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THE SOCIETY IN EUROPE FOR  
SIMULATION APPLIED TO MEDICINE



ABSTRACT BOOK



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**'The stuff of life...': working with simulated participants in designing challenging communication simulations; A panel discussion**

**Format:** Workshop

**Topic:** Curriculum Development

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**Introduction & Aims**

Modern health and social care is becoming increasingly challenging and complex. With such intensifying demands, health and social care professionals have also come under unprecedented pressure with rising rates of stress, burnout and depression. Whilst the causes are multifactorial, challenging interactions with patients, careers and other healthcare professionals are recognized as important stressors. As an educational community, we need to intensify our efforts to equip our healthcare professionals in meeting these demands. SP based simulation training has much to offer in helping to best prepare our healthcare professionals to manage these challenges. It is not enough to train professionals to cope under pressure; we need to train them how to care under pressure.

**Description**

This panel discussion, led by simulation experts from the US and the UK, will invite comments and experiences of attendees to stimulate a discussion of key considerations when designing these types of scenarios.

The construction of a training programme with the objective of dealing with difficult topics and emotion requires forethought and planning that involves all stakeholders. Simulation of difficult emotions can impact those involved in a very real way; personal experience can cause a role play to strike an emotional cord in the learners, simulated participants and faculty observers. Emotion memory can be a powerful resource to enhance SP based simulation but must be used carefully in line with tried and tested techniques. Simulation based education espouses to be a powerful modality of learning without risk to patients. However, learner safety, including their emotional and psychological wellbeing, is of fundamental importance – especially with more complex and emotive simulations. These and other tensions will be the basis of our discussion.

**Discussion**

Points of discussion will include the role of the SP including selection, training and de-rolling, balancing realism with safety, pre-briefing, intra-simulation and debriefing concepts, warning signals and quality control. The sharing of tools and resources to assist fellow designers is encouraged.

Introductions and overview: 20 min

Outline of Discussion points: 5 min

Facilitated Discussion: 25 min

Summary and sharing of resources: 10 min



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## **"In it together" - Developing a sustainable in situ IPL immersive simulation programme for the Emergency Department**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

Providing high quality care within the emergency department (ED) relies on clinical teams working together effectively under high levels of stress and unpredictability. Immersive simulation was identified as a method to support, develop and invest in staff education with the aim of improving patient care, team working and safety.

Delivering immersive simulation in-situ provides staff with dedicated educational time as part of their normal working day minimising the time required to be released from clinical duties. There is also the potential to identify latent safety threats whilst testing departmental/hospital processes.

Our aim is to develop a sustainable model to allow immersive in-situ simulation to be embedded as an effective educational tool within the ED at University Hospital Hairmyres (UHH).

### **Description**

Prior to the initial sessions time was spent with senior nursing and medical staff to explain the 'Why' of this novel approach. Scoping exercises were carried out and a risk assessment completed each time to ensure safety.

Sessions were delivered jointly by the Medical Education clinical skills team and departmental clinical lead trainers. Wednesday mornings were identified as the time most likely to permit the session to proceed without impacting upon patient safety.

Initially a high fidelity manikin was used in the resuscitation room but this raised significant technical issues for faculty with immersion difficulties for candidates. To overcome this we now use a side room and a simulated patient with relevant patient modifications overseen by a faculty stooge.

Participants reflect the teams involved in delivering ED care with the consultant in charge of the department making themselves available to accept any escalation handover if required. A facilitated debrief follows each scenario and candidates are asked to identify individual learning points they can take into their clinical practice.

Post course evaluations and faculty debriefs link in to post simulation / evaluation SBAR reports which are disseminated to the lead nursing and medical staff within the department and hospital site.

## **Discussion**

Over the last 18 months the inter-professional faculty have utilised a PDSA cycle approach to continually improve these sessions concentrating on fidelity, timings, scheduling, candidate numbers and mix.

Moving forward we will focus on departmental safety goals, candidate engagement, faculty development and replication of this programme across other EDs in NHS Lanarkshire.



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## **#TeenTalk. Flip reverse it: using role reversal to develop communication skills with young people and adolescents**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

### **Authors**

Sarah Williamson	Birmingham Women's and Children's NHS Foundation Trust
Isobel Fullwood	Birmingham Women's and Children's NHS Foundation Trust
David Baker	Birmingham Women's and Children's NHS Foundation Trust
Hayley Kinnear	Birmingham Women's and Children's NHS Foundation Trust
Deyashini Mukherjee	Birmingham Women's and Children's NHS Foundation Trust
Mary Salama	Birmingham Women's and Children's NHS Foundation Trust

### **Introduction & Aims**

Since the 1960s, using patients in simulated practice has been well recognised, particularly in adult simulation based education. Using children and young people poses greater challenges in simulation but can be done successfully as described in a systematic review by Gamble et al (2016). Green et al (2018) concluded that children and young people can provide rich, instinctive feedback about our interactions with them and in return, they can feel empowered and valued by the process.

At Birmingham Children's Hospital, we are always working to improve the hospital experience for young people. The Young Persons Advisory Group (YPAG) is a youth engagement group for young people (11 – 19 years) who have a passion about improving their local healthcare services.

Our aim was to design and implement a simulation based training session focussed on communication skills with young people and adolescents, with a twist.

### **Description**

We performed a literature search and identified potential themes for scenarios such as teenage pregnancy, cyber bullying, sexuality and gender dysphoria. We then identified potential complexities or dilemmas that the scenarios could pivot on such as confidentiality, parent and adolescent conflict, and cultural or religious differences. Collaborating with young people from YPAG and the hospital youth workers, we devised two patient profiles to be played by the candidates. In addition, the young people identified two doctor characters with particular demeanours that can be potentially obstructive to communication, 'abrupt' and 'patronising'. These characters were to be played by the young

people.

The hour-long pilot session ran as part of the weekly teaching for the junior medical team at Birmingham Children's Hospital. We ran two role reversal scenarios with supportive debrief using advocacy inquiry.

## **Discussion**

We received positive feedback following our pilot session. The use of young people in the sessions ensured authenticity and taking the role reversal approach encouraged the candidates to reflect on communication skills from a unique perspective.

We aim to build a permanent relationship with YPAG and develop this pilot session in to a one day course on adolescent communication which will involve workshops on the adolescent brain, patient experience question and answer, role reversal simulation followed by reverting back to normal roles with application of learning.

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**'Teamskills': Developing hospital based immersive simulation to support quality improvement in a District General Hospital**

**Format:** ePoster Presentation

**Topic:** Patient Safety / Quality Improvement

**Authors**

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Vimty Muir	NHS Lanarkshire
Catherine Paton	NHS Lanarkshire

**Introduction & Aims**

Simulation has become established as a method for supporting healthcare staff education, and increasingly, as a way of impacting processes within the work place, so supporting patient safety and improvement work.

Our hospital 'Safety and Quality Strategy' includes a 'Team Working workstream. Change ideas on the driver diagram include the development of a 'bespoke' immersive simulation programme.

The aim is to test the viability of an on site interprofessional simulation programme to support improvement of relevant team working processes and behaviours.

**Description**

A pragmatic approach has been taken, with one surgical ward initially identified to take part. The aim is to run short, focused sessions on alternate weeks to facilitate staff release. Five team working themes, including 'speaking up' were identified as issues from local SAERs, complaints and 'Care Opinion' postings. Discussion with senior ward staff identified drug errors as a local issue.

Two simple 'distraction / speaking up' scenarios were developed. Firstly staff attempting to prepare and secondly administering a controlled drug while being interrupted repeatedly by another member of staff. The aim is to introduce strategies for managing distraction and tools to facilitate speaking up. The target group is ward staff, both nursing and medical. The pilot was reviewed midway and will be at the end of the 3 month pilot period

The simulation sessions are taking place in on site ward simulation area and on the visiting Scottish Mobile Skills Unit.

Planned evaluation will be based on Kirkpatrick's framework:

1. Reaction of learner
2. The learning achieved
3. Behaviours of learners
4. Results on the organisation

The following will also be evaluated:



1. Optimal timing and duration of sessions
2. Optimal way to engage staff and to ensure staff are supported to attend
3. Design of content of sessions/scenarios
4. Numbers of faculty required
5. Adequacy of new simulation area and facilities

## **Discussion**

The simulation sessions followed a standard format:

1. Introduction to the teams skills programme / simulation / 'safe space' / process
2. Scenario
3. 'Triumphs and challenges' analysis
4. Focused debrief using video
5. Take forward lessons

Initial feedback is supportive, with the simple scenario being realistic and generating stimulating discussion and learning. The staff appear to like the concept of the 'TEAMSTEPPS' 'CUS' tool (Concerned / Uncomfortable / Safety issue..Stop the line) to aid speaking up. There have been some challenges in freeing up staff to attend

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**'You're going to be a doctor and you can't tell right from left!' A phenomenological analysis of medical students (in)abilities in distinguishing right from left**

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

**Authors**

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**Introduction & Aims**

Wrong-sided procedures represent some of the most catastrophic errors in healthcare such as removal of the wrong kidney. Though multifaceted in origin, human error is considered an important root cause. Evidence indicates that a significant proportion of our population, including medical students, experience difficulty with left/right discrimination (LRD). Given that not all medical students have equal LRD ability, there have been calls to raise its awareness in medical education. It remains unknown what the experiences of medical students when conducting LRD tasks. Elucidating such experiences may provide new understanding to these challenges and guide future pedagogical practice. The aim of this study was to gain deep insights into medical students lived experiences of LRD.

**Methods**

In order to bring to the surface individuals LRD experiences, hermeneutic phenomenology was deemed conceptually a good fit. Using a purposeful sampling method of 10 (as typical in phenomenological-based studies) medical students, with various LRD abilities, were invited to participate. Interviews were transcribed and analysed using the Template Analysis approach to generate research themes. The research team were continually reflexive.

**Results & Discussion**

Analysis yielded four main themes 1) Discriminating right from left: An unconscious or conscious task? 2) 'What...you can't tell right from left?': an undesirable skill deficit 3) Concealment 4) 'But you're going to be a doctor!' Impact on professional identity formation.

For many LRD is an unconscious effortless process. However, for a significant number of medical students it represents a relatively challenging task. Individuals who experienced difficulty with LRD felt 'different', often embarrassed and stigmatised. They imagined that their 'skill deficit' would increase their proneness in making laterality errors. Such circumstances triggered a critical reflection on their ability on being a competent doctor and questioned their suitability for future career specialities (e.g. surgery).

For the first time in the literature, this study provides a nuanced understanding of how individuals discriminate right from left. Individuals who are challenged with LRD, have to carry out a complex conscious process in order to determine right from left. Medical education needs to respond by raising the awareness of this challenge that many medical students face. Even in apparent low-level risk situations, such individuals need to be provided with techniques such as tactical pauses and seeking cross-checks to ensure that they have made the correct laterality decision. Such techniques could be introduced into simulation teaching that emphasises human factors training. It's not 'right' to be 'left' in ignorance about LRD.



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## **Academic-clinical collaboration to address the training needs of Extracorporeal Membrane Oxygenation Specialists**

**Format:** Oral Presentation

**Topic:** New Technologies and INNOVATION

### **Authors**

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### **Introduction & Aims**

Extracorporeal Membrane Oxygenation (ECMO) is a bridge therapy that is increasingly used with critically ill patients who require cardiac and/or respiratory support. Although very specialised, high-risk, but potentially lifesaving, Hamad Medical Corporation in Qatar opted to introduce an ECMO programme in its main government hospital in 2013. To ensure optimal patient outcome, it was decided from the onset that simulation would be the cornerstone of the programme initiation and of all training activities. To complement the existing educational know-how of the hospital team and meet the training needs of ECMO specialists, the technology currently available to conduct ECMO simulation needed to be improved so a collaboration was established with Qatar University. Our aim was to apply for funding and develop solutions that can be employed to train ECMO specialists under realistic conditions at a reasonable cost, minimising reliance on real and expensive clinical equipment.

### **Methods**

The core project team developed the technological project specifications so it could be undertaken by consecutive teams of final year students from Qatar University as part of their senior design project. The specifications for the basis for grant applications submitted the Qatar National Research Fund (QNRF) and to Qatar University. Selected students get the opportunity to work as part of a multidisciplinary team (electrical/mechanical engineering) on a project that addresses a real need with the support from their academic supervisors as well as the clinicians and educators from the hospital

involved in ECMO.

