direction online is required to shift activity to the online service. While the experience of those who make this transition remains positive this risks reducing access to testing among the 25% redirected online who fail to complete the testing process.

**Conclusion:** Online sexual health services increase access, attract new users and improve user experience. Online services rarely operate in isolation because of the limits to clinical services without face-to-face interaction. Their evaluation benefits from a whole systems approach that acknowledges their interaction with the facilities that they refer to or accept referrals from. In sexual health economies that re-direct users out of clinics towards online options total capacity is increased but choice is reduced. Further work is required to understand the interfaces between these modalities of care. Triage that predicts ability to switch service modality with targeted support could reduce barriers to access for those who do not transition effectively.


**ISQUA17-2404**

**THE OASI CARE BUNDLE – A QUALITY IMPROVEMENT PROJECT TO CHANGE PROVIDER BEHAVIOUR AND REDUCE PERINEAL TRAUMA IN CHILDBIRTH**

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Objectives: Obstetric anal sphincter injuries (OASI) are any tears that occur during childbirth involving the anal sphincter muscle. Consequences of such perineal trauma include anal incontinence, which severely impacts quality of life. Long-term health costs are significant. In England OASI rates tripled in primiparous women from 1.8% in 2000 to 5.9% by 2011.[1] This current rising trend is concerning. The underlying aetiology is multifactorial, however, experiences in some maternity units and previous research have shown that contributing factors are training inconsistencies, lack of awareness and variation in practice.[1–3] The OASI Care Bundle was developed to address underlying issues and piloted with promising results.

Methods: Scale-up of the intervention has used a stepped wedge cluster randomised control trial study design, with implementation staggered in blocks to allow for robust evaluation. Roll-out began in January 2017 and over a 12-month period the intervention will be introduced in 4 blocks of 4 units within the UK. An estimated 32,800 women are eligible for the care bundle across the 16 units. The primary outcome is OASI rates. Implementation outcomes, including acceptability, feasibility, coverage and sustainability will be evaluated using mixed methodologies (including focus groups and routine clinician data). The intervention is facilitated by improvement leaders - clinical champions at each unit who will cascade training and supporting materials within their unit. Joint leadership is provided by the Royal College of Obstetricians and Gynaecologists and the Royal College of Midwives. Ethical approval was obtained from each participating unit.

Results: Interim results will be available by September 2017 as 4 focus groups (2 with clinicians from the units and 2 with champions) will have been conducted to assess implementation. Thematic analysis will capture the barriers and enablers associated with uptake and scale up of the intervention and provide a forum to share learning. There is a belief among some clinicians that OASIs are an unavoidable consequence of vaginal birth and this project challenges that view. Preliminary findings from the focus groups conducted with the champions will be communicated to champions from subsequent blocks, allowing them to develop strategies to enhance implementation.

Conclusion: The OASI Care Bundle combines elements of evidence-based practice into a cohesive bundle, that when implemented together, improve patient outcomes. We expect that implementation success will partly depend on the champions at each unit. Our aim is that our robust design is clinically effective and that lessons learned from implementation will enable wider roll out and inform subsequent care bundles.

References

ISQUA17-2693
MULTIDISCIPLINARY EMBEDDED RESEARCH TO IDENTIFY SOLUTIONS TO EMERGENCY DEPARTMENT OVERCROWDING
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Objectives: Emergency department (ED) overcrowding is a common and persistent problem in many countries, impacting on the quality of care, patient safety, staff morale and cost. There is existing literature on the causes and effects of overcrowding, and evidence that it can be alleviated by a range of different quality improvement interventions. However, interventions don’t always have the desired effect and many health care staff and systems are suffering “change fatigue” and lack the means to prioritise and focus their improvement effort strategically. Our objective was to determine a prioritised set of evidence-based interventions for reducing ED overcrowding that were attuned to the context-specific problems and organisational potential for change in an acute hospital in the UK, and to develop generic guidance for use by other organisations to identify compatible interventions.

Methods: Mathematical modelling based on queuing theory was used to explore the intrinsic limits and drivers of ED performance in an acute hospital in the UK under different operating conditions, given exogenous factors such as arrival rates and bed capacity elsewhere in the hospital. ED performance was defined as the percentage of patients admitted or discharged within 4 hours in a given day. Ethnographic research (observations (20 hours), staff shadowing (15 hours) and interviews (n = 35)) explored the organisational practices and perceptions of staff in the hospital in relation to overcrowding. Soft systems methodology was used to integrate modelling and ethnographic findings within a structured multi-stakeholder process to identify and prioritise interventions.

Results: Staff reported various system, process and cultural factors impacting on overcrowding, such as lack of communication between ED staff and staff in other departments which lead to delays in clinical decision-making, difficulties maintaining good team dynamics in the ED, irregularity of some services such as imaging and ambulatory care, and exit blocks produced by problems with flow across the hospital. A mathematical queuing model was developed and parametrised using data routinely collected in the ED, emerging findings from the ethnography and expert clinical input. It was used to assess quantitatively the relative scale of reductions in ED overcrowding achievable through improving different aspects of the process. For example, we determined the extent to which delays caused by the availability of specialist clinicians and/or hospital beds are currently limiting ED performance and quantified achievable gains through requesting specialists and/or beds earlier in the process and/or shifting the current pattern of hospital discharges to earlier in the day. Existing evidence of effective interventions from the literature were characterised with respect to their impact on different aspects of crowding and the context of
implementation. These interventions were filtered and prioritised accounting for how desirable, acceptable and feasible to implement staff considered them to be. In parallel, generic guidance was developed for identifying evidence-based interventions that might be compatible with a given organisation based on their characteristics.

**Conclusion:** Quantitative modelling coupled with qualitative research enabled an acute hospital to assess the potential impact of interventions aimed at reducing ED overcrowding and so where strategically to focus their efforts to affect change. Generic guidance for other organisations would need to be tested to understand the potential for spread.

