#10DD01 (1615)
Learning from medical errors: A retrospective study of senior surgeons, surgical nurses, and physical therapists

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Background: Previous studies provide little insight into the learning curves related to the wide range of profession-specific errors over time. It is unclear if and how the rate of reduction in medical errors changes along with experience among physicians and other medical care personnel across three career stages.

Summary of Work: Using questionnaires with items based on existing literature and expert panels of senior personnel, we retrospectively collected error commission data from 521 senior clinicians (135 surgeons, 50 surgical nurses, and 336 physical therapists).

Summary of Results: In all three groups, errors decreased as experience was accrued (all p < .001). Compared with paramedical professionals, physicians make a wider range of errors, including diagnostic, prescribing, treatment, communication errors and etc. Medical errors made by nurses and physical therapists are often procedural, communication or systemic.

Discussion: This study identified types of errors committed by surgeons, surgical nurses, and physical therapist and followed rates of error reduction in these professions early-career, mid-career, and late-career. Understanding how the reduction in medical errors differs by profession over time may help in planning well-targeted and well-timed observational learning programs.

Conclusion: Medical errors are reduced with experience, though rates and learning curves differ by profession. Performance of procedures improved more easily than medical reasoning, decision-making, and communication skills.

Take-home Message: This study enrolled late-career medical care personnel, allowing us to follow changes from early- to mid- and to late-career. Progress in communication occurred more slowly than the more technical errors, in all groups. Team effectiveness should be studied with regard to relative learning curves and complementary learning among members.

#10DD02 (1707)
Designing in situ simulation in the emergency department: Evaluating safety attitudes amongst physicians and nurses

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Background: In situ simulation is an effective strategy for training handover communication. Research is lacking, however, on how to use patient safety data and a needs analysis to design of in situ simulation. This study aimed to enhance patient safety attitudes through in situ simulation in an Emergency Department in Denmark.

Summary of Work: The design of this in situ simulation program was based on a thematic analysis of patient safety data and a needs analysis using short-term ethnography. In particular handover communication was observed and analysed as a contributing factor for critical incidents and adverse events in the ED.

Summary of Results: Sixteen healthcare teams participated (n=39). In the Safety Attitudes Questionnaire staff scored their safety attitudes in six categories. In the categories Safety Climate and Teamwork Climate, scores were significantly higher for the post-SAQ than for the pre-SAQ (p < 0.01, p < 0.05).

Discussion: We learned about the complexity of the ED from seeing how a phenomenon like handovers emerged. The duration of ethnographic fieldwork should depend on the intensity and not per se time. The approach was strategic and triangulated (interactive observations, interviews, theoretical perspectives) which made it a feasible research strategy.

Conclusion: Research on in situ simulation is burgeoning as a method for delivering continuing education to health care providers. The argument for simulation-based education is that it provides a safe place to learn from mistakes, in contrast to the workplace. However in this study, staff trained in their own clinical environment.

Take-home Message: This study designed a feasible strategy for implementing a simulation program based on an analysis of critical incidents and adverse events and a needs analysis. The results showed a significant increase in staff’s safety attitudes. Research has shown a positive relationship between safety climate and patient safety.
#10DD03 (2085)
**Medical education in safety culture by implementing CUS Strategy in Residency Training Program**

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**Background:** CUS (Concerns, Uncomfortable, Safety) is a mutual support skill branched from TeamSTEPPS (Strategies and Tools to Enhance Performance and Patient Safety) to promote patient safety. A residency training program adopts this concept and implements the CUS strategy could be effective for preventing patient safety issues and promoting quality of care.

**Summary of Work:** A consulting process for each resident was developed and record for CUS conversation on the CUS Consult Record Sheet. The attendees described their concerns as questioned by the Sheet and considered whether or not they feel uncomfortable with these concerns and then evaluated if the concerns would cause safety issues.