## **Results & Discussion**

Since 2016, a total of 11 students have been involved in the project, constituting 2 teams supported by 4 grants, one of which recently started with funding from the QNRF Undergraduate Research Experience Programme. The team has published 14 abstracts, conference and journal articles, and obtained one US provisional patent application so far. The key outcomes at present have been the prototyping of a modular ECMO simulator and a patient model with jugular and femoral cannulation capability. The ECMO simulator is made of an interactive ECMO machine console with parameters that are remotely controllable via an instructor app. It includes modules that help realistically recreate relevant emergencies such as access insufficiency with line oscillation, air entry with associated noise, haemorrhaging, power failure, membrane failure, and blood oxygenation/deoxygenation with the expected colour change. It also includes other tablet-based functions in relation to scenario design and learner assessment. Overall, this project aims to revolutionize ECMO simulation-based training.

### **Acknowledgements:**

These collaborations have been made possible thanks to the Undergraduate Research Experience Program (UREP) awards 22-003-2-001 and 19-062-2-026 from the Qatar National Research Fund (a member of The Qatar Foundation) and the Qatar University Internal Grants QUCG-CENG-2018-1 and QUST-CENG-SPR-15/16-8. The statements made herein are solely the responsibility of the authors.



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**An ECMO trainer on a shoestring budget: Whole team training, regularly, for under £100.**

**Format:** ePoster Presentation

**Topic:** Technical Operations

### Authors

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### Introduction & Aims

The use of Extracorporeal membrane oxygenation (ECMO) in critical care situations is expanding in Europe and around the world. The technique of providing prolonged cardiac and respiratory support to patient's whose heart and lungs are unable to provide effective perfusion to sustain life is both complex and time critical and as such, regular rehearsal is essential. The challenge on this team was to create an effective and realistic ECMO trainer, with blood vessel lumens that could be easily changed between sessions, in a system that fit for use for ultrasound guidance - and all on a shoestring budget.

### Description

Utilising an old, out of use CVC trainer, the team devised a blueprint for a trainer that required several small reservoir places within the trainer and a arterial and venous silicone tube circuit with interchangeable sections that could be removed between sessions after needle perforation. Silicone sections were then placed within the containers and filled with agar jelly to create a realistic ultrasound 'feel'.

### Discussion

The trainer has been recently deployed in its pilot phase in the ITU at the Royal Infirmary of Edinburgh. The evaluation of this first session was exceptional with particular praise on the speed in which the trainer can be set up and consumables replaced between sessions, as well as the realism in both feel and via the ultrasound.

Further iterations are currently being tested related to the testing of different types of tubing and agar substrates.



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## **An observational and action-based tool for non-technical skills monitoring in Simulation-Based Training**

**Format:** Oral Presentation

**Topic:** Assessment using Simulation

### **Authors**

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### **Introduction & Aims**

An extensive review of existing non-technical skills (NTS) assessment tools revealed inconsistencies regarding teamwork taxonomies, terminology and competencies frameworks. Different descriptors are used to designate similar skills and, although there is a recognized overlap in what is being assessed, a plethora of instruments is used with a shared intent.

The presented work proposes a prototype taxonomy, aiming to overcome the limitations of specialty-related tools, but still including observable and measurable actions, filling a gap in simulation-based assessment of NTS.

### **Description**

A frequency-based approach was conducted to identify the most referenced tools. The analysis of published measurements for healthcare teamwork, and the review of CRM literature, led to a pool of NTS categories. Categories with the same or similar meaning were suppressed, as well as competencies that could not be measured through observation. Multidisciplinary meetings led to further tool refinement: skills with a lower level of abstraction were merged, assuring a coherent and homogeneous level of granularity between concepts.

The tool is composed by five key-principals: situation-awareness, decision-making, interaction/cooperation, leadership and communication. The first four key-principals are subdivided into specific elements and correspondent actions, Table 1. The Communication domain was considered an overarching and aggregating component, and was included throughout the actions of the other key-principals. Additionally, specific Communication strategies are listed promoting its systematic observation/assessment.

### **Discussion**

The use of a standard framework for observation and assessment of NTS that is not dependent of a specific domain, nor details singular aspects of healthcare professions, promotes the application of a single monitoring method to multiple target audiences.

Also, being built primarily for the simulation setting, it can be customized to the learning objectives established in the

scenario design by dismantling its domains to a partial or a combined use.

This NTS observational and action-based tool aims to be generic and focused on team performance, and was designed thinking of simulation training demands. As a support to debriefing sessions, a major contribution was the definition of observable actions that not incorporate references to specific tasks or contexts, being easily adapted to a variety of environments/contexts.

Since it is developed to maximize the learning experience and extend application in simulation fields, further work is required on psychometric validation and applicability to a wide variety of settings, as well as its contribution to enhance quality of information gathered and debriefed in simulation exercises.

## **Reference**

Granted by Fundo Europeu de Desenvolvimento Regional – FEDER, through the Programa Operacional Norte 2020, under the project Simprove: The Biomedical Simulation Center of the Future (NORTE-01-0247-FEDER-017566)"

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## **An obstetric teams journey to open a women's department using inter-professional team based simulation to test systems and program readiness**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

1. To discuss the framework to utilize interprofessional team based simulation to open a new women and children's hospital.
2. Describe the journey using the obstetric units as a working example.
3. Highlight key lessons learnt from the data collated from hundreds of simulation sessions.

### **Description**

This presentation will highlight our process to be able to support the leadership teams and administrative stakeholders of activation readiness for a large Greenfield Women's and Children's hospital system. Starting in Sept 2017 with the aim to open in mid- Jan 2018 for our first patients with a key component patient, family and staff safety. Simulation of day-to-day hospital activities were conducted across 10 essential units for a day 1 opening scenario with a goal of testing team readiness, facility and environmental readiness, and the adequacy of the electronic medical record performed using core activation staff over four months.

### **Discussion**

#### **Discussion**

We will discuss our summary data from the Obstetric Units including an Obstetric Triage, a Birthing Unit, Operating Rooms, and a postnatal unit and preliminary metrics used in this process. Significant staff and operational issues were raised and mitigations including additional education and practice simulations delivered to support patient safety concerns. A major challenge included facility readiness, staffing and of our electronic medical record not performing as robustly as expected. Our system design however was highly effective in identifying these gaps early to allow identification and mitigation in a timely manner. Such mitigations were identified utilizing our simulation framework and debriefing tools which were highly effective in capturing and organizing our data. Most importantly our data provided essential vital metrics to assure readiness of our facilities to administrative certifying body's, clinical leadership, and to our governance structure that our physical plant and its systems, and our staff were ready and capable to commence safe operations.



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## **Aneurysm coiling and simulation- assessing risks and skills in clinical proficiency**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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Mel Boulton	Western University
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### **Introduction & Aims**

Interventional cerebral angiography is an endovascular procedure that requires extensive hands-on clinical training. Within the scope of an angiography fellowship, trainees are required to learn and reproduce complex steps and phases learned in literature and observed in the Angio Suite. Clinical training and performance evaluation are restricted to subjective scales used by mentors and procedure exposure frequencies, rather than evidence-based objective skills criteria often applied in other specialties. In order to be able to apply new technologies, simulators and teaching strategies, objective methods of assessment and performance evaluation need to be created and evaluated.

### **Methods**

A group of 85 expert neurointerventionalists from the Canadian Interventional Neuro Group (CING) were asked to participate in a nation-wide assessment of their perceptions of the clinical environment during cerebral aneurysm coiling procedures. The survey was distributed via Survey Monkey in a multi—phase Delphi format, focusing on the importance, frequency and severity of core angiography and aneurysm coiling steps and errors. In the first phase, participants were given the option to provide feedback on the accuracy of the provided questions and options, which would be redistributed in a subsequent phase. The next phase, including modifications from the clinical experts, would be redistributed for another round of voting. Once an agreement is achieved across the entire procedural spectrum, results are redistributed to all parties and data collection is completed.

### **Results & Discussion**

Of the 85 experts queried, a total of 21 experts responded to the survey, with 13 completing the survey in full for the first phase of the study. In response to the importance of clinical stages in interventional cerebral angiography, aneurysm coiling received the highest Likert-score. Inconsistent flushing of the endovascular space and advancement of tools at the beginning of the procedure were reported to have the highest frequency of error, but also the lowest levels of severity. Aneurysm coiling was stated to have the lowest rates of error and carrying the highest potential severity (microcatheter advancement and coil deployment).

These results identify areas of training that are exposed to the highest level of risk (eg. coiling) or highest rate of error (eg. catheterization). As the study is ongoing, the next phase of the study will reassess divergence of scores through step ranking and account for individual comments. Coupled with a thorough understanding of the clinical workflow, this data has the potential to shape the development of training protocols and simulation-based assessments.



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## **As real as it gets - Complex ECMO simulations for optimal team performance**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

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### **Introduction & Aims**

Extracorporeal membrane oxygenation (ECMO) is one of the most intellectually and practically challenging methods in ICU with little room for learning at the bedside. ECMO simulation is developing but mostly enables partial learning experience that is far from complex clinical situations. We present our adult ECMO training programme that focuses on 'real-life' ECMO simulation and interdisciplinary integration.

### **Description**

ECMO simulation programme (basic, intermediate, advanced) developed by our team consists of theoretical part covering topics on ECMO physiology, patient management, emergency measures and water drills enabling all medical staff to get familiar with machine handling first. The third, major part, that we believe is unique among educational programmes in this field, is interdisciplinary practical simulation of 'real-life' complex clinical situations. Simulations are carried out in groups of delegates comprised of 2 doctors, 2 lead nurses and 2 nurses as would be an optimal ECMO team in our ward and take 2 hours per group. Group is introduced to a scenario and taken into simulation room. Simulation model developed by our team enables 'hands-on' implementation of all crucial steps we believe are necessary for optimal training of all members of ECMO team and each scenario is focused on integrating roles and practical skills of each member with interdisciplinary cooperation and communication. We do not focus on practical skills only but put effort into integrating clinical data for problem recognition and solution into different steps of each scenario. Manikin used in simulations was developed by our team and enables real ultrasound guided cannulation at different sites (femoral, jugular), connection to working ECMO circuit and simulation of ECMO-patient interactions (line chatter, backflow,...). We can simulate ECMO related emergency situations (pump failure, oxygenator failure, air embolism,...) that need to be recognised and solved by groups practically. We also integrate physiological variables using simulation software to simulate 'real-life' monitored parameters that are synchronised with scenario and reflect physiological responses to groups' decisions and actions. Manikin is ventilated and different ventilatory problems are simulated that need to be recognised and addressed by adjusting ventilator settings. Each 1.5 hour simulation is filmed and later debriefed with groups for optimal results. We also conduct assessment of postcourse perceptions of delegates.

### **Discussion**

ECMO simulation presented encompasses all aspects of ECMO patient management and provides a unique 'clinical experience' for improvement and integration of specific skills, knowledge and team cooperation with aim to optimise performance and improve staff confidence.

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## Assessing the self-efficacy of the participants undergoing simulation based training

**Format:** ePoster Presentation

**Topic:** Assessment using Simulation

### Authors

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### Introduction & Aims

The evaluation of clinical competency is a complicated procedure due to it being largely based on subjective assumptions. In sight of the high risk of inefficiencies to patient well being during the learning process, it has been the aim of trainers throughout to develop a system which removes chances of patient harm during medical training. This has lead us to human patient simulation, where both novice and experienced clinicians can learn new skills as well as polish up on rusted ones, while being assessed for competence and confidence in the respective scenario through pre and post simulation assessment forms. The aim of the study is to evaluate the confidence and performance levels of participants, mainly covering the fields of Obstetrics, Orthopedics and General Surgery through simulation based learning.

### Methods

A standard operation protocol was established including specific clinical scenarios in three different fields namely Obstetrics, Orthopedics and General Surgery. They were developed to evaluate and compare the performance in each specialty along with the effectiveness of the workshop. Each session consisted of 20 participants divided in groups of 4; a standard of 9 participants per workshop were selected. The workshop started with a pre-simulation briefing followed by the simulation itself and concluded with a debriefing session. The performance of the participants was graded utilizing a pre and post numerical rating scale based questionnaire for each of the scenarios. The participants were advised to perform the activity, as if they were active clinician currently overlooking the care of the simulated patient. They performed proper diagnosis, interventions, and interdisciplinary communication. The workshops were conducted at the Centre for Innovation in Medical Education at Aga khan University, Karachi, Pakistan.

