Disclosure practices.

When they signal a willingness to learn about error and the approach.

Interprofessional education for junior clinicians is needed to improve the shared understanding of error management, and to develop a consistent systems approach.

Conclusion

Summary of Results: The majority had personal involvement with medical error, particularly near-misses. Few had disclosed an error. Most agreed serious and minor errors should be disclosed; opinions regarding near-misses diverged. Interns and nurses significantly differed in their views about the cause and importance of medical error, and their prior training experiences. 89% desired more education.

Discussion: Many junior nursing and medical staff commence clinical practice with some experience of medical error, particularly low harm errors but having had limited formal or informal education about open disclosure processes.

Conclusion: Education about managing near-misses is needed given junior clinicians’ experiences. Lack of a shared approach to issues of the causality and significance of medical error has implications for how the two professions manage threats to patient safety. Interprofessional education for junior clinicians is needed to improve the shared understanding of error management and disclosure and facilitate team-based management, and to develop a consistent systems approach.

Take Home Messages: Educators should capitalise on the opportunity to work with junior clinicians at a time when they signal a willingness to learn about error and disclosure practices.

#5EE01 (134459)

Views and experiences of medical error and open disclosure practice: a study of junior clinical staff

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Background: Doctors and nurses have been found to engage differently with the concepts of patient safety and open disclosure of errors. Most research focuses on individual professions with few comparisons of attitudes and experiences across health professional groups using the same measure.

Summary of Work: A cross sectional quantitative survey of views, experiences and prior education of medical error and open disclosure was administered to 48 interns and 52 graduate nurses about to commence clinical practice.

Summary of Results: The majority had personal involvement with medical error, particularly low harm errors but having had limited formal or informal education about open disclosure processes.

Discussion: Many junior nursing and medical staff commence clinical practice with some experience of medical error, particularly low harm errors but having had limited formal or informal education about open disclosure processes.

Conclusion: Education about managing near-misses is needed given junior clinicians’ experiences. Lack of a shared approach to issues of the causality and significance of medical error has implications for how the two professions manage threats to patient safety. Interprofessional education for junior clinicians is needed to improve the shared understanding of error management and disclosure and facilitate team-based management, and to develop a consistent systems approach.

Take Home Messages: Educators should capitalise on the opportunity to work with junior clinicians at a time when they signal a willingness to learn about error and disclosure practices.

#5EE02 (134401)

Imperfect practice makes perfect: Error-Management Training Improves Transfer Of Learning.

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Background: Traditionally, trainees are instructed to practice with as few errors as possible during simulation-based training. However, transfer of learning may improve if trainees are encouraged to commit errors during training. The aim of this study was to assess the effect of error-management instructions compared to error-avoidance instructions during simulation-based ultrasound training. Primary outcomes included diagnostic accuracy and performance scores during the transfer test. Performance assessments rated by blinded ultrasound experts using the Objective Structured Assessment of Ultrasound Skills (OSAUS) scale. Secondary outcome was diagnostic accuracy and performance scores during simulation-based training.

Summary of Work: Medical students (N=60) with no prior ultrasound experience were randomized to error-management (intervention, n=32) or error-avoidance (control, n=28) training. The intervention group was instructed to make errors during training. The control group was instructed to follow the simulator instructions to commit as few errors as possible. Training consisted of three hours simulation-based ultrasound training focusing on fetal weight estimation. Participants underwent a simulation-based pre- and post-test and a transfer tests on real patients seven to ten days after training.

Summary of Results: On the transfer test, intervention group participants attained higher performance scores with a mean of 67.7% (CI 62.4-72.9%, p<0.001; Cohen’s d = 1.1) compared to the control group 51.7% (CI: 45.8-57.6%). There was a borderline-significant improvement in diagnostic accuracy for the intervention group compared to the control group, 16.7% (CI: 10.2-23.3%) versus 26.6% (CI: 16.5-36.7%), p=0.082.

Discussion: There are considerable differences in the way trainees should be trained in the simulated and clinical environments. Errors should be encouraged in the simulated setting, compared to clinical training, where errors must be avoided due to patient safety concerns.