**ISQUA17-1406**  
**IMPROVING HAND HYGIENE IN OUTPATIENT SETTING WITH AN AUTOMATED NOTIFICATION SYSTEM**


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**Objectives:** Hand hygiene (HH) is widely recognized as the most effective way to reduce transmission of healthcare associated infections but clinicians’ compliance has consistently been challenging. With the global rise of urbanization and ambulatory patient visits, there is an urgent need for HH in high traffic outpatient setting. The current gold standard is observational auditing, which has major drawbacks as 1) the Hawthorne effect in small clinic settings is large, 2) only a small fraction of HH opportunities are observed due to the high demands on resources, and 3) the use of the audit results for improvement are delayed due to process and analysis time.

We therefore studied the feasibility of a real-time infrared-driven HH notification system that is suitable for the outpatient setting.

**Methods:** Mixed methods were used. A multidisciplinary group of hospital infection specialists, HH nurse auditors, outpatient clinicians, human factor specialists and health services researchers from an academic children’s hospital in Singapore that sees 228,716 numbers of paediatric outpatients per year tied up with the engineering department of its university. In an iterative process of co-creation, an infrared-driven tool was engineered to audit outpatient HH opportunities. HH opportunities were defined as the first movement of a clinician into a zone around the patient (WHO HH moment 1) and were detected using infrared technology. Pressure plates were implemented to detect the presence of a patient and dispenser trackers registered the usage of hand disinfectant.

The functioning of the infrared tool was tested in three pediatric outpatient settings (surgical, neurological, and general) over the course of three times three months. For the first month of each setting, the tool was set to collect baseline data. The system registered the HH opportunity as compliant if the dispensers were used prior to the opportunity or successful after prompt when performed within twenty seconds after the clinician attempts to approach the patient, therefore crossing the IR line.

In the subsequent two months, the tool emits a real-time visual and audio notification to the clinician if there is an opportunity where they should perform hand hygiene. The HH tool underwent an iterative process of readjustment during the prototyping process. The HH compliance as measured by the tool was compared to HH compliance obtained by manual auditing at the respective departments.

**Results:** In all three settings, the infrared tool was able to capture all moment 1 hand hygiene opportunities in a single clinic room, whereas manual audits represented only 0.4% of the total HH opportunities. In the first month of the test settings study, the observed compliance differed from the manual audit observation, with 14.77% (site 1, surgery, n = 109), 8.45% (site 2, neurology, n = 145) and 0.84% (site 3, general, n = 113). After implementation of a real time notification in the two subsequent months, results showed a HH compliance increase of Hygiene Compliance (HHC) of 2.33%. In addition, an increasing part of the HH was performed in the 20 seconds before patient contact (first month: 5.47%, subsequent 2 months: 30.15%).

**Conclusion:** The infrared-driven real-time notification HH tool seems feasible to provide a full audit of hand hygiene compliance and a cost effective substitute of manual audits. Although the results seem promising, more in depth comparison studies need to be done to explain its effect.

**ISQUA17-1024**  
**USING CLINICAL PATHWAY TO MANAGE DENGUE FEVER**

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**Objectives:** To standardize the management of dengue fever for proper management and to prevent fatality.

**Methods:** Study was conducted for a period of two (2) years from January 2014 to December 2015 using clinical pathway. Data was collected using dengue clerking sheet to detect the compliance of five (5) Physicians on the use of: Pathway – to manage their dengue case.

Monitor of compliance will be based on daily platelet, daily packed cell volume (PCV), daily fluid management, number of patients discharged following the discharge criteria and number of patients discharged not following discharge criteria. Data was also collected on the number of dengue cases treated for year 2014 and 2015. Those data were tabulated, segregated and analyse accordingly for both years to see the compliance among the five (5) Physicians on all the stated parameters.

**Results:** Total cases treated in 2014 were 707 cases with one (1) case of death before the implementation of pathway. In 2015 there were 800 cases treated with no case of death.

Therefore the implementation of dengue pathway had enabled our Physician to provide proper management of dengue cases with no fatality rate.
Conclusion: Based on the data collected it was found that all five (5) Physician fully complied to the management of daily platelet, daily packed cell volume (PCV) and daily fluid management of their patients. However there were variation in terms of the discharged criteria.

Therefore it was found that the compliance of Physician A was 89% for both years, Physician B: 87% in 2014, 90% in 2015, Physician C: 85% in 2014, 91% in 2015, Physician D: 85% in 2014, 93% in 2015, Physician E: 79% in 2014, 84% in 2015.

References

ISQUA17-3337
IMPROVING CARE IN COMPLEX HUMANITARIAN CRISIS: A PROCESS EVALUATION OF MÉDECINS SANS FRONTIÉRES’ APPROACH TO QUALITY
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Objectives: Médecins Sans Frontières - France (MSF-OCP) works in 5 world regions and over 30 countries with extremely challenging contexts. Its medical portfolio is diverse, with >9,000 staff caring for patients with a variety of medical conditions, including obstetrical emergencies, malnutrition, infectious disease, traumatic injury, and chronic illness. Patients may be from areas affected by conflict or violence, may be displaced, or may reside in stable contexts that simply lack adequate health systems. Though the MSF movement is at times lauded for providing high-quality medical care in precarious situations, the sheer diversity of MSF-OCP’s work presents a unique challenge in quality measurement, reporting, and improvement.

Methods: In order to describe MSF-OCP’s institutional approach to quality, a qualitative process evaluation was conducted to determine staff knowledge, attitudes, and practices on the topic. A limited and selective literature review was done, as well as an analysis of existing MSF-OCP quality tools. Additionally, 47 semi-structured interviews were conducted with a purposively-selected sample of medical, operational, and support staff from October-December 2016. Participant selection attempted maximum heterogeneity of medical specialties, experience levels, and staff location (headquarters and field sites). Data was compiled into 10 thematic codes and analyzed using a grounded theory method to highlight strengths and weaknesses, as well as to identify specificities of MSF-OCP’s work as it relates to quality.

Results: The analysis shows that quality is an organizational priority, even in complex humanitarian contexts, as evidenced by standardized clinical protocols, strict recruitment processes, in-house expert technical support, and rigorous logistical and pharmaceutical supply practices. Weaknesses of MSF-OCP’s approach to quality diverged into three areas. First, staff perceive a lack of unified quality concept, language, and metrics across MSF-OCP working environments. This contributes to variation and person-dependence in the way that care is delivered, examined, and improved among MSF-OCP projects. Second, concerns with clinical care were highlighted, particularly regarding integration of necessary elements of care and care coordination both within MSF-OCP structures and with other actors. Further, care is not always viewed as patient-centered. Finally, variability in human resource management, including staff support and the individual review process, undermines MSF-OCP’s capacity to consistently deliver high-quality care.