### Results & Discussion

The self-efficacy score of the participants represents a positive effect on their performance in the procedures taught. This is signified by the changes in the overall scores of the participants; going from 41.29% to 68.14% in basic knee arthroscopy, 49.75% to 74.44% in shoulder dystocia, 56.94% to 79.30% in appendectomy and 52.72% to 74.34% in cholecystectomy showing an increase of 26.85%, 24.69%, 22.36% and 21.62% respectively. These statistics point towards an encouraging development highlighting the benefit of further simulation based training workshops, along with the impact that the center of innovation in medical education is having on the medical education of both novice and experienced clinical practitioners.

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## Assessing the utility of a behavioural marker system for medical students' non-technical skills

**Format:** ePoster Presentation

**Topic:** Debriefing

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### Introduction & Aims

The Medi-StuNTS (Medical Students Non-Technical Skills) system is a behavioural marker system (BMS) developed for observing the non-technical skills (NTS) of final year medical students. It is recognised that non-technical skills are crucial to safe and efficient task performance and that training in such skills can improve outcomes and reduce rates of error within healthcare. The Medi-StuNTS system was developed to be used within immersive simulation debriefing to provide constructive, personalised feedback on the NTS of medical students. To assess the utility of this BMS as an educational tool, we must evaluate the validity, reliability and educational impact.

### Methods

Following ethical approval, the Medi-StuNTS system was trialled with 48 final year medical students at a different medical school from where it was developed. The students underwent a ward simulation exercise using the BMS to observe peers as well as receive individual feedback from faculty. Following this, students completed a questionnaire to assess face validity. Workshops have also been conducted introducing the tool to a total of 56 participants who similarly completed questionnaires after using the BMS. Validity is being further assessed by comparing the BMS scores of third year medical students with those of final year medical students and core medical trainee doctors, with the hypothesis being that the scores should improve across these groups respectively. Inter-rater reliability will be assessed by comparing the scores assigned by two independent markers reviewing multiple scenarios of final year students. Educational impact will be assessed qualitatively using focus groups with medical students following an introductory session on the purpose and use of the BMS.

### Results & Discussion

Initial face validity results are encouraging with 98% students agreeing or strongly agreeing that using the BMS helped familiarise them with NTS, and that using the system helped them identify NTS behaviours in their peers. With regard to completeness, 86% workshop participants felt that there were no categories or elements missing from the Medi-StuNTS system and 96% felt that there were no irrelevant categories or elements. 96% agreed or strongly agreed that the system addresses the key NTS behaviours displayed by final year medical students. Further results are currently awaited but we hope to find that the tool proves valid and reliable, whilst being valuable to students' learning. If so, we

would anticipate this tool could be used to provide structure to faculty delivering NTS training and to provide focussed and individualised feedback to medical students within immersive simulation settings.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Assessment of simulation-based education for emergency interns according to Kirkpatrick's model: a regional survey**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

**Introduction and aims:** Emergency medicine has officially become a full specialty on November 2018. Simulation-based education (SBE) has been integrated into the emergency medicine. All emergency interns (PGY-1) of Paris and Paris region had low and high-fidelity simulations (HFS) at the beginning of the 1st year of postgraduate. All had two team simulations on the anaphylactic and haemorrhagic shock. The purpose of this study was to evaluate these sessions. Aim of this study was to survey PGY-1 after this SBE.

**Method:** Interns were surveyed immediately by questionnaire after the two days of simulation. Results were kept anonymous. According to Kirkpatrick's model, three levels were approached: level 1: satisfaction, level 2: learning (knowledge, skills, and attitudes), and level 3: changes in clinical practice. Categorical variables were summarized by percentages (%).

### **Description**

**Results:** 100% of the 88 PGY-1 in Paris and Paris region were included. 66 of them (75.0%) answered the questionnaire. All of them were very satisfied (78.8%) or satisfied (21.2%) with the course. 98.5% agreed with HFS realism. 100% of responders perceived a gain in knowledge, 98.0% in practical skill and 80.3% in improved self-confidence. Among the clinical practice changes, 81.8% involved anticipation, 87.8% procedural skills, 86.3% algorithms, 77.3% communication and teamwork. 100% expressed the wish to repeat simulation sessions.

### **Discussion**

**Discussion:** The assessment was largely favourable to the simulation course in terms of satisfaction, knowledge and clinical practice changes. Self-assessment represents the main feedback for this type of training. According to participants, this SBE highlighted the need to train more. This could enable emergency residents to manage life-threatening events in a more serene and secure way. It is of interest to assess in future study the long-term retention of the skills acquired after SBE.



**Breaking bad news in oncology: Methodology of development of a virtual patient to enhance physicians training**

**Format:** Oral Presentation

**Topic:** New Technologies and INNOVATION

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**Introduction & Aims**

Breaking bad news (BBN) inappropriately could have negative impacts on the patient, his entourage, and on the physician. BBN requires effective training, such as standardized patients and role-playing, which are not widespread due to financial costs, human, logistic and time resources. However, some studies provide encouraging results regarding virtual patients (VP) and their cost-effectiveness. These highlight different difficulties such as the replication of the non-verbal cues and the lack of immediate feedback. Therefore, the aim of this study is to produce a methodology of a VP development that will overcome those difficulties. The finality of this VP is to provide a cost-effective training that will enhance physicians' communication skills while BBN.

**Description**

The development of the VP was organized in two steps: (1) the VP's nonverbal emotional expression; and (2) the physician's and VP's verbal statements.

The nonverbal emotional expression was developed according to Ekman's (2003) facial microexpressions. Pictures of faces expressing different emotions were selected based on his theory and submitted to a sample of voluntary subjects to gain consensus on the nonverbal expressions. Three emotions were chosen (shock, sadness and anger) and were classified in several levels of intensity. These levels of intensity were based on subjects' evaluations considering the lack

of existing guidelines on this matter. Two rounds were necessary to obtain the final emotional animation loops in the different intensity.

The verbal statements are based on the BBN SPIKES model and effective communication skills retrieved from the scientific literature. They were structured systematically using a decisional tree. At each interaction with the VP, the physician will have to respond orally by choosing between 3 possibilities of answers (2 correct, 1 incorrect). The VP gives immediate feedback to the learner by adapting its emotional reactions to the chosen answer (e.g being irritated). The dialogue was developed in collaboration with oncologists and psycho-oncologists, which are experts in communication.

## **Discussion**

This methodology addresses several issues that have been reported in the scientific literature. Furthermore, a pretest will be conducted testing the VP with a small sample of physicians and results will be available by June 2019. Further studies will validate the VP by assessing to what extent the virtual situation is representative of the real situation, and by assessing its learning impact.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Building on the foundations and going beyond the core: integrating mental health simulation further into a psychiatrist's career span**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

### **Authors**

Marcela Schilderman

Maudsley Simulation

### **Introduction & Aims**

Chris Attoe et al., previously identified five stages within a psychiatrist's career from "infancy" to "late adulthood," with corresponding learning needs, for which Maudsley Simulation have already tailored simulation courses.

In the past year two further points along this career trajectory were identified that continued to have unmet needs: the foundation years, and entry into speciality registrar training.

Two simulation courses were therefore developed with the aim of directly addressing these.

### **Description**

Despite the 2014 Broadening the Foundation Programme it was noted that approximately 55% of doctors will still never get the chance to undertake a foundation placement in psychiatry, invaluable in nurturing holistic care, and potentiating a career in psychiatry for some. "Building on the Foundations" was therefore created for the 217 foundation trainee doctors in King's College Hospital and Guy's and St Thomas's Hospital who would not be undertaking psychiatric placements.

Psychiatric registrars will have undertaken examinations, but these do not depict many of the complex clinical scenarios encountered upon graduating to specialist training. "Practicing Psychiatric Competencies I" was met with success in improving core psychiatry trainee knowledge, attitudes and confidence in crucial skills prior to their first on calls, through simulation. A similar programme adapted to higher trainees was therefore formed: "Beyond the Core."

Both courses included ten scenarios of ten minutes duration followed by a modified Pendleton's debrief. In "Building the Foundations" the content ensured exploration of the mental/physical health interface and psychiatric liaison services. "Beyond the Core" incorporated supervision of juniors, mental health tribunal work, and interface with the criminal justice system. Content was refined through discussion with respective training programme directors and consultant psychiatrists.

### **Discussion**

Considering the career trajectory of physicians within their different fields can act as a springboard to identifying unmet learning needs. Simulation can act to meet those needs, particularly where it involves familiarisation with common or complex clinical encounters.

Extension of simulation towards the consultant end of the career pathway is yet to be explored fully. However, the further along the career trajectory a simulation course is targeted at, the greater the level of expertise required in the development and delivery, which can form a barrier to completion.

#### References

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SOCIETY FOR  
SIMULATION IN EUROPE

## **CAMHS ABC- Using simulation to improve management of mental health and Acute Behavioural Crises in Paediatrics**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

Child and Adolescent Mental Health Services, or CAMHS, are the NHS services involved in the assessment and treatment of children and young people with mental health concerns.

Data from the UK found that up to one in ten young people have a diagnosable mental health disorder. Those who present to hospital and do not require tertiary psychiatric input, or who are waiting for a tertiary bed to become available, are often admitted to general paediatric wards. The number of CAMHS admissions to general paediatric wards is increasing across the country and the vast majority occur out of hours, when trainees may be without on-site senior support.

Medical and nursing personnel frequently report difficulties in this area, including with stigma around mental health and the difficulties of multi-agency working. Young people and their parents also commonly describe negative experiences with mental health services.

There are multiple examples of children coming to further harm on general wards, for example related to excessive physical or chemical restraint, self-harm, and conflict with treating teams. This was felt to be related to inadequate training and skills acquisition for general paediatric staff. These patients are also at high risk of absconding from in-patient wards and from coming to harm if they do so.

There is little formal CAMHS training for general paediatricians, and multiple surveys support the need for additional teaching. In order to try and improve available training in this high risk area we designed a course featuring acute mental health presentations for general paediatric staff.

### **Description**

We designed a one day course for general paediatric doctors and nurses to cover multiple aspects of acute mental health presentations. Faculty included Paediatric consultants, CAMHS consultants, simulation technicians and 'planted' staff, and trained actors as simulated patients.

Scenarios were a mix of high fidelity manikins and simulated patients, with some using a mixed modality approach. Small group workshops were interspersed after relevant sessions. Topics included acute psychosis, de-escalation and rapid tranquilisation.

## **Discussion**

The first course will be run in January 2019, with candidates including a range of Paediatric junior doctors and nursing staff. We will discuss the challenges faced and candidate feedback.

The course helps promote the 'parity of esteem' – the concept that mental health should be on equal standing with physical health – promoted by the Royal College of Paediatrics and Child Health.

Future courses could include emergency department and/or mental health junior doctors.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Can implementing a parent simulation program improve parental confidence in caring for their preterm infants on a neonatal intensive Care Unit?**

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

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### **Introduction & Aims**

Encouraging and supporting parents to provide active care for their infant whilst on a neonatal unit is key in providing effective family centred care. However parents commonly experience anxiety of this new role. Implementing a reproducible educational-behavioural program for parents to commence early in their admission can improve mental health outcomes, enhance parent-infant interaction, and reduce hospital length of stay(1).

Our aim was to design and implement a parent simulation program to empower and improve parental confidence in providing active care for their infant early in their admission on the neonatal intensive care unit (NICU).

### **Description**

We distributed a pilot questionnaire to parents of infants admitted to the tertiary NICU at Birmingham Women's hospital. The questionnaire was designed to self-report parental confidence in common daily care tasks; as well as determining whether parents would attend simulation teaching sessions if available.

We further designed a parental simulation program, conducted by a small group of paediatric doctors, nurses and a physiotherapist. The sessions were aimed at all parents of infants born 30 weeks gestation or below admitted to our NICU. The program consisted of four weekly 30-minute simulation sessions, starting within the first week of their infant's life. Preterm mannequins were used to teach parents skills to support early active involvement in the care of their infant during their admission (figure 1). The sessions included:

1. Baby Cues and positioning
2. Positive touch and the neonatal environment
3. Nappy changing, dressing, temperature recording
4. Naso-gastric or oro-gastric tube feeding, feeding cues, non-nutritive sucking

Following the parental simulation program a second questionnaire was distributed to all parents to gain feedback on the sessions.