Conclusion: Error-management instructions during simulation-based training improve transfer of learning to the clinical setting compared to error-avoidance instructions.

Take Home Messages: Imperfect practice makes perfect.
Background: Currently medical schools rarely teach students on what can go wrong, focusing mostly on ‘how to do it right’. However, the medical errors continue to be the major factor diminishing the quality of medical service around the world.

Summary of Work: Co-funded by the Erasmus+ Programme of the European Union, Karaganda State Medical University leads the international consortium on Teaching Against Medical Error (TAME). The consortium includes St. George’s University of London, Karolinska Institutet, Masaryk University, Aristotle University of Thessaloniki, and six medical universities from Malaysia, Ukraine and Kazakhstan.

Summary of Results: Each of the six partner country Medical Universities will implement 12 virtual patient (VP) cases in its undergraduate curriculum designed to address ten ‘deadly’ medical errors. The project aims not only to capacitate the Universities in teaching against medical error, but also to give research evidence for the best VP case format tuned at medical errors.

Discussion: The project has only started in October 2015. In 3 years, the partners will map VP cases into their curriculum, adapt 6 provided VP cases to local healthcare needs, develop their own 6 cases, and redesign their assessment strategy to test how students learned to stay away from medical errors. All the partners are ready now to take the adventure of exploring the new ways to teach students against medical errors.

Conclusion: The promotion of patient safety should start early on in the medical curriculum. Knowing the most common medical errors will enable students to incorporate safe practices into their future profession. The research evidence of the best practices in TAME is also well-demanded.

Take Home Messages: We can only hope now that our humble efforts will have the long-term impact in creating the educational culture based on patient safety through training against medical errors using VPs at all levels of medical education around the world.
The “SimHand”-Mobile-Application – a new way of teaching handover in undergraduate medical education

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Background: Handovers are a critical point of patient care and the need for handover training already at undergraduate level has been clearly elucidated. In the context of the EU-founded PATIENT project the AIXTRA Interdisciplinary Training Center developed the “SimHand”-Application, which introduces the user to different clinical cases, role games and quizzes. The objective is to raise awareness for patient safety at an early stage and to train handovers in a playful manner.

Summary of Work: The app was evaluated in randomized controlled educational research study within a clinical preparation course for medical students in their 2nd year (n=132). Course structure: Short theoretical unit for introduction - Allocation of students into two groups: working through two (pre-)clinical cases using the SimHand-App or paper-based information In a pre-post-design questionnaire data regarding attitudes towards handover, patient safety and use of applications was collected. The assessment of app-usability was realized applying the “system usability scale” (SUS).

Summary of Results: Students show great interest in the topics patient safety and handover as well as sensitivity towards the use of mobile applications for learning purposes. The SimHand-App was rated with a SUS-Score of 65%, which is defined as borderline to good. Especially technical problems of the prototype were criticized. Numerous students appreciate the initial idea of the app, combined with standardized checklist and role play training.

Discussion: Further technical development and content-related extension are necessary to refine the SimHand-App and adjust it to students’ needs.

Conclusion: The SimHand-App is an innovative and potential learning tool for handover and patient safety.

Take Home Messages: Early handover teaching and training is essential for patient safety – mobile applications may offer an additional learning opportunity.
Evaluation of knowledge and attitude about medical errors and patient safety in medical students

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**Background:** Patient safety and medical errors are global problems related to iatrogenic harm from health care. Learning about these issues is important in medical education.

**Summary of Work:** Cross-sectional study was done in all 22 fifth-years medical students at Sisaket Hospital Medical Education Centre from 2014-15. Participants were divided into 2 groups and attended 3-hour session on patient safety and medication errors during the Paediatrics course. Group A attended lecture-based learning followed by interactive case discussion. Group B started with small group debriefing and self-study case discussion. Data were collected by questionnaires to evaluate their level of knowledge and attitude before and after training.