Conclusion: This survey shows an inconsistent approach to quality management at MSF-OCP. Due to the diverse and challenging nature of providing assorted health services in a variety of demanding contexts, traditional approaches to quality improvement may not be adapted to MSF-OCP. A strategic framework for quality is being developed with an objective of harmonizing the approach across the organization while still allowing for adaptability to different contexts and challenges.

ISQUA17-1080
REDUCE DENGUE FEVER EFFECT OF SODA ASH ON VECTOR CONTROL
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Objectives: According to the Environmental Protection Administration Executive Yuan, R.O.C (Taiwan), there were 43,348 confirmed cases of dengue fever in Taiwan in 2015. While the number of confirmed cases in Kaohsiung City was 19,660.

At present, the disease-causing mosquitoes of Dengue Fever are Aedes aegypti and Aedes albopictus. We carry out density investigation for natural container (gutter) around medical district since 2012. In-depth understanding of water causes, such as increased drainage slope, ditch cover plus stainless steel gauze and management control, such as spraying agents and drug delivery bricks, although for outdoor disease density significantly reduced, but to improve the project costs in addition to the cost of additional spray agents also remain in the surrounding environment, fear of causing ecological impact. So to find low-cost can also maintain the environment and control effect has become the primary goal.
The use of soda ash characteristics to suppress the breeding of pests and reduce outdoor mosquito breeding, statistical data will be analyzed, the significant benefits set in the revised Breatou index $L \leq 2$.

**Methods:** Will be mark standard number around the hospital building a total of 34 open ditches in sequence, one by one placed soda ash and sampling water quality testing PH value maintained at PH 8.5–9.3, three days after the check ditch whether there are larva and pupae to be records, and in accordance with the revised Breatou index to determine the fabric of the hospital around the mosquito density.

**Results:** 2012: management control, eliminate the origin; Breatou Index $\geq 1.5$
2013–2015: Engineering and management control, eliminate the origin; Breatou Index $\leq 1.4$
2016: Baking soda power, eliminate the origin; Breatou Index $\leq 1.2$

**Conclusion:** Soda ash (NaHCO3) is a natural non-toxic substances, soluble in water white powder, combined with water production, said carbon dioxide and the formation of weak alkaline. Benefits after use:

First: when dissolved in water to produce carbon dioxide easily attract mosquitoes.
Second: alkaline water is not easy to breed disease vector mosquitoes and lay eggs.
Third: does not affect the ecological environment. After five years of continuous review to improve. Soda ash is not only low-cost, can inhibit Larva breeding, destruction of complete metamorphosis of growth, reduce the density of vector-level mosquito and dengue transfer, with practical reference value.

**ISQUA17-1816**

**QUALITY AND SAFETY IN PERINATAL MENTAL HEALTHCARE: DETECTION AND RESPONSE TO MATERNAL NEAR MISS EVENTS**

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**Objectives:** Mental illness is a leading cause of maternal death in the UK. Between 2009–2012 one in five of the women who died during the perinatal period had a mental illness and almost one quarter of maternal deaths during the postnatal period were from mental health related causes (Knight et al., 2014). In high-income countries, where maternal deaths are rare, investigating maternal near miss events (e.g. severe life-threatening complications not resulting in death) can provide important information about the systems, or lack of, in place for detecting and responding to clinical deterioration and help guide strategies aimed at improving patient safety. However, currently no research investigating near miss events in perinatal healthcare exists.

The overall objectives of this study were to explore: 1. Healthcare professionals’ experiences of identifying and responding to psychiatric near miss events among women with perinatal mental illness; 2. Barriers to detection and response of near miss events in perinatal mental healthcare from a systems perspective using the Three Delays Model (Thaddeus and Maine, 1994); 3. Current and future adoption of patient safety solutions to prevent harm in perinatal mental healthcare.

**Methods:** The current qualitative study utilised in-depth semi-structured interviews with healthcare professionals and managers ($n = 30$) working with women with perinatal mental illness (e.g. psychiatrists, midwives, health visitors) from a range of settings (e.g. inpatient, outpatient, community) across the UK. Grounded Theory principles guided data collection and analysis.

**Results:** Drawing on the Three Delays Model in maternal mortality a conceptual model will be presented to illustrate the key barriers to recognition and response of psychiatric near miss events among women experiencing mental illness during pregnancy or post birth. The model focuses on elucidating at which level of the system these hindering factors exist (e.g. individual, healthcare providers, organisational or environmental) and how they interact with each other.

**Conclusion:** Existing frameworks for monitoring maternal near miss events do not currently refer to psychiatric causes of morbidity, the findings therefore directly inform the development of a series of psychiatric indicators, which can be used to monitor and learn from near miss events in perinatal mental healthcare. The conceptual model will form the basis of future work to develop or enhance strategies to improve quality and safety for women with mental illness during the perinatal period.

**References**


**ISQUA17-1692**

**NO SECTOR LEFT BEHIND: ADVANCING MENTAL HEALTH QUALITY IN ONTARIO, CANADA**

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Objectives: Sixteen years ago, Ontario embarked on a process of improving measurement systems and use of information to improve the cancer system and population-based cancer outcomes. [1] Three years later, Ontario developed a Wait Times Strategy that used a similar focus on measurement and public reporting to drive performance improvement. [2] This practice was further entrenched through the establishment of a provincial advisor on health care quality (Health Quality Ontario) that reports to the people of Ontario on how well the health system is performing, including recent reporting on long-term care and health system quality. Not surprisingly, progress in access and policy was observed in those areas where reporting and performance were developed and emphasized. [3]

However, for much of the last two decades that have seen significant progress in health system performance measurement and service delivery, Ontario’s performance reporting has been silent on the quality of services and care received by people living with mental illness and addictions, despite the evident need to address the challenges in mental health service delivery. [4]

Starting in 2011, clinician scientists and analysts at the Institute for Clinical and Evaluative Sciences applied the tools of measurement and reporting, long-established in other parts of the health system, to understanding quality in mental health. The program broke new ground in using linked administrative data sets to examine and shine a light on: the disease burden of mental illness and addictions, access barriers for people living with mental health and addictions, and the quality of services and care delivered.