## **Discussion**

The pilot questionnaire revealed, 58% of parents felt either very anxious or anxious when performing a nappy change, and 70% of parents felt either very anxious or anxious during kangaroo care. Seventy-nine percentage were interested in attending simulation sessions. Since implementation of the parent simulation program, general feedback from parents has been extremely positive and we are planning to extend this program in the near future.

## **References:**

1. Melyn et al. Reducing premature infants' length of stay and improving parents' mental health outcomes with the Creating Opportunities for Parent Empowerment (COPE) neonatal intensive care unit program: a randomized, controlled trial. *Pediatrics*. 2006 Nov;118(5):e1414-27. Epub 2006 Oct 16

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**Can simulation based training for emergency medical teams improve patient safety? A systematic literature review**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

**Authors**

Kjetil Torgeirsen

SAFER

**Introduction & Aims**

Health care is often organized as inter-professional team-work. Most health care professionals have little or no knowledge or training in how to get teams to work from their education. Most of the nontechnical skills are rarely practiced in isolation by any health care professional even though it is pointed out that nontechnical skills can mitigate risk of errors or adverse events. Characteristics of emergency medical teamwork is; complex, uncontrolled situations/scenes, high levels of stress and high stakes. These factors can individually increase the risk of errors and adverse events and when present together the risk increases. It is important to use highly efficient tools to reduce this risk. Research question: Can simulation based training for emergency medical teams improve outcomes and patient safety?

**Methods**

A systematic literature review was conducted based on a PICO analysis with assistance from a librarian searching Medline and Embase. Inclusion criteria for the abstracts were based on a PICO analysis; Population; clinicians in some kind of emergency situation and multidisciplinary teams. Educational articles with student populations were excluded as they are not likely to measure patient outcome. Intervention – simulation based training. Outcome/endpoints: impact on patient outcome (reduced risk of errors or reduced mortality) Kirkpatrick level 4 (K4).

**Results & Discussion**

Of the initial 164 studies, 18 studies met the inclusion criteria. 6 of the included studies were systematic literature reviews conducted in the period 2010 - 2014. 10 single studies found impact on K4 level and mortality. There seems to be an increasing number of studies proving reduced mortality after simulation based training intervention. Previous literature reviews do not include new studies, and have missed important studies. The findings from this literature search indicate a potential huge impact on patient outcome with several studies reporting of 18 – 50% reduced mortality rates and also for other indicators for patient safety. The other main finding in this review article is the lack of reporting guidelines for medical simulation studies and the difficulties of getting an overview over the research in this field. None of the included studies involve pre-hospital health care providers or teams, but medical emergencies and interdisciplinary teams.

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SOCIETY FOR  
SIMULATION IN EUROPE

## Care of pressure and venous ulcers in simulation environment

**Format:** ePoster Presentation

**Topic:** New Technologies and INNOVATION

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### Introduction & Aims

The area of wound treatment is assumed to be an area of great interest and intervention for nurses. The advances observed in recent years at different levels influence the need to develop new strategies in training, either initial or post-graduated. On the other hand, current technological advances allow the creation of new teaching methodologies that can go through the increase of the high-fidelity simulation for the learning of clinical competencies or the most appropriate use of new training tools as e-learning.

The aim of the project is to create an attractive e-learning programme and 5 simulation tasks with aim to increase nursing students and nurses knowledge about venous and pressure ulcer.

### Description

The "Care of Pressure and Venous Ulcers in Simulation Environment" project of the Erasmus + programme results from the partnership between different European entities that by the synergy of teachers and students to produce knowledge about intervention in venous ulcers and Pressure ulcers and an e-learning training program with simulation scenarios that aim to equip advanced knowledge professionals on the subject.

### Discussion

The project started in September 2018 and already has two virtual international meetings, and the first meeting was scheduled to be held in December. Bibliographic research was carried out to determine knowledge assessment instruments in leg ulcers and pressure ulcers to determine training needs using simulation.

The work in partnership in international projects is very attractive and aims to provide greater growth at the academic, scientific and pedagogical level of health professionals in the simulated practices they develop.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Challenges and changes: quality assurance in mental health simulation**

**Format:** Oral Presentation

**Topic:** Faculty Development

### **Authors**

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Maudsley Simulation

### **Introduction & Aims**

With the advance of the national strategy for simulation coming out of Health Education England, the standards generated by South London Simulation Network, and those due to emerge from the Association for Simulated Practice in Healthcare, there is an increasing emphasis on ensuring high-quality educational outcomes in simulation.

This prompted an exploration of some of the methods of quality assurance within Maudsley Simulation with the aim of sharing good practice, identifying any areas for change, and considering what may be unique to mental health simulation.

### **Description**

Over a period of nine months methods of quality assurance were explored within Maudsley Simulation. Of greatest note was:

1. A discrepancy was noticed between actors who had undergone dedicated training in portraying psychiatric conditions and those who entered scenarios purely through briefing and method acting. A course was subsequently run for any actors without mental health training to increase the fidelity of patient portrayals.
2. Consistent, structured and written evaluation of courses was not routinely performed after every course delivery. Verbal evaluation was. An i-auditor tool was developed which incorporated several free-text boxes to prompt discussion in all areas. Time constraints led to restricted use of this, predominantly for entirely new deliveries.
4. All faculty were encouraged and supported in attending on-going education in simulation and associated fields. This included conferences, local simulation network events, a weekly academic hour, and specialist courses. All have been offered essential debriefing skills training.
5. Debriefs were conducted by two or more facilitators on all but one course. This resulted in inbuilt direct observation. This was supplemented on occasion by 1:1 feedback through playback of extracted footage. Cross-centre formal peer review did not occur.
6. Where faculty were unable to provide sufficient expertise in an area, external expertise is called upon.
7. All courses delivered incorporated a dedicated 30 minutes or more to pre-briefing participants, with an emphasis on psychological safety.

## **Discussion**

Many aspects of quality assurance can be embedded within course design.

Other aspects have proven more difficult to embed, such as peer review. Some barriers to this may include faculty availability and the risk of embarrassment. Application of some of the principles of simulation to this area, such as the basic assumption, might facilitate greater use of these tools.

Quality assurance of acting standards was noted to be of particular importance to the fidelity of mental health simulation.

## Clinical effects of simulation training «difficult airway management»

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

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### Introduction & Aims

Difficulties in airway management is one of the most serious situations in anesthesiology practice, requiring quick making decision and one of the main sources of stress and anxiety among anesthesiologists.

The aim of study: evaluate the impact of simulation training "Difficult Airway Management" on the level of anxiety and non-technical (soft) skills of anesthesiologists.

### Methods

The pilot study was included 24 anesthesiologists from the Hospital 81, Seversk. The average age is  $44.8 \pm 8.1$  years, experience -  $17.2 \pm 7.4$  years. The assessment of the level of anxiety was carried out according to criteria 1-6 (mental sphere) of the Hamilton Anxiety Rating Scale (HARS) before the training, immediately after the end of the training and after 6 months. The non-technical skills of anesthetists in difficult airway situations were analyzed during the 12 months before and after training. The training program included 8 modules: 1) Theoretical test; 2) Nasopharyngeal and oropharyngeal airways; 3) Installation Laryngeal mask (Classic, Unique, Supreme, Fastrach, I-gel); 4) Installation Combitube and Laryngeal Tubes; 5) Different ways tracheal intubation; 6) Video laryngoscopy-assisted tracheal intubation; 7) Surgical Airway Techniques; 8) Clinical scenarios developed by protocols DAS, ASA and FAR. In the training phantoms of head and torso of adult and child (LAMT, Laerdal) and the High Fidelity mannequin (SuperHal, Gaumard) were used. At each manipulation filled checklist. With the development of clinical protocols «Difficult Airway Management» used Full Scenario & Video-based Debrief. Statistical data processing was conducted by t-test and X2 McNemar.

### Results & Discussion

Comparison 12 months before training and after the training: total anesthesia – 4774 and 4252 ( $p=0,37$ ); endotracheal anesthesia - 782 and 890 ( $p=0,30$ ); the difficult intubation cases - 18 (2,30%) and 21 (2,36%) ( $p=0,39$ ), alternative methods of airway was used in 20% and 48% of difficult intubation cases ( $p<0,001$ ), decision time -  $13,2 \pm 2,3$  and  $5,6 \pm 1,7$  min. ( $p<0,001$ ), the total time of procedure  $18,2 \pm 3,4$  and  $7,9 \pm 2,6$  minutes ( $p<0,001$ ). Anxiety level of anesthesiologists before the training was  $9,6 \pm 1,2$  points by 6 criteria HARS, after training -  $3,4 \pm 0,4$  ( $p<0,001$ ); after 6 months -  $6,1 \pm 1,8$  points ( $p=0,004$ ).

Conclusion. Training "Difficult Airway Management" does not affect the number of difficult intubation cases. Decision time and total procedure time were reduced by 2.5 times. The frequency of using alternative airway management

methods increased by 58%. The anxiety level of anesthetists after training was reduced by 65%. To maintain the effect of training, it is necessary to repeat the simulation trainings every 6 months.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Clinical skills curriculum to student- physician to provide first line emergent medical care to an unconscious patient**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

Introduction: Given the increasing number of individuals using opioids, there is an acute need for a simulation-based curriculum to educate learners about the management of opioid overdose. We describe the development of a longitudinal curriculum that teaches medical students to assess patients with diminished levels of consciousness using physical examination. Included in this curriculum is how to identify suspected opioid overdose and provide simulated intra-nasal naloxone.

Aims: 1. Create a curriculum which enables learners to perform a checklist-based history and physical examination in an individual with a decreased level of consciousness  
2. Develop simulated patient scenarios to educate students about the differential diagnosis of decreased level of consciousness  
3. Design a skills session using simulation to train medical students in the administration of naloxone

### **Description**

The simulation-based curriculum begins with a clinical skills session on the physical examination of a patient with marked decrease level of consciousness. The session consists of a checklist-based demonstration of the history and physical examination of a standardized patient playing the role of a semi-conscious patient, followed by a discussion of potential actionable outcomes including indications and steps in administration of naloxone (intranasal). The demonstration is followed by skills attainment in which the learners perform the history and physical exam under the observation of faculty. During this session, students practice simulated delivery of intranasal naloxone on task trainers. These skills are then reinforced with case-based emergent scenarios of an unconscious patient in the third year emergency medicine clerkship and fourth year Advanced Physical diagnosis course. Assessment of skills via OSCE and OSAT cases are currently being developed along with direct observation by teaching faculty using specific checklists.

### **Discussion**

Discussion : A total of 540 learners have completed the first basic module component of the curriculum; over 200 have completed the second phase. Learner evaluations of the sessions suggest a high level of satisfaction with the teaching modules. Several OSAT stations are being developed to assess skills during both the preclinical and clinical years to assess skill retention.

In conclusion this is a longitudinal, simulation-based curricular intervention to enable learners to perform a

checklist-based history and physical examination in an individual with a decreased level of consciousness, establish a differential diagnosis, and train medical students in the administration of naloxone. Student satisfaction with the curriculum has been high and assessment for skills attainment and retention of skills with OSCEs and OSATs are in the planning phases.





SOCIETY FOR  
SIMULATION IN EUROPE

## Communication as a mental process for global patient care through the SBAR method

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

### Authors

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### Introduction & Aims

Education labs play an important role in improving learning. The Situation, Background, Assessment, Recommendation (SBAR) method in education labs has shown to be effective in improving students' awareness about the importance of communication in nursing practice.

In the healthcare context, the SBAR method offers positive outcomes both for professionals who feel more confident in ensuring patient safety while providing care and preparing nursing plans, especially during handover when important information can be missed or omitted.

The aim of this study is to build in students a mental process for safe communication during handover using the SBAR method, by implementing global patient care and promoting patient safety.

### Methods

This is an observational study, with pre-post-test methodology. An education lab consisting of the vision of two videos was prepared for undergraduate nursing students.

The first video showed a poorly-structured handover, which was confusing and not standardised. At the end of the video, the students were asked to evaluate the quality of the communication process by using a grid to score four communication aspects (range between -2 +2).

After completing this evaluation, an educational intervention about the SBAR method was provided, to teach a standardized methodology for handover. Then the students watched a second video showing the same situation of the first one, but where the SBAR method was used during handover. The students were asked again to assess the communication process with the same scoring grid.