**Summary of Results:** Level of knowledge about patient safety increased in 86% of participants without significant difference between group A and B (p=0.85). Level of knowledge about medical errors in group B was significantly higher than those in group A including definition of medical errors, different type of medical errors, prescribing errors and drugs administration (p=0.042, 0.002, 0.011, 0.042 respectively). Awareness in medication safety rose significantly after training in both groups (p<0.05).

**Discussion:** Although most participants have heard about patient safety, providing brief curriculum about it could enhance their knowledge and insight. All participants agreed that most of clinical errors are preventable and intended to change their clinical practice to ensure patient safety.

**Conclusion:** Knowledge about patient safety and medical errors improved by attending brief curriculum. Small group debriefing and self-study would be better than lecture-based learning in increasing knowledge and attitude towards medical errors and patient safety.

**Take Home Messages:** Awareness about patient safety and medical errors can be increased through experiential curriculum. Interventions that focus on deficit area are recommended.

Handoff Training Day for final year students: Addressing gaps in patient safety education – inspired by the EU-PATIENT Project

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**Background:** As a significant source of adverse events for patients, handoffs are a critical point of patient care. This leads to the urgent need to train young medical professionals to conduct adequate handoffs. To address this gap, the EU-founded PATIENT project undertook research, development and implementation strategies in handoff training and developed a European curriculum for handoff training.

**Summary of Work:** Based on a local needs analysis and the curriculum of the EU-PATIENT-project we developed a handoff training day concept for our final year students. Focusing on practical experiences we applied methods as interactive seminar, case-based handoff training (multiple disciplines), discharge letter writing, computerized simulation, human patient simulation and video feedback. Participants received checklist-based pocket cards for their clinical workaday life. With a paper-based pre/post assessment we recorded knowledge and attitudes from the participants (n=22). Exemplary handoffs were voice-recorded for qualitative analysis and prior to training as a baseline in comparison to future follow-ups.

**Summary of Results:** The initial needs analysis confirmed that students had very limited experience with handoffs. However, there was overall agreement on the urgent need for handoff training. Results of our training day showed a significant increase in self-confidence for the use of standardized handoff tools and performance a verbal handover. Also the students rated the use of standardized handoff tools as more important and helpful after the training. They highlighted the handoff training with a simulated patient.

**Discussion:** The intervention led to increased awareness for this critical issue. Further controlled studies are needed to compare teaching methods through practical performance assessment.

**Conclusion:** First steps towards patient safety education were taken and practical experience in handoff was provided to young medical professionals.

**Take Home Messages:** You can easily develop your own training sessions and use free access to curriculum, teaching methods and materials at www.patient-project.eu.
Are you a giver and never a receiver of feedback?

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**Background:** High level stakeholders in medical education recommend eliminating the medical culture of tolerance towards poor care (Francis 2013, GMC 2015). Doctors should lead this culture of change by promoting openness, transparency and candour. Students can be useful ‘eyes and ears’ looking out for poor care on placements. The General Medical Council (GMC 2015) state medical students must report concerns about patient safety to the appropriate person. This project analysed concerns raised by students on clinical placements to categorise the seriousness of the issue. We consider how faculty can best support the students in this professional duty.

**Summary of Work:** All concerns raised by students to a community team over a nine-month period were categorized as level 1, 2 or 3. Level 1: Placement provider referred to regulatory bodies. Level 2: Student removed from placement. Level 3: Probably the student could have addressed concern.

**Summary of Results:** Students independently raised 42 concerns (2% of student population). Level 1 = 2

**Discussion:** Some medical students felt unable to resolve lower level concerns on placement. This could reflect the lack of an atmosphere conducive to openness, transparency and candour. GP tutors may be missing an opportunity to improve their practice by not supporting students to speak up.

**Conclusion:** The majority of concerns raised by students were minor and could be resolved by the student and placement without faculty involvement. Potential solutions will be discussed which aim to help students develop skills in professional conversations.

**Take Home Messages:** Raising concerns is a professional duty which some students need support to develop and utilise throughout their careers. Ultimately this may improve patient safety and satisfaction.