Through this work, mental health indicators could for the first time be incorporated as an integral part of overall health system public performance reporting in Ontario, [5] and the first cross-sectoral mental health system scorecard for both children and youth [6] and for the adult mental health sectors.

These advances lay the groundwork for addressing fragmentation and inequities in the mental health system, including through the development of a provincial mental health and addictions scorecard to inform policy change and quality improvement.

Methods: In 2015, a task group of experts in data, performance measurement and policy, and leaders from mental health and addictions community agencies and hospitals used a modified Delphi process to deliberate on a set of evidence-based indicators suitable for routine performance monitoring.

Results: A minimum set of measurable performance indicators that can be standardized and reported across hospitals and community-based mental health and addictions organizations was established (See, e.g Figure 3.5).

Conclusion: Results from the selected indicators are already informing policy, including the development of five provincial mental health and addictions Quality Standards and a mental health data strategy for Ontario.

References

ISQUA17-2138
QUALITY OF CARE AND CLINICAL OUTCOMES OF HEART FAILURE AMONG PATIENTS WITH SCHIZOPHRENIA IN A UNIVERSAL HEALTH CARE SYSTEM

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Objectives: The association between schizophrenia and the quality of care and clinical outcomes of heart failure in a universal health care system remains sparse. This nationwide study compared the quality of care and clinical outcomes of heart failure among Danish patients with and without schizophrenia.

Methods: In a population-based cohort study, we identified 36,718 incident heart failure patients with hospital contacts including 108 with schizophrenia using Danish registries between 2004 and 2013. High quality of heart failure care was defined as receiving ≥80% guideline-recommended process-performance measures of care. Potential predictors of heart failure care among patients with schizophrenia included patient-, (age, sex, Global Assessment of Functioning (GAF) score, abuse, duration of schizophrenia), provider- (quality of schizophrenia care), and system-specific factors (patient-volume defined as hospital departments and clinics average patient-volume of incident heart failure patients per year). Clinical outcomes included 4-week all-cause readmission and 1-year all-cause mortality following a first-time hospital contact with incident heart failure.

Results: Compared to incident heart failure patients without schizophrenia, incident heart failure patients with schizophrenia had a lower chance of receiving high quality heart failure care and treatment with beta-blockers. A high GAF score was associated with a higher chance of receiving high quality heart failure care and beta-blocker treatment among incident heart failure patients with schizophrenia. Incident heart failure patients with schizophrenia had a higher risk of 1-year mortality, but not a higher risk of readmission than incident heart failure patients without schizophrenia.

Conclusion: Efforts are warranted to reduce the high mortality among incident heart failure patients with schizophrenia.
**ISQUA17-2430**

**MENTAL HEALTH SOCIAL INCLUSION THROUGH JOB PLACEMENT: IMPLEMENTING IPS IN SPAIN**

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¹Avedis Donabedian Research Institute, Barcelona, Spain, ²Red de Investigación en Servicios de Salud (REDISSEC), Spain, and ³Ministry of Health-Generalitat de Catalunya, Barcelona, Spain

**Objectives:** Individual Placement and Support (IPS) is an integrated intervention including social, labor and mental health (MH) with an important component of evidence for its effectiveness in helping people with severe mental disorders (SMD). Its objective is to obtain and maintain competitive jobs, increase social inclusion and quality of life, while consuming fewer resources. In Europe, IPS model is implemented in three countries (Netherlands, Italy, and Spain) involving a collaborative learning community, sharing background with the IPS Employment Center (IEC).

Back in 2013, the project started with an agreement among three Regional Government Departments at Catalonia (Ministry of Health, Ministry of Business and Labor, and Ministry of Social Wellbeing and Family), “la Caixa” Banking Foundation, Government of Province of Barcelona, and the IEC.

The goal is to improve labor and social inclusion of people with SMD, in a pilot project that aims to integrate efforts and workflow from three areas (health care, social services and labor) both at community and policy levels to develop supported employment. Based on IPS principles: zero exclusion criteria; personalized benefits counseling; competitive jobs; IPS and MH services integration; rapid job search; IPS professionals building relationships with employers; continuous supports and follow-up’s; and service user’s involvement, respecting clients’ preferences. The innovative challenge involves implementing a new community perspective to support people with SMD finding a job and keeping it.

**Methods:** Changes implemented are based on a specific patient management system including integration of Employment Services (ES) with MH treatment teams. People with SMD are actively involved in their own IPS plan, and families supporting them in their job search and maintenance. ES involve employers in an active way, by getting close collaborations through a win-win goal. Services are measured by external evaluation through a “Fidelity Scale” validated by IEC.

Actions taken: 1) Professional training; 2) Improving integration between MH and ES (periodic meetings, patient plans and training on benefits planning); 3) On-site support and monitoring achievements through an ICT platform; 4) Quarterly follow-up meetings among regional leaders, MH teams and ES; 5) Action plans developed in each ES.

**Results:** Since October 2013, 7 sites have adapted their own programs to implement IPS.

Up to September 2016, an average of 393 people with severe mental illness has participated in these programs quarterly. Although severe economic crisis, the percentage of working people have increased almost three fold from the beginning of the program.

Scores in fidelity reviews (which measure adherence of work process to IPS methodology) have improved 33.5% in average. And 671 jobs were covered.

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**Conclusion:** A job integration program based on evidence with significant local leadership, regional focus and commitment of the participants, raising IPS as an important intervention to obtain and maintain competitive employment and recovery for people with SMD, improving improve their integration in the community at the time, can improve resource consumption and the impact on health.