At the end, a debriefing session was conducted with the students to identify the strengths and weaknesses of the education lab. Then the students evaluated the educational methodology of their education lab, the teaching materials, and the educators by using a scoring grid.

### Results & Discussion

After the debriefing session, the themes that raised students' awareness about the importance of the event were: the meaning of handover; the "loss" of the quality of patient care when handover is incomplete or poorly formulated; the perception of the need for a high level of competence when nurses communicate in different settings and times; recognizing that standardized communication requires specific training; and the need to be aware of scientific evidence: knowledge, sharing and cooperation, and a common vision about patient centred care.

Nursing education needs to envisage the construction of a communication method that involves the ability to structure communication as a process, and not as something limited only to handover.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Communication of bad news: protocol validation by simulation**

**Format:** Oral Presentation

**Topic:** New Technologies and INNOVATION

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### **Introduction & Aims**

The moments of communication of bad news cause embarrassments both to the person receiving it and to the person who transmits it. For this reason, this is one of the greatest difficulties identified by health professionals, and can be filled with training with simulated practices.

The objective was to systematize the evidence, construct and validate a communication protocol of bad news in a critical event(PCMNe) for health professionals.

### **Methods**

For the preparation of the protocol, a systematic review of the literature was performed, and in order to validate the same, the Delphi technique was used in two rounds. Subsequently, it was validated using the simulated practice and application of the content validity index.

### **Results & Discussion**

The communication protocol of bad news in context of critical event that was constructed and validated, presents high levels of agreement. Thus, it can be expanded through the networks of professional development and put into practice. It is expected that the replication of the protocol has potential for use in research and training in simulated practices.

## **Comparison of two mask holding techniques for one-person bag-mask ventilation in mannequin studies**

**Format:** Oral Presentation

**Topic:** Assessment using Simulation

### **Authors**

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Rīga Stradiņš University

### **Introduction & Aims**

Effectively performed bag-mask ventilation remains an essential component of cardiopulmonary resuscitation (CPR). Correct mask holding technique ensures open airways by optimal head-neck alignment and tight seal between face and mask. Despite it being seemingly simple manipulation, standard mask holding method ("EC" clamp") might prove to be challenging, especially in situation when only one rescuer is presented. Alternative may be "glass-holding" technic previously described for bag-mask ventilation in children (Saudi J Anaesth. 2016 Oct-Dec; 10(4): 487–488.). Study hypothesis is that "glass-holding" clamp could be relatively easiest technique (comparing with "EC clamp") for holding mask in adult patients in case of one rescuer CPR when only the side access to a patient is available. The aim of the study was to compare a tidal volume provided with both methods. During adult cardiopulmonary resuscitation tidal volumes of approximately 500 to 600 mL (6 to 7 mL/kg) should suffice and each rescue breath provide over one second regarding to European Resuscitation Council Guidelines for Resuscitation 2015.

### **Methods**

Research took place in Medical Education Technology Center of the Rīga Stradiņš University in October 2018. Thirty-nine medical students performed a bag-mask ventilation on Mannequin "ResusciAnne QCPR" (Laerdal Medical). Each one provided 5 ventilations using "EC" clamp, followed by 5 ventilations using "glass-holding" clamp sitting aside from patient. Tidal volume of ventilations provided was registered with Skill reporter software (Laerdal Medical). Median volume of ventilations provided by each subject using each clamp were compared.

### **Results & Discussion**

Totally 390 ventilations were measured. The tidal volume measurements show that the "EC" clamp yielded a median of 594 (IQR 527-630.8) mL. The "glass-holding" clamp yielded a median of 611 mL (IQR 569.4-634.4) mL ( $z=2.875$ ,  $p=0.004$ ). Using "EC" method, tidal volume >500 mL was reached fewer times than using alternative method (cumulative percentage 12.8% and 5.1%, respectively). Results of the study shows possibility to reach a recommended tidal volume using "glass-holding" clamp.



SOCIETY FOR  
SIMULATION IN EUROPE

**Comprehensive evaluation of the clinical simulation program in the medical degree of the UVic-UCC.  
The perspective of teachers, facilitators and students.**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

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**Introduction & Aims**

During the first two years of implementation of the degree of medicine in UVic-UCC, the methodology of clinical simulation has been applied from the beginning in order to facilitate the learning of medical skills and improve the process of clinical reasoning of students. During the first year the program of simulations based on zones 1 and 2 was developed (according to the SIMzones model), analyzing each one of the simulations to ensure its transversality and guaranteeing that they were faithful to the competencies set by the program of the subject . This has allowed during the second year to evaluate the simulation program applied under the premise that it meets the expectations of learning and acquisition of skills and medical reasoning both from the point of view of the student body and the professor of the subject and the facilitator of the simulations.

**Description**

With this objective, evaluation surveys of the simulation activities have been designed for the protagonist students to collect their degree of satisfaction and to evaluate how the simulation has facilitated their learning and acquisition of skills. A set of surveys has also been designed for the subject professor and the facilitators responsible for designing the cases to assess the degree of success of the application of the simulation in relation to its specific objectives.

**Discussion**

The faculty members of the subject, the facilitators and the students evidenced the strengths and weaknesses that they perceived about the execution of the program, and about the perception of learning generated from the contents of the simulation. At the same time they showed the degree of learning perception of the students was directly related to the degree of usefulness that the experts of the subject and the facilitators referred. It was verified that the titular professors valued in a significant way how the simulation allowed to identify gaps of knowledge of the students that could not have identified in the theoretical classroom. The students scored favorably as the simulation helped them analyze what they thought and have a better cognitive restructuring of what they learned.



SOCIETY FOR  
SIMULATION IN EUROPE

## Confidence in performing Cardio Pulmonary Resuscitation

**Format:** ePoster Presentation

**Topic:** Patient Safety / Quality Improvement

### Authors

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### Introduction & Aims

MediSim is a centre for excellence based at the Royal Surrey County Hospital (RSCH). We run introduction to simulation sessions for medical students, doctors and doctor's assistants in order to improve confidence and understanding of emergency clinical scenarios.

### Description

Utilising the immediate feedback tool on LLEAP software for our SimMan3G manikin, we were able to show candidates in real-time how effective their cardiopulmonary resuscitation (CPR) was.

Given the high fidelity of the simulation suite, groups of candidates were able to perform several cycles of CPR to enable candidates who had never attended a real-life cardiac arrest to understand how it is likely to work. A trained MediSim faculty member operated a live defibrillator during these sessions.

Running several full cycles of CPR enabled us to encourage candidates to communicate effectively with each other, for example requesting that another person take over chest compressions in a safe manner, minimising downtime.

Our pre- and post-session questionnaires allowed us to assess knowledge and confidence in performing CPR.

### Discussion

Candidates were significantly more confident in delivering chest compressions following teaching (11% very or extremely confident pre-teaching [4/35] vs 61% post-teaching [19/31],  $p=0.0001$ ). They were also more likely to correctly answer appropriate depth and rate of compressions (see Figure) and estimated a shorter duration of good quality CPR before tiring (pre-session average 2.6 minutes vs post-session average 1.4 minutes).

Though the majority of candidates had not performed CPR in a real-life scenario (94.3%, [33/35]), all candidates had valid certificates for Basic Life Support, Intermediate and/or Advanced Life Support certificates. Despite this, many initially struggled to replicate good quality CPR during the sessions. Where previously candidates had performed CPR to manikins on the floor, our manikin was located on a hospital bed with mattress. By demonstrating how much kinetic energy is absorbed by the mattress, and how it can be difficult to lower some hospital beds to a comfortable level for performing CPR (necessitating that candidates of shorter stature kneel on the side of the bed), we were able to

demonstrate that CPR can be much more challenging to perform effectively in a 'real-world' situation than it is in mandatory training sessions and offer useful guidance on how to improve this.

Our sessions allowed candidates to improve knowledge and confidence in this vital clinical skill, demonstrating the challenges and offering useful guidance on how they might improve.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **Creating a simulated bleep; providing experience and improving fidelity**

**Format:** Oral Presentation

**Topic:** New Technologies and INNOVATION

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Tom Galliano	Royal Surrey County Hospital
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### **Introduction & Aims**

MediSim is a centre for excellence for high-fidelity simulation training across the Kent, Surrey, Sussex region based at the Royal Surrey County Hospital, England. Simulation is now well established in both medical school and specialty doctor curriculums. A candidate's engagement, however, can vary, depending on the fidelity of simulation. We strive to improve our fidelity to improve candidate's engagement.

Currently in almost all hospitals, electronic bleeps are held by most staff, and key members receive emergency calls. Despite this, medical students and speciality doctors are often placed into simulated scenarios where they are emergency responders, and yet they aren't in possession of a bleep. Furthermore, if that candidate places an emergency call of any kind, there is often no replication of the emergency sound that would be emitted from the bleep. The lack of audio response to an emergency bleep being placed can diminish the fidelity of the scenario. Medical students who have yet to hold a bleep also miss out on a learning opportunity, prior to it occurring during their first on calls.

### **Description**

We surveyed 31 medical students and foundation doctors. Although 65% had held a bleep, only 25% had held a bleep received emergency calls. 94% of those surveyed agreed that it would be beneficial to hear emergency bleeps in simulation.

Our aim was to provide medical students and doctors with no experience of holding an emergency bleep the opportunity to experience it. Another benefit would be its use in all emergency scenarios to increase fidelity and increase candidate's engagement with the scenario.

In order to create our simulated bleep we utilised broken bleeps, fitted with a Bluetooth receiver and speaker.

Recordings of the hospital emergency alarms being emitted were captured, and simulated recordings for each emergency call were created. This then allowed us to send these recordings to the simulated bleep to candidates in the scenario. This allowed independent control from our hospital switchboard, reducing workload.

### **Discussion**

The benefit of the introduction of a simulated bleep was demonstrated by a repeated survey of the cohort after its introduction.



As part of a Plan, Do, Study, Act (PDSA) cycle we are continuing to implement its use and gather further feedback, in order to create change to our future simulated bleeps. The continued use of the simulated bleep against all future courses and events will allow us to continue to assess its benefit to scenario fidelity and engagement.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Creating an environment for teaching ultrasound: steps and protocols**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

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### **Introduction & Aims**

Teaching Ultrasound is a challenge to anyone and that is especially true for the new user. Presenting a curriculum or training program that makes sense to new users and lays out steps for creating the most diagnostic images possible. This presentation will present the experience we've had and some steps we've taken to make it easier.

### **Description**

The goal of this session is to:

1. Present the plan created at EVMS to create an integrated Ultrasound curriculum.
2. Present participants with ideas that we found easiest and most effective so far.
3. Discuss the process of SP participation at EVMS.

### **Discussion**

At EVMS, Ultrasound has evolved over several years. Some lessons were easy to see coming and others were, and remain, some of the hardest issues for us to work through.

One of our great achievements has been to create a single Ultrasound where the majority of Ultrasound training occurs. This has helped center faculty for better collaboration and planning. One of our hardest challenges has been in securing funding for and additional faculty member.

One thing we have worked diligently on was creating SP's who knew what to expect from Ultrasound and help in evaluations as possible. We've created a master guide for the SP's describing each examination, patient preparation needed, if any, and dressing requirements. We've trained SP's in Ultrasound and Ultrasound evaluation.

We offer training, as requested for any department in the school, and are working on a plan to meet the Ultrasound related goals in a success plan recently published by EVMS to allow Ultrasound training to all departments. This led to a close evaluation of, and revision of the vision of our training. Others may find documents, policies, and procedures helpful in their training programs.



SOCIETY FOR  
SIMULATION IN EUROPE

## Cultural prototypes and differences in simulation debriefing: A qualitative review

**Format:** ePoster Presentation

**Topic:** Debriefing

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### Introduction & Aims

What people do and how they explain their actions are quite different; debriefers often report their perception of debriefing practices based on national culture [1,2] yet, their practice does not reflect the reality of the debriefing [3]. It is imperative to decipher the context and different approaches used during the debriefing [4].

We aim to explore the connection of patterns of behavior during simulation debriefing relative to cultural origin.

Specifically: (1) identify debriefing prototypes by mapping cultural, societal and regional elements of interaction and, (2) elucidate how interactions between participants are linked to their cultural backgrounds.