Prescribing error research to the medical curriculum integration

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**Background:** The prescribing errors were found among medical students and intern physicians in Vachiraphuket hospital. Since the errors were undetected despite pharmacists screening, the adverse events were potentially harmful to patients. We performed data research of prescribing errors to identify common errors and send feedback for further medical curriculum integration.

**Summary of Work:** Retrospective study in 813,027 outpatient prescriptions of year 2015 by Chi-square. The prescribing errors were found in 131 errors (1.61% of total prescription), 2. 941 drug error prescriptions (11.59%) and 145 drug allergies prescriptions (1.79%) were mostly found. The most prescribing errors were in pediatric department (258 errors, 20.20%) and medicine department (131 errors, 10.26%).

**Discussion:** The prescribing error of medical students and intern physicians had risk ratio 3.48 times compared with attending physicians at the 0.05 level of significance. That’s necessary for medical curriculum modification especially pediatric and medicine department. Moreover, prevention system for drug allergy and cross-reactivity management were not acknowledged too.

**Conclusion:** The summary of prescribing error research will send to Vachiraphuket medical education center for further medical curriculum integration to emphasize on prevention. Such as Warfarin dose adjustment for targeted INR, pediatric dosage calculation and drug allergy management. For example, Ibuprofen and Diclofenac were considered related NSAIDs and potentially cross-reactivity.

**Take Home Messages:** Most important strategy for prevention of prescribing error should be conducted by revision and integration of physician concern to the medical curriculum under the academy responsibility to patient safety. The monitoring of prescribing errors should be done continuously to evaluate the efficacy of curriculum modification on improvement of safety issue.
Assessment-driven mobile learning for healthcare professionals on high-risk medication safety issues

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Background: Improvements in patient safety are a fundamental driver for health care systems worldwide. Assessment-driven mobile learning is a modern practical method of attracting health professional learners.

Summary of Work: The centre for pharmacy postgraduate education (CPPE) developed a Medicines Safety app utilising mobile technology to engage UK healthcare professionals and undergraduate trainees. Users tackle a quiz using questions chosen randomly from a bank, considering key issues related to the safe use of medicines. The app provides feedback, links to further topic information and continuing professional development (CPD) certification. A collaborative approach enabled identification of clinical pharmacists, doctors and nurses to write the questions and feedback. The quality of content used was assured through review by an editorial team of senior clinical pharmacist and medical honorary lecturer.

Summary of Results: Summary of results The app launched at the end of January 2014. The medication safety topics covered are: - Insulin - Opioids - Allergies - Anticoagulation - Medication safety - Transfer of care - Chemotherapy - Omitted doses - Intravenous therapy - Adverse drug reactions The app is available free of charge for Apple and Android devices, with more than 12,000 downloads from multiple health professionals by February 2016.

Discussion: Busy healthcare professionals need bite-sized learning at a time and place that suits them. The app offers features to encourage continued participation, points to further learning opportunities and fits with the CPD cycle. Assessment of learners’ attitudes towards the app and its role in highlighting medication safety issues is required.

Conclusion: Mobile assessment-driven learning is accessible and engaging for healthcare professionals at postgraduate and undergraduate levels.

Take Home Messages: Easily accessible and engaging mobile assessment-driven learning apps could be more widely used for healthcare professionals at postgraduate and undergraduate levels to help achieve patient safety goals.

Playing your drugs right: gamification of antibiotic teaching

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Background: Antibiotics are commonly prescribed drugs in both primary care and hospitals (1), and at high risk for prescribing errors. It is therefore necessary to influence prescribing behaviours and educating medical students is key. ‘Gamification’ of resources is being increasingly used within medical education to reduce pressure, add fun into learning, whilst promoting understanding and retention.

Summary of Work: A matching style dominoes game was developed to teach classes of antibiotics to 36 first year medical students. Students were taught using a didactic presentation, followed by the game. Knowledge of antibiotics was tested prior to, and after the session. A perception questionnaire on student confidence of antibiotics was also collected, before and after the session.