**ISQUA17-2372**

**SIMULATIONS IMPROVEMENTS IN PATIENT SAFETY CULTURE AND MEDICATION SAFETY AT A PSYCHIATRIC CENTER IN THE FAROE ISLANDS**

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**Objectives:** The National Hospital of the Faroe Island (NHFI) was in a virginal state of implementation of quality and safety management initiatives (1), but kicked off in this area in the autumn of 2013. This study was set within the Psychiatric Center of the NHFI, and aimed to investigate changes in

– patient safety culture (PSC) from 2013 to 2016, and

– the implementation of quality improvement (QI) methodology related to medication review and medication reconciliation.

**Methods:** The Danish version of the Safety Attitude Questionnaire (SAQ-DK) was distributed electronically to the staff members of the Psychiatric Center in the autumn of 2013 and again three years later in 2016. SAQ-DK has 31 items comprising composites for; teamwork climate (TC), safety climate (SC), job satisfaction (JS), stress recognition (SR), working conditions (WC), and perceptions of management (PM). The proportion of respondents with positive attitudes towards each of the PSC composites was described, and changes were assessed clinically relevant if >5%.

The Psychiatric Center enrolled in the Danish Patient Safety Program for Mental Health (“Safe Psychiatry”); a national QI project in March 2014. Staff were introduced to and trained in the science of improvement, quality and safety, including the Model for Improvement and Plan-Do-Study-Act learning cycles, and the Psychiatric Center took part in seminars and networking activities within the Safety Psychiatry Collaborative. As part of the program a bundle concerning safe work processes of medication, that is medication review and medication reconciliation was implemented.
Statistical process control was applied monthly to survey change in the two work processes over time.

**Results:** The response rate of the PSC surveys were 82% in 2013 and 70% in 2016 (N = 93, N = 80).

Clinical relevant improvements in PSC were observed over time for TC (6%), SC (15%, P < 0.05), and WC (13%).

For the new work process of medication review there was an improvement of approx. 60% from June 2014 to October 2016; the breaking point emerged approx. 8 months after the work process was implemented, establishing the work process for around 90% of patients with some variation. In parallel there was a 30% improvement in applying medication reconciliation. In October 2016, this work process was in place for all patients (100%), with some variation too.

**Conclusion:** The results of this study are to our knowledge the first within the Nordic countries to imply that extensive implementation of a standard QI program such as the Danish Patient Safety Program for Mental Health can act as a significant catalyst for enhancing TC, SC, WC. We observed clinical relevant improvements in PSC simultaneously with substantial improvements in the implementation of two medication work processes at the Psychiatric Center of the NHFI. A safer medication situation was established for the patients of the Psychiatric Center over time.

The results of this study are unique and strengthened by the fact that the Psychiatric Center was in a virginial state of QI (1) prior to implementation of the PSC survey and the Safe Psychiatry program 2013, and therefore, there was no influence from other concurrent quality or safety improvement initiatives prior to or during the study period.

**Reference**


ISQUA17-1818

**IMPROVING SAFETY IN FAMILY MEDICINE CLINICS IN THE FEDERATION OF BOSNIA AND HERZEGOVINA AND SARAJEVO CANTON**

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1AKAZ, and 2Federal Ministry of Health, Sarajevo, Bosnia and Herzegovina

**Objectives:** In 2010, the Federal Parliament adopted a “Law on Health Care”. The new law introduced a new approach to the accreditation of health care institutions within the entity health care system, making the adoption of a system of safety standards a mandatory requirement, while leaving accreditation for higher quality standards in health care provision voluntary. The Agency for Quality and Accreditation in Health Care in the Federation of Bosnia and Herzegovina (AKAZ) was given the following tasks: to develop two set of standards for all types of health care institution, based respectively on optimal safety standards (mandatory accreditation) and optimal quality standards (voluntary accreditation); to adapt education and training programmes for health care professionals involved in the processes of safety and quality improvement to bring them into line with those requirements; and to issue certificates to health institutions that meet the optimal safety standards.

To kick-start this process of establishing a system of safety standards at the primary health care and family medicine levels, the Federal Health Ministry signed contracts in July 2014 with both the Sarajevo Canton Health Centre and AKAZ, funding implementation of a project entitled “Establishing a System of Safety Standards in Family Medicine Clinics in the Sarajevo Canton Health Centre”.

**Methods:** The planning phase of the project, including the design of all activities and outcomes, took more than a year and was carried out jointly by health care professionals from the Federal Ministry and AKAZ. Only then did the three parties sign the contracts. During this period, AKAZ carried out a thorough revision of the accreditation standards for family medicine teams in order to incorporate the mandatory system of safety standards and to amend the quality standards then in place. This was the fourth revision of the accreditation standards for family medicine teams since adoption of the first version in 2005. AKAZ modified the training programmes for quality coordinators, health professionals in the family medicine department, external and internal quality assessors and facilitators in line with these new standards. Under the project, AKAZ prepared and conducted 25 two-day training sessions for health professionals in the family medicine department, three two-day training sessions for external and internal quality assessors, and a two-day training session for facilitators, as well as an assessment of accreditation for all the family medicine teams in Sarajevo Canton.

**Results:** Between October 2014 and May 2016, AKAZ organized training for 708 health professionals from the Sarajevo Canton Health Centre, including 592 physicians and nurses from the family medicine teams, 35 internal quality assessors, 32 facilitators, and 49 managers from all levels in the Health Centre. It has also performed 186 facilitators’ visits to family medicine clinics and the Department for Safety and Quality and accredited 197 family medicine clinics within the Sarajevo Canton Health Centre for safety standards and criteria.

**Conclusion:** This project has had a major impact on other health care professionals and institutions. By the end of 2016, family medicine teams from 15 health care centres had been included in the process of facilitation. This is 19% of all the health centres in the FBiH. Overall, AKAZ has accredited 265 family medicine clinics, which is 31% of total number in the FBiH.