### Methods

The study is a thematic analysis of the open-ended questions (#3) of a survey completed by experienced debriefers worldwide to assess cultural differences and prototypes in debriefing [1]. The questions were regarding the unfamiliarity of participants with Crisis Resource Management (CRM), cultural (in)sensitivity on the part of the debriefer when approaching certain topics and, other cultural aspects relevant to debriefing worth noting.

Phrases as short as 2 words to as long as 3-4 sentences were thematically analyzed to the smallest meaningful unit.

Codes were derived based on the themes. Multiple forms of triangulation were performed to ascertain reliability; firstly, categories were ascribed to 'culture' and 'hierarchy' based on the number each of these codes were repeated, subcategories were then grouped under these 2 umbrella themes. Secondly, 4 other investigators iterated the process, the major 2 themes remained the same yet, several subcategories were added. This process was repeated until the team reach consensus.

### Results & Discussion

Fifty-six surveys were included in the analysis, from countries with low Power Distance Indexes (PDIs) e.g. Denmark (18) and the highest e.g. Malaysia (100). Under the categories of "Hierarchy Rules (n)" and "Culture Rules (v)" various themes and sub-themes emerged. Including a clear distinction between national and institutional culture; professional

hierarchy, and gender-based hierarchy. Expectations of knowledge and behavior, fear of losing face vs. saving face, judgement, embarrassment and humiliation.

Within multi-cultural, multi-professional debriefing groups, the debriefer has to compete with all these challenges while reconciling with their own cultural biases. During debriefing we can uncover assumptions and values guiding a team's behavior, these reflections may produce long-lasting effects; therefore, it is not enough to be well-versed in debriefing methods or approaches, but also how to navigate the cultural landmines within particular groups.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Dealing with challenging behaviour in the paediatric emergency department: A multi-disciplinary simulation based on approach to team education**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

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### **Introduction & Aims**

Simulation-based education in medical paediatrics is growing<sup>(1)</sup> but is relatively under-used for behavioural and psychiatric emergencies. With rising national incidence of such emergencies, including at our institution, we aimed to increase the confidence and knowledge of staff whilst developing a novel model for paediatric simulation training.

### **Description**

We developed two scenarios based on anonymized cases which were delivered first in a pilot session and then as part of a simulation education day in our local high-fidelity simulation suite. Each scenario followed a patient story with actors portraying increasing levels of agitation and challenging behaviour. Actors were briefed to respond transiently to de-escalation attempts, but to become increasingly difficult to manage overall.

Debrief was carried out using the Diamond<sup>(2)</sup> model, with an extended interactive teaching session during the 'transition' phase. This was facilitated by a multidisciplinary panel from psychiatry, paediatric and security teams.

Course questionnaires were designed to gather pre and post-simulation confidence ratings on the session, using a 5-point Likert scale for our main learning outcomes: simple techniques for de-escalation of an agitated patient, rapid tranquilization protocol, the support provided by the security team, and dealing with challenging behaviour in the paediatric emergency department.

### **Discussion**

Our results support the idea, that a structured approach to managing challenging behaviour can be taught and developed through simulation methods. We believe this was enhanced by the wide skill and experience base of our multidisciplinary faculty.

Our 7 participants comprised 3 nursing staff, 2 junior doctors and 2 paediatric specialist trainees. For our main learning outcomes, the confidence gains (increasing by at least one point) between the pre- and post-test ratings were significant ( $p < 0.01$ ), with the greatest gains seen with the rapid tranquilization protocol (Mean difference 2.4 SD 1.0,  $p < 0.001$ ).

Participants reported that the simulation was overall a realistic, useful, and positive learning experience. The value of a multidisciplinary faculty for debriefing was also highlighted.

In future sessions we plan to include teaching prior to the simulations, so as not to 'uncouple' the descriptive debrief from the analysis. Going forward, the use of objective patient level outcomes, such as incident reporting, could provide insight into the efficacy with which this novel teaching package translates to improved performance in the workplace.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **Dealing with death; Simulation training for final year medical students**

**Format:** Oral Presentation

**Topic:** Curriculum Development

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### **Introduction & Aims**

Medical students receive minimal teaching and have very little experience of death during their undergraduate years. Most doctors experience the death of a patient during their first year of postgraduate training. Literature regarding nursing students demonstrated varying degrees of anxiety around death. A key contributing factor was the lack of exposure; anecdotal evidence suggests medical students are in a similar situation.

Simulation has been used to expose participants to a wide range of challenging clinical encounters. In many UK medical schools, high-fidelity simulation training is used in the later years of training, mostly concentrating on management of critically unwell patients.

Our aim is to expose final year medical students to an unexpected death in a clinical encounter in safe supportive learning environment, focusing on few common challenges.

### **Description**

A high-fidelity simulation session was designed for 6-8 final year medical students. The scenario focuses on a critically unwell patient with sepsis, deteriorating into cardiac arrest in presence of a close relative. Two students are expected to manage the patient initially. As a part of cardiac arrest team, a faculty member steps in and guides the students through resuscitation, making a joint decision to end resuscitation. In a thorough debrief, we focus on emotions of the participants, decision to end the resuscitation and strategies that can be used to care for a close relative in these situations. In our pilot, we gave out pre- and post-debriefing questionnaires to participants.

### **Discussion**

Psychological safety is paramount and is at the centre of the debrief session. We are explicit that their actions or inactions make no difference to the outcome. To reassure students, patient's details were chosen as 'Mrs De'Ath who lives in Rose Cottage'. Interestingly no student picked this up until the debrief. According to pilot data, the students' views shift from being responsible for the death to the opposite after debriefing. Our faculty members are clinicians, comfortable with debriefing and pastoral care and are able to share their own experiences of unexpected death of a patient.

The students who participated in the pilot had previous exposure to scenarios with only positive outcomes. They found this scenario challenging, in particular the decision to stop resuscitation. After debriefing, they demonstrated a clear understanding of the process.

We will present the key findings, along with our own observations and will share constructive advice for successful implementation of a similar session.



## Design and development of low cost prototype for the training of bronchoscopy examination

**Format:** Oral Presentation

**Topic:** Physiologic Modelling and Simulation

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### Introduction & Aims

In the last decade, simulation in medicine has attained a fundamental role in the training of medical students as well as on improving and maintaining skills of expert clinicians. In anesthesia and intensive care bronchoscopy is a procedure that carries some risks, such as bleeding, perforation etc., Thus there is the need of alternative methods for training when patients are involved. Currently, physicians can use two distinct families of simulators, one based on Virtual Reality (VR) and the other on physical models. Our aim is to build a low cost and easy to use prototype integrating both the physical and the VR simulators to provide a complete and realistic system for training bronchoscopy examination

### Description

Images, acquired with Computed Tomography (DICOM format) with 0,625 mm slice thickness, are used to create a 3D digital model of the tracheo-bronchial tree. This model is used to create both a physical model to train manual skills and a VR model to provide a realistic visual feedback. To create the physical prototype we imported and elaborated the digital model in the CAD software, then by using a stereolithography process, we 3D printed a physical model of the tracheo-bronchial tract that could be navigated with a real bronchoscope. To create the VR model that the operator can navigate with a virtual camera, the digital model was imported and elaborated in Unity 3D. The physical and the VR models are connected so that each movement of the real endoscopic camera inside the physical model corresponds to a movement of the point of view in the VR model. A simple led-based system allowed computing the coordinates of the tip of the bronchoscope inside the physical model. These coordinates are sent to Unity 3D allowing the simultaneous navigation in the VR model.

### Discussion

Both components of this simulator are very realistic: the physical model of tracheo-bronchial tree is similar to the real airways; the bronchoscopic images of the VR system were compared with images of a real bronchoscopy, showing an high level of similarity. Furthermore, the system is low-cost: the software is open-source and the used 3D printer process not expensive.

Conclusion: This system represents a good and innovative simulator combining visual and haptic feedback for bronchoscopy exam training. This prototype might help enhancing clinicians' skills in a safe and efficient way.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **Design and evaluation of a virtual research environment to study patient flow management in overcrowded emergency departments**

**Format:** ePoster Presentation

**Topic:** New Technologies and INNOVATION

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### **Introduction & Aims**

Emergency department overcrowding and patient boarding result in delays in care, increased short-term mortality and worsened patient experiences. We sought to develop and evaluate a virtual research environment that will allow us to study the effect of physicians' strategies and behaviours on quality of care in the context of emergency department overcrowding.

### **Methods**

This observational two-stage study was conducted at the University Institute of Health Simulation. Twelve emergency physicians took part in the simulation scenarios and had to manage thirteen patients during a 2-hour period. The study outcome was the authenticity of the environment through realism, consistency and mastering. The realism was the resemblance perceived by the participants between virtual and real ED. The consistency of the scenario and the participants' mastering of the environment was expected for 90% of the participants.

### **Results & Discussion**

The virtual emergency department was considered realistic with no significant difference from the real world concerning facilities and resources except for the length of time of procedures that was perceived to be shorter. 100% of participants deemed that patient information, decision-making and managing patient flow were similar to real clinical practice. The virtual environment was well-mastered by all participants over the course of the scenarios.

The new simulation tool, Virtual Research Environment in Emergency Medicine (VIREM) has been successfully designed and developed. It has been assessed as perfectly authentic by emergency physicians compared to real EDs and thus offers another way to study human factors and quality of care in the context of ED overcrowding.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **Design and structure of a multidisciplinary training programme for medicine and nurse residents in a university hospital**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

Clinical simulation is being incorporated into medical residency programme, as it allows training in a safe, realistic environment. Nowadays, we can find several postgraduate training activities in areas such as Intensive Care Medicine (ICM), Emergency Medicine (EM), Pediatrics, Obstetrics, or Anesthesiology. The design and development of a continuous training is of increasing importance, especially in minimally invasive surgery. However, it is not so usual to find a multidisciplinary, years-long training programme. Our goal is to design this type of program through clinical simulation. The aim is to improve the training and skills of medicine and nurse residents before they assume greater responsibilities in the hospital. In case of surgical specialties, this would be complemented with a high-quality training programme in endoscopic surgery (CCE), which is already consolidated.

### **Description**

It is a blended learning programme that combines online documentation along with medium- and high-fidelity simulation. On the other hand, we also work with experimental porcine models to simulate human-like scenarios in surgical specialties. So, we can recreate several medical situations professionals can face to during their career. This multidisciplinary training has a core part for all first- and second-year residents, which concerns different topics depending on the type of specialty:

- Internal Medicine specialties: emergencies (CPR, defibrillators), communication and bad news, serious patient care (emergency patients, hospitalized patients).
- Pediatric specialties: pediatric and neonatal CPR, communication and bad news, polytrauma, hospitalized patient emergencies.
- Surgical specialties: CCE, emergencies, communication and bad news, serious patient care.

A more specific program has been designed next to focus the training on complex clinical situations. This training starts in the second year of residency and is unique depending on the specialty or related specialties. Nowadays, it has already been implemented in: surgical specialties (CCE), ICM, and Anesthesiology - Resuscitation.

## **Discussion**

This planning started in 2017, except for the CCE that began in 2009, and will continue developing progressively. It is an unprecedented multidisciplinary training as residents in all medicine and nurse specialties participate. Its implementation also needed the collaboration of many hospital departments: General and Digestive Surgery, Obstetrics and Gynecology, Urology, Pediatric Surgery, Thoracic Surgery, Oral and Maxillofacial Surgery, Cardiovascular Surgery, Orthopedic Surgery and Traumatology, Neurosurgery, ICM, Anesthesiology – Resuscitation, EM, Cardiology, Short Stay Unit, Organ Transplantation, Gastroenterology, Pneumology, Pediatrics, Pediatric Emergency, and Neonatology. Nowadays, this entails a total of 269 satisfied students and 105 teachers who are motivated to continue delivering such promising and profitable training.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Developing a communication and marketing strategy for a simulation centre**

**Format:** Oral Presentation

**Topic:** Center Administration and Program Evaluation

### **Authors**

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### **Introduction & Aims**

This paper aims to examine the role of social media marketing and communication and its impact on business success, specifically for simulation centres. Many universities and healthcare institutions have invested in simulation-based learning; broadening the scope of activities within and outside the parent institution is crucial to realizing a return on that investment, and serves as a means of engaging with contemporaries in the field, and the public at large. This presentation explains the crucial importance of developing an effective communication strategy for new and existing simulation centers.