**Summary of Results:** All CUS records were collected from April 2015 to December 2016. Major concerns of attendees were insufficiency of professional knowledge, deficiency of clinical skill and heavy workload. The patients’ safety impact was mainly from the environment and team factors. The CUS identified weakness should be focused in next training program.

**Discussion:** Many factors contribute patient safety issues including residents’ heavy workflow. Knowledge and skills can be improved by a good residency training program but limiting the work to 80 hours a week may disrupt patient care and learning. Therefore, a balance between the two is important for patient and resident safety.

**Conclusion:** Residency training program and patient safety are two focusing areas for medical institution and system today. CUS strategy implemented residency training program is efficient for promoting residents’ quality of care and preventing patient safety issues.

**Take-home Message:** CUS strategy implemented residency training program can promote residents’ quality of care and prevent patient safety issues. Resident’s heavy workload has an impact on patients’ safety and must be improved urgently.

#10DD04 (2399)
**A collaborative and sustainable model of teaching patient safety in low and middle income countries (LAMICs)**

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**Background:** Sri Lankan Doctors from a UK based voluntary organization worked in partnership with Doctors from healthcare institutions across Sri Lanka to develop, implement and evaluate a series of the train the trainer style, interprofessional, patient safety workshops in Sri Lanka, in response to unmet need as advocated in the literature.

**Summary of Work:** Train the trainer style, workshops on six themes central to patient safety were held in three institutions across Sri Lanka. Participants completed Likert scale pre and post course questionnaires with qualitative feedback. The post-course questionnaire also assessed participants’ pre-course perceptions of understanding. Paired T test statistical analysis methodology was used.

**Summary of Results:** N=196. Comparison of pre and post intervention scores demonstrated a statistically significant improvement in understanding in all 6 themes covered by the workshop, and statistically significant improvements in knowledge in 4 out of 5 subject areas. The workshops also effectively addressed learning needs, with a high level of learner satisfaction.

**Discussion:** The interprofessional participants (Doctors, nurses, allied healthcare professionals) significantly improved their understanding of empowerment, patient safety, communication, leadership, collaborative healthcare (team-working and interprofessional education) and feedback, and knowledge in all but two of these subject areas, whilst demonstrating a high level of learner engagement throughout the Jaffna and Colombo based workshops.

**Conclusion:** This demonstrates the utility of collaborative working to implement innovative ‘train the trainer’ style workshops on patient safety and interprofessional education across Sri Lankan healthcare institutions. The authors believe that this effective, learner centred model can be adopted elsewhere and encourage a collaborative approach to improving interprofessional education in LAMICs.

**Take-home Message:** We believe these workshops were the first interprofessional ‘human factors’ workshops in Sri Lanka. The workshops were effective, enjoyable, and relevant to improving patient safety across Sri Lanka. This demonstrates that interprofessional education in LAMICs can be implemented in a cost-effective manner, collaborative manner, ensuring effectiveness, cultural acceptability and sustainability.
Human factors training for medical students: Exploring student perception and how best to promote a better understanding

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Background: Human factors training assesses the interaction between humans and the system in which they work. It is increasingly used to enhance patient safety, reduce the risk of error and has a direct benefit to patients. The role of human factors training in undergraduate medical education is still developing.

Summary of Work: This study aims to identify the attitudes of medical students towards human factors training and how a training programme can affect the student’s preparedness and approach to clinical situations. Several teaching sessions to multiple year groups were delivered with questionnaire and semi-structured interviews before and after the course of sessions.

Summary of Results: The initial questionnaire and semi-structured interview has shown that student’s perception of human factors training is limited, particularly in terms of how it is relevant to their own practice. Following the teaching sessions, the results from the repeat questionnaire and semi-structured interview will also be presented.

Discussion: Using an approach with a variety of teaching methods and allowing students from different year groups to attend will enable a better understanding the importance human factors plays in the careers of the medical students and making these sessions a regular part of the curriculum with better prepare the students.

Conclusion: By ensuring the students have an appreciation for human factors and how they can apply this knowledge to their practice is key to the success of this training programme and in reducing risk to patients. By involving different year groups, the students are better able to learn from their peers.