ISQUA17-1820

**TRENDS IN THE QUALITY OF STRUCTURED DIABETES CARE IN PRIMARY CARE**

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**Objectives:** The Health Service Executive Midland Diabetes Structured Care Programme (MDSCP), one of the longest
established primary care-based diabetes care programmes in Ireland, is dedicated to improving the quality of care for patients with diabetes in the Midlands region. The programme encompasses evidence-based quality improvement strategies to integrate and coordinate diabetes management within general practice and with other disciplines, including patient registration and recall, regular diabetes review visits, active role of the practice nurse in coordination and ongoing management, multidisciplinary specialist access (e.g. clinical nurse specialists (CNS), dietetics, ophthalmology, chiropody), professional education, and remuneration. Limited research exists on the long-term performance of structured, primary care-led diabetes management both in Ireland and internationally, and the MDSCP has the potential to provide insight into the delivery of a primary care-led approach to improving diabetes care. We examined the quality of care delivered to patients with type 2 diabetes (T2DM) using data from 16 years of the programme.

Methods: At four time points, 1998, 2003, 2008 and 2015, data on the documentation of care processes and outcomes were collected by CNS from patients with T2DM (≥18 years) registered with participating practices. Data were extracted from patient notes using a paper-based data collection form. Using Stata, chi-square tests for trend were used to test differences in processes and outcomes over time, benchmarked against national guidelines and the English National Diabetes Audit (NDA) 2014–2015; a suitable comparator given that structured diabetes care in the UK is supported by existing policy and financial incentives.

Results: Data on 331 patients with T2DM in 1998 (10 practices); 843 in 2003 (20 practices); 989 in 2008 (30 practices), and 1106 (30 practices) in 2015 were available for analysis. Documentation of all processes improved significantly over time (p < 0.001). Documentation in 2015 (>97%) was comparable with the NDA with the exception of BMI (69.5%) and smoking (78.9%). The proportion of patients with a blood pressure <130/80 mm Hg increased from 7.8% in 1998 to 21.1% in 2015 (P < 0.001), as did the proportion with a total cholesterol <4.5 mmol/L (22.9% vs.70.4%, p < 0.001), and triglycerides <2.0 mmol/L (46.4% vs.75.5%, p < 0.001). The proportion with HbA1c <48 mmol/mol (6.5%) remained similar (37.6% in 1998/1999 vs.34.1% in 2015).

Conclusion: The findings demonstrate the progress made in the quality of care for people with diabetes in the region since the initiation of the MDSCP. Documentation of care processes improved significantly over time, as did the proportion of patients meeting clinical outcome targets. It is important to note the latter could reflect improvements in clinical guidance and prescribing over time and may not be directly attributable to the programme. Recording of BMI and smoking status remain consistently lower than other parameters, and understanding how this can be improved should be an area for attention. The MDSCP may inform how optimal primary care-led diabetes care can be delivered in Ireland, which is particularly relevant given ongoing policy reforms to support the delivery of diabetes care in the community. This includes the new diabetes ‘cycle of care’ funding initiative which was launched in 2015, and will, for the first time in Ireland, financially remunerate GPs for care of patients with stable T2DM, providing two structured visits per year.

ISQUA17-2610
WHERE NEXT FOR PRIMARY CARE PATIENT SAFETY? A NATIONAL UK PRIORITISATION SETTING PARTNERSHIP

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NIHR Greater Manchester Primary Care Patient Safety Translational Research Centre, University of Manchester, Manchester, United Kingdom

Abstracts

Objectives: As the majority of contacts within the UK healthcare services occur within primary care, the opportunity for patient safety incidents to occur is significant. While patient safety incidents with serious negative consequences are in comparison rarer in primary care than in hospital care, the volume of avoidable risks is substantially higher. Despite this primary care patient safety has been under researched and underfunded. Increasingly there is a recognition of the need to examine patient safety within a primary care setting but as resources available for research are limited it is important to address the research questions that matter to those who use the services, i.e. patients, carers and healthcare professionals. The James Lind Alliance (JLA) is a priority setting approach to identify the most important areas for research that has become well established in the UK. The JLA is overseen by the National Institute for Health Research Evaluation, Trials and Studies Coordinating Centre (NETSCC). Its aim is to provide opportunities for patients and healthcare professionals to work together to agree what are the most important treatment uncertainties affecting an area, in order to influence the prioritisation of future research in that area. This partnership aimed to identify the top 10 unanswered research questions for primary care patient safety research.

Methods: The JLA priority setting partnership adopts a structured approach to the identification of unanswered questions, or uncertainties, and their prioritisation. A national survey of patients, carers, general practitioners, pharmacists, nurses, dentists, other allied health care professionals, and patients and carers was conducted. Questions were then processed from their raw form with similar questions combined into indicative questions. These questions were then categorised and refined into research questions and the literature was searched to identify any relevant evidence. A second national prioritisation exercise was then conducted on unanswered questions and the priority questions were taken forward to a final prioritisation workshop where the top 10 questions were identified by patients, carers and primary care health care staff.

Results: 443 research questions were submitted by 351 patients and 86 healthcare professionals. After checking for relevance and rephrasing, a total of 173 questions were collated into themes. The themes were largely focused on communication, team and system working, interfaces across primary and secondary care, medication, self-management support and technology. After the second national prioritisation exercise, the top 30 questions were taken forward to the final prioritisation workshop. The top 10 research questions prioritised in the final workshop will be presented.

Conclusion: The top 10 research questions identified a range of systems of care where there are outstanding questions to address in...
primary care patient safety research. The final top 10 research priorities will be used to guide funding of primary care patient safety research over the next 5-10 years on areas that are important to both patients and healthcare professionals to address questions that are needed in practice.

ISQUA17-2571
‘CLIENTS TELL US IT WORKS’: USING PRINCIPLES OF TRAUMA INFORMED PRACTICE TO DELIVER HIGH QUALITY CARE

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1Community Health, Sydney Local Health District, and 2Australian Institute of Health Service Management, University of Tasmania, Sydney, Australia

Objectives: Trauma informed practice (TIP) - based on the principles of safety, trust, collaboration, empowerment, and choice - is efficient and has merit for clients, and professionals, across public and social services. Implementation of TIP is, however, a challenging undertaking for individuals and organisations. The study aimed to: attain the level of use of principles of TIP; and determine the motivators, barriers and enablers for changing work practices towards increasing its use at an organisational system level.