Summary of Results: Prior to session, student correct response mean was 57% (28-93%). After teaching, this increased to a correct response mean of 90% (78–100%). The perception questionnaire showed an increase in student confidence from 2 (1=not confident, 5=very confident) to 4. Qualitative data collected was generally positive; students acknowledged the game made antibiotic learning easier and more fun.

Discussion: The general trend worldwide describes medical students requesting more antibiotic teaching throughout training years, as they do not feel confident in their knowledge. This perception is reflected in our test results prior to teaching. Incorporating a ‘serious’ game into the teaching session has led to substantial increase in knowledge and confidence. Students enjoyed the alternative teaching more than the traditional lecture-based style.

Conclusion: Reusable resources such as ‘serious’ games are versatile learning tools and can be incorporated by students into their independent and peer-to-peer study sessions. Our study suggests that there is scope to expand the game series to a wider variety of subjects in medicine.

Take Home Messages: Games such as "Antibiotic Dominoes" are innovative tools that can reduce pressure on students, increase retention of knowledge and introduce fun into the classroom.
Workplace Based Student Prescribing: A Safe and Effective Way to Learn

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Background: It is mandatory for UK final year medical students to complete an assistantship. During this period they practice the skills necessary to work as foundation doctors. Feedback from students who previously completed their assistantship at the Cumberland Infirmary, indicated they were not confident in prescribing to the level of a foundation doctor. To combat this we introduced a standardised student prescription model throughout the hospital. We aimed to increase students’ confidence and quality of prescribing, whilst upholding patient safety.

Summary of Work: Twenty-four students completed a pre- and post-assistantship questionnaire about their prescribing practice. During the assistantship we audited the student prescriptions against trust guidelines. Each week’s results were emailed to the students.

Summary of Results: Students completed 1101 prescriptions in 173 patient charts. There were 128 errors identified. The error rate was highest in the first week (16.3%) and lowest in the last week (6.9%). The majority of errors were related to omission of details for as required and antibiotic prescriptions. There were 3 medications that were administered that were not countersigned by a doctor. The pre-assistantship questionnaire indicated that 17% of students were confident in prescribing to the level of a foundation doctor, whereas post-assistantship 92% were confident.

Discussion: A prescription error rate of 6.9% is better than expected when compared with previously identified error rates of foundation doctors (8.4%) (Dornan et al, 2009). Students were more confident in their prescribing ability at the end of their assistantship. They were also more confident when compared with the previous cohort that did not have a standardised student prescribing model.

Conclusion: The introduction of a standardised pre-prescribing model for students undertaking their assistantship was successful in improving students’ confidence and quality of prescribing whilst maintaining patient safety.

Take Home Messages: A standardised pre-prescribing model for students was successful in improving students confidence and quality of prescribing whilst maintaining patient safety.

Introducing 1st year medical students to drugs used in cardiology

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Background: Early exposure to the subjects of cardiology and pharmacology can seem daunting to 1st year medical students who may struggle to connect the underlying pharmacological science with the management of a cardiac pathophysiology.

Summary of Work: After a subject introduction, students were given 3 virtual patient scenarios, each concerning the use of a drug to help manage the patients’ conditions. They were guided in their self-directed learning with structured workbooks linked to the clinical scenarios.

Summary of Results: Anonymised feedback data was collected and analysed over 2 academic cycles, with evaluations informing iterative modifications to future workshops: in 14/15, 97% of students indicated that they would like further workshops structured in this way compared to 86% of students in 13/14.

Discussion: Students commented on ‘question overload’ during the 13/14 session which led to reducing the workbook question-count for 14/15. This undoubtedly helped improve satisfaction scores for that cycle.

Conclusion: This workshop model format is now being successfully applied in other 1st year medicine teaching.

Take Home Messages: Self-contained workshop sessions (comprising a didactic introduction to a topic then a student-directed task followed by an expert-led group discussion ‘wrap-up’) are an effective method of introducing and exploring complicated de novo subject matter with 1st year medical students.