### **Description**

Communications technologies impact on every facet of human society, altering the way we network, learn, and the way we teach. This paper demonstrates the need for strong marketing and communications for simulation centres to create awareness, build customer loyalty and retention. It will address issues such as how to assess the impact of digital marketing on the customer, which 'best' practices are recommended constituents of a communication strategy for simulation centres and how these marketing and communication strategies contribute to the overall success of an organization.

### **Discussion**

This presentation's structure is based on the experience of establishing a communication strategy for a new world class simulation centre in Pakistan, a developing country where people face so many challenges including education and health. The imperative in such locations is to obtain maximum return from investments in health and education: marketing and a sound communications strategy are crucial to this.

This research reviews the social media and websites of a number of organizations and their trends in usage over time. Key variables examine how the relationship between customer and organization are maintained by examining the frequency and means of engagement. The frequency of updating and maintaining 'live' social media pages is compared, identifying responsive and non-responsive organizations and the impact on perceptions of success.

The analysis of this data is then used to inform the strategy adopted in AKU, the results of which will be presented in detail, but broadly speaking focus on internal communication through the intranet, and a monthly pdf newsletter; and external communication through Facebook, Instagram and Website. How the strengths and weaknesses of these approaches are balanced within the overall strategy is discussed.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Developing medical students' education by simulation teaching using simulated patients and inter-professional teamwork**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

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### **Introduction & Aims**

To enhance pulmonary disease clinical skills training we implemented simulation teaching into 160 third and fourth-year medical students' Chest pain, dyspnea and vascular surgery course. To facilitate essential clinical skills learning we created patient cases with Chronic Obstructive Pulmonary Disease COPD and anaphylaxis. To support medical student's interaction and teamwork skills we decided to create patient cases by using simulated standardized patients (SP) and interprofessional teamwork.

### **Description**

Before the simulation teaching session, the students refresh their knowledge about pulmonary diseases by reading pre-reading material from Moodle learning platform.

Simulation session starts with briefing to schedule, learning goals, simulation environment and simulation ground rules to create common understanding and acceptance.

As session lasts two hours, we have two simulated patient cases. Two student per patient case participate as doctors and a nurse simulation instructor participates as a nurse. The roles of the patients are played by two professional actors. We standardized the roles of patients and a nurse to standardize teaching. Pulmonary disease clinical teachers are main instructors and participate patient cases as a consulting senior doctor.

Students participate the teaching at groups of seven to nine, four students participate as doctors and the others are observers. Observers have specific tasks to follow, such as handling clinical skills and guidelines, teamwork and interaction observations.

During patient cases, we use deliberate practice for clinical skills, interprofessional teamwork and interaction skills to facilitate learning. Students are expected to take anamnesis and make quick status and treat the patient according to

guidelines after consulting. They can ask questions, use aids to check and carry out treatments and proceed safely towards clinical decisions. Nurse instructor guides them to use closed loop communication when giving orders and medication.

Debriefing session involves first all simulation participants, SP and ends up with observations.

After simulation sessions, students fill out electronic feedback questionnaire with 20 Likert scale questions and 1 open question. Questions are about learning clinical skills, closed loop communication, interaction with the nurse and simulated patient, tension to participate simulation and systematic approach to patient care.

## **Discussion**

By the time of abstract submission deadline, 37 students have participated and feedback received from 19 students. According to initial feedback, simulated patient cases enhance clinical skills and teamwork skills learning. Students value highly possibility to have interprofessional training with SP. They strongly agree that simulation as learning method enhance systematic approach to patient care.





SOCIETY FOR  
SIMULATION IN EUROPE

## **Development of a practical feedback tool for trauma leadership**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

Trauma leadership training is increasingly being incorporated into trauma courses. An increasing demand is thereby put on educators' ability to assess, reflect on, and improve leaders' nontechnical skills. However, there is a paucity of tools that can support educators' targeted observation and feedback. We therefore developed a novel feedback tool that focuses specifically on the trauma leader. We based this tool on previous work, in which our task analyses of trauma leadership resulted in a granular skill taxonomy, called the "Taxonomy of Trauma Leadership Skills" (TTLS). The central aims in the present study were to enhance the TTLS' practicality for in-action assessments and notetaking, and to improve its elements for being sufficiently instructive as 'stand-alone' items to guide observations and the identification of learning points.

### **Methods**

We subjected the TTLS to practical evaluation and modification in two stages. In the first stage – consisting of three rounds – testing panels reviewed and improved the elements' clarity, observability and brevity. They were asked to observe brief video vignettes from the local trauma team training and indicate from the list of elements which behavior or behaviors they felt were being shown. Any ambiguity, redundancy or difficulties in identifying behaviors objectively were addressed by re-phrasing, combining or omitting elements. This resulted in a prototype feedback sheet. The second stage consisted of a round of testing and a final evaluation in actual practice. In the ATLS refresher course in the Netherlands, ATLS instructors (6 and 16 respectively) used prototype feedback sheets to collect impressions on the trauma leaders' performances and to debrief the scenario. Afterwards, they filled out a questionnaire regarding the sheet's clarity, content validity, ease of use, usefulness and impact on instructor tasks. Answers were given on a 3-point scale (no-moderately-yes).

### **Results & Discussion**

The final feedback tool, called the TTLS for Assessment (TTLS-A), contains 5 skill categories (information coordination, action coordination, decision making, communication, and coaching and team development) and an additional skill set for the briefing phase of trauma care. The TTLS-A was evaluated as being complete, clear, practical and helpful at multiple stages of the training. In relation to previous trauma assessment tools, the TTLS-A provides an additional level

of specificity that is pivotal for detailed recommendations for targeted practice. The positive evaluations, by trauma instructors from across the Netherlands, suggest that the TTLS-A is a valid and helpful tool for training trauma team leaders' nontechnical skills.

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## Development of a structured virtual reality curriculum for laparoscopic appendectomy

**Format:** Oral Presentation

**Topic:** Curriculum Development

### Authors

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### Introduction & Aims

Appendectomy is the most common abdominal surgical emergency for which laparoscopic appendectomy is routinely performed, mainly by trainees. Therefore, it is imperative to equip junior surgeons with the necessary laparoscopic expertise to carry out this procedure safely. Laparoscopic skill transferability developed on virtual reality (VR) simulators has already been demonstrated. The primary aims of this study were to assess the construct validity (CV) of VR appendectomy and basic psychomotor skills modules. The secondary aims were to use these results to develop a step-wise structured VR curriculum for laparoscopic appendectomy and to assess the perceived realism and usefulness (face validity) of the VR appendectomy module.

### Methods

Using a high-fidelity VR simulator (LAP Mentor II™, Simbionix Corporation, Cleveland, Ohio, USA), a prospective randomised study design was implemented. One pool of experts and one pool of novices were randomly allocated into three groups: nine laparoscopic psychomotor skills tasks, five appendectomy procedural tasks, and one full appendectomy procedure (Figure 1). Novice and expert performances were compared to assess CV for each computer generated metric. Learning curve analysis was performed. A curriculum was then constructed using expert performance as proficiency goals. Participants were invited to complete an on-line anonymous survey assessing face validity of the appendectomy module using a seven-point Likert scale.

### Results & Discussion

Thirty-five novices and twenty-five experts participated in the assessment. Psychomotor tasks three, five, six, eight and nine, and all appendectomy tasks demonstrated CV. Learning was demonstrated in the majority of construct-valid

tasks. Realism in general of the appendicectomy module was rated as moderate, participants strongly agreed that the module was both enjoyable and useful, and agreement to making a similar module mandatory prior to operating on real patients was moderate by novices, and strong by experts. A novel step-wise VR curriculum for laparoscopic appendicectomy was constructed, rigorously based on distributed practice, with a specified period of human instruction, as well as formative and summative feedbacks/assessments.

Many of the psychomotor tasks demonstrated CV, partially corroborating the results of previous investigations. All tasks in the LAP Mentor's appendicectomy module demonstrated CV, which was perceived as realistic and useful. To the authors' knowledge, this is the first prospective randomised study to demonstrate CV for the LAP Mentor appendicectomy module and to establish a structured curriculum based on a "low-dose high-frequency" training format. Differences between real-world and simulated laparoscopic appendicectomy have not been addressed. Future studies will test the feasibility of curriculum implementation and transferability of acquired skill.

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## **Development of a translational scenario template: from design, through implementation, to execution**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

The success of simulation based training (SBT) is highly based on adequate scenario development. Each scenario has specific and meaningful learning objectives that drive the development process. A scenario script is an essential tool that plans and details all relevant information and steps of the envisioned scenario. The script ensures the quality of the simulation sessions, including its consistency and standardization, guaranteeing its repeatability/reliability [1]. The quality of the script is not only dependent of its developer but also on the scenario template.

Several examples of scenarios' templates are currently available; however, these templates were developed with the single purpose of scenario design, excluding information on the implementation or the execution of the scenario. This may lead to a mismatch of the content that generates gaps that may lead to poor simulation experience [1].

The aim of this work is to propose a new template that accompanies and supports the developer throughout the steps of the scenario development, implementation and execution.

### **Description**

The development process of the proposed template combined a published template as a basis [2] with the current recommendations and standards for scenario design [1].

Additionally, new requirements were included:

1. Modular structure - sections that can be included/excluded, as needed.
2. Multipurpose use - all relevant information for scenario development, implementation and execution.
3. Various users - specific information for the instructors, technicians/operators, confederates/SPs, etc.
4. Chronological structure - sections arranged considering the different phases of a scenario: preparation, briefing(s), scenario, debriefing.

The proposed template is constituted by 7 sections, each with specific elements, Table 1.

### **Discussion**

The proposed template represents an extension to traditional templates, broadening the application to other relevant phases of a scenario. It is expected that such an integrative tool will facilitate and optimize the successful application of SBT.

References:

1. Clinical Simulation in Nursing (2016) 12, S5-S12.
2. Simulation & Gaming (2011) 42(1), 9-26.

**Reference**

Granted by Fundo Europeu de Desenvolvimento Regional – FEDER, through the Programa Operacional Norte 2020, under the project Simprove: The Biomedical Simulation Center of the Future (NORTE-01-0247-FEDER-017566)"

**Reference**

Granted by Fundo Europeu de Desenvolvimento Regional – FEDER, through the Programa Operacional Norte 2020, under the project Simprove: The Biomedical Simulation Center of the Future (NORTE-01-0247-FEDER-017566)"

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**Development of the first interdisciplinary scale for the chest tube insertion based on a systematic review**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

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**Introduction & Aims**

**Introduction:** Simulation is an essential method for teaching emergency procedures before being applied in real clinical situations. However, in clinical practice these actions require interdisciplinary teamwork. We have created and validated a scale for chest tube insertion [1]. However, there is no tool to evaluate the procedure in its globally, including the nurse's role.

**Aims:** This literature review aimed to identify articles related to teamwork and multidisciplinary management of chest tube insertion. The objective was to construct a scale for interdisciplinary chest tube insertion in simulation based on the Downing method [2].

**Methods**

**Method:** Integrative literature analysis between 2012 and 2017 was conducted with a qualitative approach [3]. A search of the PUBMED and SCIELO databases was performed using combinations of the terms "Chest Tube; Nursing; Care; Drainage; Insertion". An analysis of articles written in English, French, Portuguese and Spanish was conducted. A standardized analysis procedure was carried out [4] to select the items that allowed the creation of the scale. The scale was then modified according to international medical and paramedical experts (France, Brazil, England, and Switzerland) according to a DELPHI method.

**Results & Discussion**

**Results:** 10214 articles included the search terms. After excluding articles that did not meet the objective of our study, 467 abstracts were analysed. Among these items, 12 allowed the creation of a first version of the scale. This consisted of 54 items: 26 related to the nurse's role, 4 could be achieved by the doctor or nurse, 24 for medical work. After expert opinion, some items were removed as non-evaluable in simulation, others added and some merged or separated in regards to the weight of each item.

#### Discussion:

After analysing the existing literature on chest tube insertion, we identified a large number of studies. However, the main limit of our work remains the mono-disciplinary of most of the included studies, each discipline indeed assessing only the components specific to its domain. Whereas we were aiming at focusing on interdisciplinary and the team work aspect of this procedure. However, our study allowed the creation of the first interdisciplinary and updated scale promoting the safety of teamwork during chest tube insertion. Future studies will analyse the agreement and reliability of this scale.