Methods: Participants were working in community health services attached to a large hospital network in Sydney, Australia. Ethics approval was obtained from the health network. The services were directed at clients who are marginalised or experiencing disadvantage. Focus groups were conducted with 24 front-line workforce and managers, from medicine, allied health and health promotion. Focus groups were facilitated using a semi-structured interview guide to determine motivators, barriers and enablers. Participants completed a validated, TIP checklist to identify practices undertaken. Data was digitally recorded, independently transcribed and thematic analysis conducted. Checklist data was reported using descriptive statistics.

Results: Participants reported the willingness and consistent actual use of the five principles of TIP with clients. Practices included: open and respectful communication (96% n=23); sharing decision-making (92% n=22); providing a gender sensitive service (92% n=20); supporting client goals and interests (92% n=22); and providing a physically safe environment (88% n=21). Fewer principles of TIP were reported in regards workforce, particularly regarding worker self-care and development. Almost three quarters reported only ‘sometimes’ or ‘never’ attending regular supervision where preventing vicarious trauma is discussed (72% n=17). Just over half reported having attended training on the impacts of trauma (54% n=13) and just under half reported attending training about developing a safety or crisis plan (46% n=11).

Common motivators for using TIP included: professional philosophy; evidence based; positive client outcomes; service model; and positive feedback received from clients. Three key enablers for changing work practices were identified: working in a flexible community setting; having a highly skilled, multidisciplinary workforce; and having a supportive team. Perceived barriers included: budget constraints; inability to back-fill positions and access training; and funding pressure.

Conclusion: Clients are receiving safe, collaborative and consultative services, based on the principles of TIP. As with previous studies, worker safety was identified as an area for improvement. There were multiple strategies identified to enhance service quality and embed the use of TIP principles into services and the wider organisation. These include: ensuring TIP is built into service models; ensuring flexibility in planning service delivery; establishing organisational guidelines for worker safety; creating a supportive team environment; ensuring access to relevant training; creating multidisciplinary teams or collaborations; and ensuring performance measures are aligned with the actual time required to undertake clinical work in this complex field. The benefits of undertaking these improvements will potentially flow through the organisation and deliver higher quality care into the future.

ISQUA17-1321
INTEGRATION OF SPECIALIST DIABETES TEAMS IN PRIMARY CARE: AN EFFICIENT MODEL OF CARE WITH BETTER OUTCOMES FOR THE POPULATION

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1General Medicine and Endocrinology, Calvary Mater Hospital, 2Research, Innovation and Partnerships, Hunter New England Health, 3Hunter Medical Research Institute, 4Medicine and Endocrinology, John Hunter Hospital, and 5Clinical Director of Diabetes, Hunter New England Health, Newcastle, Australia

Objectives: The escalating prevalence of diabetes worldwide mandates innovative ideas to achieve high quality clinical care. This situation is intensified in the Hunter New England Local Health District (HNELHD) by the geographical spread of our patients with diabetes (60,000 patients across 131,000 km²) and the limited specialist resources. Improvements to primary care are an integral part of building responsive, efficient, and sustainable health care. The challenge is to design a new model of care that will strengthen primary care, integrate primary and tertiary services and initiate changes to transform the diabetes landscape.

Methods: The Alliance Diabetes Integration Project is a proof of concept pilot. General practices were recruited following expressions of interest and patients with type 2 diabetes were stratified (Joslin criteria). Moderate-to-high risk patients were offered 40-minute case-conference style consultations within each practice attended by an Endocrinologist, Diabetes Educator, the patient’s General Practitioner (GP), Practice Nurse (PN) and the patient. Recommendations were implemented by their usual GP without specialist clinic follow-up. Practice staff could then offer standardised quality care to their remaining patients with reduced specialist input.

This partnership provides a more seamless patient-centred approach to diabetes care, delivering intensive individualised education to all involved. Effective communication through direct integration minimises delay in therapeutic changes.
Results: 20 practices and 456 patients were seen over 14 months. The mean age was 64±12 years, with a duration of diabetes of 11±7 years. The mean HbA1c was 63±16 mmol/mol. 92% had quality medication changes and good holistic medicine was practised.

At 6 months follow-up of 147 patients, HbA1c improved from 60.2±15.9 to 55.1±12.5mmol/mol (p=0.0006), weight improved from 100.1±20.6 to 98.7 ±21kg (p=0.02), total cholesterol was reduced from 4.5 ±1.2 to 4.4±1.2mmol/l (p=0.04), and systolic BP fell from 139 ±19 to 133±17mmHg (p= 0.0003). The magnitude of improvement in metabolic control is similar to some newer oral diabetes medications.

All of the involved clinicians felt the experience was “satisfying” or “very satisfying”. Patients reported feeling empowered and supported with 34% reporting improved knowledge and confidence.

Due to the success of the pilot project, a further 40 practices have been recruited for 2017. Parameters are being collected and analysed to assess the impact on hospital attendances, along with evaluation of general practice processes, appropriate prescribing and clinical outcomes. A partnership with the National Prescribing Service has been established to develop a diabetes registry that will assist in benchmarking, perpetuating quality improvement, and assisting directed specialist intervention to deliver better outcomes.

Conclusion: This model of care is effective in delivering high quality standardised and holistic care through direct integration. Improved outcomes are achieved without burdening hospital clinics and has the benefit of strengthening diabetes care in the community.

Reference

ISQUA17-1252
CLINICAL RISK ASSESSMENT IN A RESIDENTIAL CARE SETTING: BEST PRACTICE IMPLEMENTATION PROJECT
D. RANASINGHE*

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Objectives: Introduction: Clinical risk assessment and management in an aged care setting is commonly overlooked. This project is focused on clinical risk and relates to residents diagnosed with severe dementia and living in a residential care setting. Weight loss, choking, aspiration and unmanaged behaviour were selected as clinical risks for this project, as they are related to severe dementia. Assessing clinical risks and developing appropriate strategies to reduce such risks can result in an improvement in the quality of life of dementia residents.

Aims/Objectives: The aim of this project was to ensure the risk assessment component included assessing and using best available evidence for care planning when caring for a resident with severe dementia.

Methods: The project selected 30 residents from two aged facilities in the Melbourne metropolitan area as a reasonable and manageable sample. The audit was conducted as a part of each facility’s continuous improvement project and therefore no ethics approval was required. Information obtained for the audit was treated confidentially and did not involve or include any personal identification.