Take-home Message: Using an approach to human factors training with a variety of teaching methods and allowing students from different year groups to attend will enable a better understanding of the importance human factors plays in the careers of the medical students and improve patient safety.

Investigate the efficacy of nurse dispensing medication standard operation procedure by e-Learning intervention

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Background: Dispensing of medications by nurse is an important part of patient safety and quality of care. Execution of the “3 reads; 5 rights” by the nurse become more important. We applied e-Learning training program to ensure their competency. We aim to reduce dispensing errors and increase patient safety.

Summary of Work: We design an e-Learning course which demonstrate the standard operating procedure of dispensing medication. It provide advantage for the nurses who work under shift system. We conducted a study to investigate the number of dispensing errors from 2014 to 2016 in our hospital.

Summary of Results: A total of 55 dispensing errors were reported from 2014 to 2016. There were 19 cases (34.6%) were err by the nurses who has already attended the e-Learning course. The rest of the cases (65.4%) were err by those who didn’t attend the course.

Discussion: Among the reported cases, those nurse who didn’t attended the e-Learning course were found to err dispensing errors 1.89 times than those who has attended the course. Obviously, e-Learning intervention can significantly reduce the errors and increase quality of care.

Conclusion: This investigation only review the number of errors err between those who has attend the course and those who hasn’t. In the future, we aim to conduct a qualitative study, in order to optimize the course design.

Take-home Message: The e-Learning has become a learning platform with easy accessible in any time. This is a user friendly design for those who work under shift system. Indeed, this convenient encourage more staff take part of the course. Patient safety increase as a result.
#10DD07 (1093)
Educational interventions to improve handover in healthcare: an updated systematic review

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**Background:** Standards of patient handover are often inadequate, resulting in errors and threats to patient safety. However, students and qualified healthcare staff are rarely trained in the required skills. A 2011 systematic review (1) found little research describing educational interventions to improve handover, how they were designed or their effectiveness.

**Summary of Work:** An updated systematic review was undertaken to determine how the handover education literature has progressed since the 2011(1) publication. The target population comprised medical and nursing staff, midwives and operating department practitioners, both qualified and undergraduates, and the setting was in-patient medical establishments.

**Summary of Results:** From 4399 citations, 27 potential studies were fully screened, with 17 papers included in addition to the previous 10 studies from 2011. The majority involved postgraduate doctors and before/after designs. Most study results achieved levels 1-2 on Kirkpatrick’s hierarchy(2) and the strength of the evidence for supporting the conclusions varied.

**Discussion:** Despite this increase, their quality generally remained poor and findings were similar to the previous review with a paucity of information on content, pedagogy or underpinning theory. As such, curriculum planners and teachers will still struggle to produce educationally high quality evidence based interventions.

**Conclusion:** Handover education research is limited by a focus on justification studies, with minimal descriptive or clarification works.

**Take-home Message:** Despite growing published works, the evidence base is of poor quality with a focus on justification. Future handover education research is required with increasing focus on describing content, learning.

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#10DD08 (2467)
Implementation WHO Patient Safety Curriculum Guide in Undergraduate Medical Curriculum, a Way Forward

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**Background:** The number of patients are harmed resulting in permanent injury, increase length of stays and even death from complexity of health care systems. Not only from substandard facilities but education and training of health care professionals is urgently needed.

**Summary of Work:** The World Health Organization Patient Safety Curriculum Guide was developed in 2011, since then Collaborative Project to Increase Production of Rural Doctors had started workshop for 37 Medical Education Centers (MEC) in 2012. In 2013, only 18% of MECs started to use these guide due to lacking of competent staff.

**Summary of Results:** Most MECs agree that patient safety topics should integrate into medical curriculum. Another two workshops for lesson plan was done by collaboration with Consortium of Thai Medical Schools. Further training for trainer “workshop from collaboration with The Healthcare Accreditation Institute, Thailand will start this year for teacher preparation.