The project utilised baseline data collection was based on JBI-PACES audit criteria, and intervention included education, modifying resident’s assessment tools, and reaudit of post-implementation data collection. The data collected identified risks related to severe dementia.

To be included in the sample a resident must be diagnosed with dementia. In addition to the dementia diagnosis, the resident must have a minimum of two of the following signs and symptoms.

- Unable to speak coherently or comprehend what the staff are saying to them
- No longer recognise family members
- Requires extensive assistance with activity of daily living and frequently resistance to personal care
- Requiring soft or vitamised diet
- Frequently refusing to eat
- Displaying verbal or physical aggression
Education on risk management was provided to staff at both facilities and resident assessment forms and care plans were modified to address risk management. Resident documentation highlighted the residents in the sample group who had four or more signs and symptoms and they were therefore identified as the high risk residents in the facility.

Project was conducted in three phases: Results: The results showed a significant improvement in compliance in all criteria.

Conclusion: This project highlighted the importance of having appropriate assessment forms to identify risks and the importance of staff education on risk management.

Reference

ISQUA17-3360
NATIONAL INCIDENT REPORTING DATA ANALYSIS FOR 3 YEARS, OMAN
KHALED A. ABOUELMA4D
Quality Consultant, Ministry of Health, Oman

Outline: The session describes a process for organizing and analysing incident report data at a national level.

How the proper aggregation and analysis can help decision maker for prioritizing improvement activities. A clear interactive Excel dashboard that ensures proper usage of all available data.

The incident reports at a national level are the main source for risk identification. Through that Excel dashboard tabs, the decision maker can determine the relation between:

- Impact and root causes
- Severity and root causes
- International patient safety goals and root causes
- Timing analysis

Also you can relate all the above mentioned points to frequency, place, time and impact.

Objectives
- Identify proper usage of all available data
- Combine incident reports with the risk program
- Facilitate decision making with incident reports data analysis

Research: The data represent incident reports from 12 main regional hospitals in Oman; years 2013,2014 and 2015 – with 32000 incident report

ISQUA17-3361
NATIONAL INCIDENT REPORTING DATA ANALYSIS FOR 3 YEARS, OMAN
Telemedicine Improves the Health Quality in China
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Outline: Telemedicine has intergraded into the healthcare system to improve the quality in China up to date. People complained very much about the Chinese healthcare systems, while the government was facing to huge challenges. The total volume of medical resources in China was far below needed, especially on well-known expertise, and distributed unevenly in nationwide. The resources organization and coordination was fragmented. The quality of the healthcare was not uniformed and short of supervision. The limited medical resources were not able to subject efficient care to the people, resulting the patients clustered to the tertiary hospital in big cities. The famous tertiary hospitals attracted more and more patients, while the secondary hospitals and community clinics were left aside, because the people never trusted the healthcare quality in primary care clinics. To resolve such situation, Chinese government has been engaging the Hierarchical Medical Systems, which might help to encourage the cooperation among different levels hospitals, and improve the medical qualities in primary cares. Telemedicine was recognized to be the coast effective technology and efficient approach to strengthen the basic healthcare system at present.

Chinese doctor had used the telecom technology in medical care for a long time, which might be traced back to early 1950s. But, the real telemedicine example in China should be the Holter dynamic electrocardiogram (Holter DCG) imported from America in Apr. 1978. At early time, the DCG data recorded for 24 hours had been saved and sent to the data analysis center, which helped a lot of patients.

Since the middle of 1990s on, Chinese government investigated huge numbers of grant to the researches for digitalize medical data and telemedicine. Hospital Information System (HIS) and Electronic Medical Record Systems (EMRs) had been equipped to over half numbers of hospitals, and interacted to the other information systems, such as PACS, LIS, PS, etc. Meanwhile, the development of the internet and mobile communications had made up the possibility of transferring the medical data via internet of things (IOT).

Digital technology integrated with internet made the telemedicine become cost effective. China-Japan friendship hospital carried on the National Telemedicine Management and Training Center since 2012. The center helped the government to make the national protocol of the telemedicine management and the quality surveillance standard. We also developed some new models of healthcare coordination, including clinic consultation, training, and research. Big data and cloud computing technology was implanted in the system to enhance the multicenter clinical researches.

Telemedicine inquires fine coordination of the subspecialty physicians between hospitals, which were organized as the Medical Cluster of Subspecialty. The Medical Cluster would focus on continue medical education for both residents and subspecialty physicians upon the telemedicine. The medical staff from the lower level hospitals could be able to reach the best clinic expertise from the tertiary hospital. EMR needs to be standardized on both medical terms and recorded data structure. Medical data sharing also need to be well managed and privacy protected. In short future, the family doctor and the primary hospital would take care of the common diseases, and the tertiary hospital would focus on the critical diseases. Hierarchical Medicine would lead to the medical resources re-contribution, which would strengthen the primary care system.
Objectives: To enable ordinary health services to develop a digitally-enabled learning health system for improvement (De-LHS) by describing real examples of De-LHS (the elements, their functions and improvements achieved) and the steps that healthcare services and systems can take to develop a De-LHS.

Methods: The examples presented are based on published case studies and projects by the authors, using mixed methods and findings from improvement projects, costings and experience developing the systems. The session will enable participants to assess their starting point and progress towards a digitally-enabled learning health system for improvement using a 5 step maturity matrix.

Results: Many health organisations are seeking ways to make more use of their health information technology and digital data to provide more person centered care and improve the value of the services they offer. Evidence of improvements achieved are presented, through applying digital technologies and data to support everyday care, co-care and improvement projects, as well as to provide data systems for research. Our case studies and experience provide the basis for a maturity matrix, showing the steps for ordinary healthcare organisations or health systems to take to develop a De-LHS.

Conclusion: Digital data and new and lower cost digital technologies now make it possible for ordinary health care services and systems to build a learning health system that improves everyday care and co-care, and enables improvement projects and clinical trials. We describe practical and affordable steps that other can take to start to make use of digital data and technologies to improve care and reduce costs more effectively. The session enable participants to assess what it would take for their organisations to move through the steps to build and use a learning health system and the costs and benefits of doing so.

References