**Discussion:** At the start of implementing WHO Patient Safety Curriculum, both Faculty of Medicine and Medical Education Center which responsible for teaching clinical years agree that it should integrate into existing curriculum and Thai Medical Council should emphasize in both undergraduate and postgraduate training to achieve professional standard.

**Conclusion:** It is challenging to implement another topic even though it is not new but how can we integrate and teach despite every institutions agree that it is important topic but ”how to teach”. Many approaches were done with strong support from three collaborations in order to support each institution.

**Take-home Message:** Many strategies were used to implement patient safety curriculum to every healthcare professional discipline. Further effort should be stress on short and long term impact in knowledge, skill and attitude of both undergraduate and postgraduate medical students. A long term evaluation in reduction of healthcare harm should be done.
#10DD09 (2420)
Applying basic Facilitation for patient safety education

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**Background:** We conducted patient safety teaching, using WHO patient safety curriculum guide, with variety of teaching methods. Applying basic facilitation to guide medical students sharing ideas or experiences in order to get attitude and knowledge of patient safety concepts. Our aim was to identify what we had learned from their activities.

**Summary of Work:** We designed learning activities for 4th year of medical students after working for 6 months. We implemented interactive exercises to assessed self-rating unsafe care, attitudes, knowledge and skills of safety practice. We facilitated five separated groups to collect adverse events and brainstorm using three key words for improvement patient safety.

**Summary of Results:** Forty medical students had self-rating of unsafe care, attitudes, knowledge and skills were 2-3, 3-4 and 1-3 respectively. They collected 30 adverse events, mainly medication errors, and three key words such as “See it, Say it, Fix it”, “Alert Aware Careful”, “Sati Step Strong”. Satisfaction was good to excellent.

**Discussion:** Facilitation focused on group processes of discussion, participate and successful consequences. It helped medical students to discover for themselves what is effective, in their own experience of patient safety. They can gain their own understanding by engaging in activities. Facilitator skill of teacher should to prepare and guide this session.

**Conclusion:** Applying basic facilitation is effective teaching method that promote us to know positive thinking of medical care with safety attitudes and not enough competency in safety practice as they were first clinical year. They could recognize unsafe conditions and had smart ideas for improvement patient safety.

**Take-home Message:** How to change their attitudes and knowledge of medical students to be safety behaviors in the workplace? Next step in patient safety impact is developing necessary skills to reduce medical errors.

#10DD10 (2102)
Development and Evaluation of an Inter-professional Patient Safety Workshop

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**Background:** Patient safety errors affect all areas of health care. Hence it is important to train healthcare students early and regularly to identify and to prevent and correct such errors. As healthcare professionals are now expected to work in teams, early team based training to prevent such errors from occurring.

**Summary of Work:** As part of longitudinal patient safety curriculum, 5 workshops were conducted over a year. All year 3 students from medicine, pharmacy and nursing faculties were required to attend one. Students were taught the 6 international patient safety goals (IPSG) through role play, simulated ward rounds, table top discussions and games.

**Summary of Results:** A total of 550 students took part. 93% felt that they had benefited from the workshop. Learning about IPSGs 1,2,3 and 6 were rated as the areas they gained the most from. 97% of students agreed that all medicine/nursing and pharmacy would benefit from the workshops.

**Discussion:** Introducing the importance of patient safety can be successfully done for undergraduates. They are able to realize the importance of team work and following safety measures to reduce harm to patients. Coordination of time tables and ensuring content is relevant to all are important issues that need to be considered.

**Conclusion:** We would recommend that patient safety workshops focusing on the 6 IPSGs be introduced in all curriculum. To maintain student interest it should be taught using interactive activities rather than purely lecture based. IPSGs need to reinforced throughout the whole course to drive home the message.

**Take-home Message:** Patient safety needs to be taught and regularly reinforced. Inter-professional workshops are effective. Content needs to be relevant and taught interactively. If executed properly, students will benefit and enjoy the program.
#10DD11 (2331)

Improvement of the patient-centered medicine portion of IPE program by adding patients’ lectures

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**Background:** In our university, the importance of coordinated and collaborative care between medical, dental and other healthcare professionals is recognized through the IPE program. However, the program contents were not sufficient for teaching patient-centered medicine. In this study, we modified the program to include patients and evaluated the effect.

**Summary of Work:** A total of 330 final-year students from eight health professions, including 101 medical students participated in a two-day IPE program which included mixed-small-group discussions and lectures. Post-program, participants submitted reports on areas they should keep in mind when working as medical professionals. Medical students’ reports were analyzed qualitatively.

**Summary of Results:** Most students realized that they should have sympathy and respect patients’ values for their care plans. Some students proposed the importance of interprofessional care that includes patients and family as team members. Others mentioned a high level of medical knowledge and skills would be required to become reliable doctors.

**Discussion:** In the previous study, our IPE program helped the students to understand about other healthcare professionals work (Yamaguchi et al., AMEE2014). This time, the viewpoint of patient-centered care was added to the program through patient lectures.

**Conclusion:** These lectures created a greater sense of students’ awareness of medical doctors’ responsibilities. **Take-home Message:** Mixed-small-group discussions among multiple healthcare professionals are useful to realize the importance of coordinated and collaborative care. In addition, the IPE program could be improved toward patient-centered medicine through incorporating patient’s lectures.

#10DD12 (2327)

Impact of team resource management training on the maintenance of patient safety act

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**Background:** Teamwork is highly important in current medical care. However, team training in the medical curriculum or postgraduate training usually focuses on the preformed working process. A team skill is necessary to facilitate multidisciplinary cooperation in the hospital to improve medical quality and patient safety.

**Summary of Work:** Since 2012, we conducted team training with the team resource management (TRM) skills to help teams in our hospital figuring out some way to solve the patient safety and medical quality problems encountered during daily work. The skills include leadership, effective communication, situation monitoring and mutual support.

**Summary of Results:** Since 2012, 150 members in 19 teams participated in the training. The topics included communication (6 teams), quality improvement (7 teams), process modification (5 teams) and hospital violence prevention (1 team). Satisfaction score after the training was 3.8/5. Team effectiveness was 7.4/10, maintained for an average of 2.5 years.

**Discussion:** The attitude to teamwork has the highest impact on team effectiveness and performance (p < 0.001). It also influences the skills the members learned during the training. The knowledge and skill of TRM highly impacted on the team effectiveness immediately after the training and during the maintenance period (p< 0.01).

**Conclusion:** The majority of patient safety issues included the medication safety, line management, patient falls, and care process. Team training helps clinical teams solving problems cooperatively and systematically. The key method to maintain effectiveness and performance of team act is to incorporate into the hospital index system and check up regularly.

**Take-home Message:** TRM training can help clinical teams form applicable patient safety actions and incorporation into hospital index system help effective maintenance of clinical performance.
An IPE activity implemented in Medicine, Psychology, Nursing and Pharmacy

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Background: Health care is not as safe as it should be. Patients die in hospitals as a result of errors that could have been prevented. Often, these errors are related to problems of communication in inter-professional teams. Solutions to solve this issue must be provided with training in Interprofessional Education (IPE).

Summary of Work: We have designed and implemented an activity called Foundations of Interprofessional Education with students from Medicine, Psychology, Nursing and Pharmacy at Universidad Europea de Madrid. The objective of this Program is to help students become aware of the difficulties and new models of work that are necessary in inter-professional teams.

Summary of Results: This Program of Interprofessional Education has been implemented for 2 years. Students of Medicine, Psychology, Nursing and Pharmacy have worked in teams for the resolution of a clinical case. At the end of the activity, students reported their levels of satisfaction with the task. Different parameters analyzed provided good results.

Discussion: The implications shown by the data collected at Universidad Europea de Madrid will be discussed in detail. It will be shown that training in Interprofessional Education is complex and involves the understanding of different competences (communication, authority, and knowledge about different roles).

Conclusion: Due to the fact that healthcare professionals work together in hospitals, their training in Interprofessional Education is essential in health schools. Programs promoting collaborative practice should be enhanced. Results obtained in these two years show that students do value this training practices.

Take-home Message: Curricula in health schools must include IPE activities in order to promote collaborative health care and shared decision making.

Lessons Learned in Lothian: Developing a trainee-centred patient safety incident analysis programme

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Background: Trainee doctors are often exposed to, and aware of, patient safety incidents (PSIs) experienced in the workplace, and are well-placed to propose possible system improvements. Based on the work of Maria Ahmed (2012), ‘Lessons Learned in Lothian’ is a well-established programme providing patient safety learning opportunities to junior doctors.

Summary of Work: This study focused on the foundation doctors’ experiences of the ‘Lessons Learned’ programme - whether they found it a useful addition to their learning, and whether the sessions were sufficiently ‘trainee-centred’. Trainee feedback from the past four years of the ‘Lessons Learned’ programme was collated and analysed.

Summary of Results: Feedback forms from 100 foundation doctors attending ‘Lesson Learned’ sessions were collated and analysed. Overall satisfaction with the session was high (’excellent’ n=48 (48%), ’good’ n=43 (43%). When attendees were asked for areas of improvement, free-text comment analysis included ‘briefer summary of cases’, ‘more time for own examples’.

Discussion: Each ‘Lessons Learned’ session is based around a pre-determined PSI, analysis of which should act as a springboard to further discussion. Feedback suggests that the balance between prescribed elements of the session, and discussion of trainees’ own experiences can, from time to time, sit in favour of the central case.

Conclusion: Overall, the programme is felt to be useful and is well received by trainees, but that the sessions may focus too heavily on the pre-selected PSI. Further programme development work would aim to redress this balance, while maintaining the consistently high level of delivery from faculty and trainees’ satisfaction.

Take-home Message: A region-wide patient safety programme for junior doctors can be delivered consistently and effectively, and is most effective when trainees are given ample opportunity to discuss and reflect on their own experiences.
#10DD15 (2583)
The Safety Thermometer and Risk Response (STARR) Project: shining a light on the path to patient safety

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**Background:** The aim of the STARR project was to use a theory-driven, participatory action research approach to examine the complex human, situational and resource-related factors affecting patient safety practices in a safety ‘hot spot’ ward and to engage staff in creating a tailor-made, sustainable programme of safety improvement strategies.

**Summary of Work:** Needs analysis employed a mixed-method approach: observation of practice, staff questionnaires and in-situ MDT simulation. Application of Activity Theory allowed break-down of the needs analysis into system-related safety themes. Researchers engaged staff in iterative cycles of feedback workshops, facilitating discussion, identification of potential areas of improvement and changes to practice.

**Summary of Results:** Ward rounds and recognition/escalation of deteriorating patients were considered priority. Gaps in resources were addressed. Regular educational sessions, ward round tools and pro-formas and monthly progress meetings were implemented. Hospital management was involved to generate ongoing support. Staff reported improved perceptions of safety.

**Discussion:** Activity Theory provided a tool for system analysis and direction for safety discussion and interventions. Challenges included staff engagement due to high workload. Iterative cycles of feedback and discussion were labour intensive but lead to the emergence of key figures directing change.

**Conclusion:** A researcher-lead, theory-based evaluation of ward practices is useful in directing discussion around patient safety. Repeated feedback workshops engaged ground-floor staff to lead in change and improved perceptions of safety. Further analysis is required to evaluate whether this approach successfully transforms patient safety.

**Take-home Message:** Application of educational theory is valuable in understanding patient safety climate in specific clinical areas, whilst using the researcher as both observer and interventionist can provide a useful catalyst for change. Opening streams of discourse on the shop floor can help to engage staff in the change process.