#### References:

1. Ghazali A., et al. J Pulm Respir Med. 2016;6(3):1-6.
2. Downing SM. Med Educ. 2003;37(9):830-7.
3. Ganong LH. Res Nurs Health. 1987;10(1):1-11.
4. Bardin L. Análise de Conteúdo. Lisboa, Portugal; Edições 70, LDA, 2009





SOCIETY FOR  
SIMULATION IN EUROPE

## **Difficult Airway Rescue Equipment (DARE)- A Pilot Course for ED nurses**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

The unanticipated difficult airway is an anaesthetic emergency the management of which requires good team working between operator and assistant, both of whom require sound knowledge of the rescue equipment and the plan. The Royal College of Anaesthetist's National Audit Project 4 (NAP4) showed the emergency department (ED) is a common location for airway emergencies and highlighted a lack of skilled staff and appropriate equipment were major contributing factors to major adverse airway events. It advised airway training should incorporate an inter-professional element to help improve team-working and communication skills.

Focus groups in our ED showed nursing staff familiarity with equipment used in rescuing a difficult airway situation was low. Aside from being a potential clinical risk, this was a source of anxiety amongst anaesthetic trainees and ED nursing staff. In response, we designed and delivered a half day course for ED nurses to increase familiarity with the management of the unanticipated difficult airway and failed intubation.

### **Description**

This course focused on awareness of the Difficult Airway Society (DAS) guidelines, and equipment in the difficult airway trolley. To support inter-professional learning we invited a senior Operating Department Practitioner (ODP) and Anaesthetic Nurse to be part of the faculty. The course was delivered in an interactive manner. It included a demonstration of correct management of a failed intubation using the DAS algorithm, a hands-on equipment walk-through using the difficult airway trolley and skills stations including bag-mask ventilation and use of oro- and nasopharyngeal airways.

### **Discussion**

We surveyed 7 attendees pre- and post-course, all ED nurses ranging from bands 5-7. The pre-course survey showed that whilst only 28% of respondents had received prior training, 57% had been asked to assist an anaesthetist with a Rapid Sequence Induction (RSI). Confidence at assisting with RSI on a 1-6 Likert scale (1=not at all confident 6=very confident) scale was 3.57. No-one was aware of the DAS guidelines for management of a failed intubation. The confidence rating for being able to locate items from the difficult airway trolley was 2.57. The post-course survey showed increased confidence in assisting with an RSI to 5.2, and finding items in the difficult airway trolley to 4.4; 80% of respondents felt familiar with the DAS guidelines after the course.

Based on this feedback the pilot course appeared to meet its primary aims learning needs. Future development could include running the course regularly and expanding the course to cover ITU nurses.



SOCIETY FOR  
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## **Do One, Share One, Sim One**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

Commitment to developing the Scottish Trauma Network in 2016 has instigated a shift in Trauma Care for Scotland. With the aim of 'Saving lives, Giving life back', there is a focus on clinical excellence and collaboration. The QEUH opened in 2015 with the amalgamation of three city hospitals. Teams were unfamiliar with considerable variations in care delivery. A need was identified to optimise team familiarity, align care process and create forum for shared team learning. Major Trauma Call Simulation was instituted using high-fidelity mannequin, to streamline care and disseminate learning to across the whole team.

### **Description**

Our development of simulation to prepare for MTC status has focused on:

Scenario Design – Selected from challenging previous cases with key learning objectives. This was aligned to data from the Scottish Audit

Trauma Group (STAG). Cases were identified for complexity and complications, allowing us to review past actions to enhance future practice.

Key Episodes:

Major Trauma Call Activation –

Following receipt of a standby

notice, a trauma call notifies specialties to gather in ED. Team forming and preparation occurs for specified scenario.

Major Trauma Preparation –

Limited time to prepare for, in a frequently crowded Resuscitation room, it was essential that staff were aware of location of equipment and how to use it. Nursing and medical staff attend micro sim focusing on elements such as RSI, splint application and chest drain insertion.

Focused Micro teach-

Using scenario to ensure key interventions are rehearsed and new protocols are introduced within a safe environment such as Major

Haemorrhage protocol and front of neck access.

### **Discussion**

Simulated Major Trauma calls are critical component of preparation for becoming a major trauma centre. Ensuring continuity of clinical care due to staff turnover is facilitated by repetition of key scenarios. Ensuring that learning objectives are aligned to surgical and orthopaedic learning requirements is crucial to maintain engagement and scenarios have been selected to achieve this.



SOCIETY FOR  
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## Doctors' Assistants Training in Simulation (DATiS)

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

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### Introduction & Aims

Doctor's Assistants (DAs) are a new role in several hospitals in Southern England. They work alongside Junior Doctors to support their inpatient work. Their role is predominantly administrative but they can also perform basic clinical skills such as phlebotomy. DAs have a two week induction before starting their role and, unlike Physician Associates, are not required to have university qualifications.

Though embedded in doctors in medical teams, DAs often have only limited previous clinical exposure, the aim of DATiS was to familiarise them with emergency equipment and techniques in a safe environment and empower DAs to provide an appropriate level of assistance in emergencies.

### Description

DATiS was attended by all DAs at Royal Surrey County Hospital (RSCH) at our Simulation Suite using a SimMan3G manikin and facilitated by a Junior Doctor.

Building on the Basic Life Support course the DAs had already attended, the session was structured in an ABCD(EFG)H format: Airway, Breathing, Circulation, Disability/Don't-Ever-Forget-Glucose, Handover. This allowed introduction of the uses of all key equipment of the resuscitation trolley, an understanding of what clinical staff may be doing during an emergency, and tasks which DAs may be asked to perform in these situations.

### Discussion

DATiS was an opportunity to cement existing learning and fulfil aspects of the new DA curriculum in a high fidelity environment.

Given the novelty of the DA role, DATiS also provided an opportunity to highlight which roles DAs are capable of undertaking in emergency situations as well as what their limitations are, specifically highlighting what is beyond their

competency.

DAs who have responded to inpatient peri-arrests have described them as feeling chaotic and felt that they had little to contribute. However, being ward based, they are often well placed to know where items the arrest team might need are (e.g. patient notes, request forms etc). DATiS has helped improve DAs confidence to help participate in emergency situations in a safe manner and feedback for the session was overwhelmingly positive.

DATiS will now be repeated twice per year at RSCH allowing existing DAs to refresh their knowledge and empowering any new DA staff to fully feel able to contribute as part of a team responding to an unwell patient.

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## **Early Announcements & Curtain Calls: In situ cardiac arrest with video playback to enhance team behaviours**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

The management of a cardiac arrest in a ward-based environment requires excellent teamworking skills. The simulation team at a large teaching hospital sought to improve the way their ward-based teams worked together to manage adult cardiac arrests.

The aim of this study was to deliver a programme of in-situ simulation events to identify, and try to improve, the specific areas of concern in staff management of cardiac arrests.

### **Description**

**Methods:** The team delivered a series of unannounced in-situ simulations (n=13) over 14 months across 13 different wards. The simulations were interprofessional and participants included doctors (n=64), nurses (n=52), student nurses (n=17), nursing assistants (n=9) and physiotherapists (n=3).

The simulation team initiated midday adult cardiac arrests using a Human Patient Simulator and participants were debriefed after each simulation. Staffing was not increased for the shifts and the formal Trust response was initiated by ward-based nursing staff on each occasion where members of the hospital resuscitation team responded and appropriately addressed the clinical situation.

**Evaluation:** Simulations were critically observed by simulation trainers to identify problems with teamworking practice and participants were asked to write down what they identified as areas that required further training.

**Results:** Observations of simulations identified that whilst staff initiated the call for help and basic life support with efficiency the overall impression of the situation was chaotic until members of the Resuscitation or Clinical Response Team arrived. Thematic analysis of participants' responses identified three areas that required further training: (i) the need for clear role allocation (37%) (ii) the use of staff names with closed loop communication (18%) and (iii) stronger leadership (18%). Staff also expressed a dislike for the unannounced process of the sessions.

### **Discussion**

This study has identified that ward-based teams lack coordination prior to the arrival of Resuscitation or Clinical Response Teams, and leadership and communication are particular areas which need improvement. Building on this needs analysis, we are currently embarking on phase II of this work. This involves delivering targeted in-situ simulation training in two ward areas, providing a safe space for ward-based staff to practise their delegation, communication & leadership skills and increase confidence as primary responders in their own environment. Employing reliable and

validated instruments (1,2) we are evaluating: (i) participants' human factors skills learning following training (1) and (ii) improvements in participants' leadership and communication behaviours (2). The results of phase II will also be presented.

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**Eating the frog, one bite at a time. Utilising the Clinical Simulation Theatre Laboratory to prepare Diagnostic Imaging students for fluoroscopic examinations in the real world theatre environment.**

**Format:** Oral Presentation

**Topic:** Curriculum Development

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### **Description**

Three separate CS sessions were designed to run across three levels of the programme to help students prepare for practice placements, and support an assessment set in the real world. Each session provided learning opportunities relevant to the year of study, and included fundamentals such as an introduction to the theatre environment, basics of operating the equipment, and radiation protection in year 2, through to optimisation of the radiation dose, C-arm manipulation, and effective relationships in the MDT. Strategies included pre-briefing, demonstrations, experiential learning with a c-arm fluoroscopy unit, simulated theatre scenarios and cases, discussions (e.g. power dynamics) and debriefs.

### **Discussion**

Preliminary feedback from final year students show they value the CS sessions and practice with the fluoroscopy unit, and expressed increased confidence preparing for theatre assessments. They also requested the sessions are extended. Initial informal discussions with clinical liaison staff suggest recently qualified DI radiographers who underwent the sessions are more confident about going to theatre than previous students. We aim to gather further formal feedback and evaluation, however initial experience suggests that simulated fluoroscopy practice in theatre environments enhance confidence, and help prepare DI students for the challenges of working in stressful real world MDT's in theatre.

### **Introduction & Aims**

Fluoroscopic guidance utilises x-rays to provide dynamic imaging during a wide variety of surgical and interventional procedures, typically in the theatre environment. Radiographers undertake examinations requiring profession specific knowledge, appropriate psychomotor skills and interpersonal skills to engage appropriately as part of the multi-disciplinary team (MDT). Research reports that Diagnostic Imaging (DI) students in the UK agreed that "their university course generally prepared them sufficiently for their first job". However, some felt underprepared for participating in theatre imaging procedures (SCoR 2014). Meanwhile, Naylor (2016) reported that the theatre environment is a source of anxiety to students and newly qualified staff. Clinical Simulation (CS) can be used to replicate the challenging aspects of real world clinical environments, providing a safe and less intimidating setting, allowing students to practice complex psychomotor skills, whilst developing problem solving and clinical decision making skills which can improve safety of the patient and staff. To help prepare students for this challenging environment (eating the frog), our aim was to implement a series of learning and practice opportunities in the clinical simulated theatre setting within the university.





SOCIETY FOR  
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## **Educational Escape Room as a simulation activity for competence development**

**Format:** Oral Presentation

**Topic:** New Technologies and INNOVATION

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### **Introduction & Aims**

In line with the guidelines set by the European Higher Education Area (EHEA), students are the protagonist and should move from a passive role to an active one. This entails the development of new teaching methodologies to offer learning environments in which students can achieve the knowledge, attitudes, and skills expected.

Gamification is a tool very consistent with the objectives that are intended to achieve and very harmonious with the student profile that is currently in the university classrooms (Cronk, 2016).

In a competency-based learning model, it is crucial that students learn to work as a team because once in the "real" world, team members must overcome various levels of training and experience, conflicting personalities and diverse sets of skills to function effectively as a unit. Studies continue to demonstrate that effective teamwork and collaboration, particularly in high-acuity and high-risk environments, can decrease mortality and cost (Clemmer, Spuhler, Oniki & Horn, 1999).

The aim of this project is to promote competence development and strengthen the already studied knowledge through a gamification activity such as an Educational Escape Room (EER).

### **Description**

EER is an ideal context to work with students' skills such as teamwork, decision making, communication, leadership among others. The EERs are based on real action games, on teams where players must work together, solve clues and complete a series of amazing and challenging tasks to "escape from the room" in less than a certain time (Nicholson, 2015).

The case will be set on a patient admitted to the ICU with the aim that as they resolve the different challenges, they will get the patient to improve and, therefore, move to the hospital room. The EER will continue in the hospital room and the case has been planned so that the student can be discharged.

Once the activity is over, the facilitator will meet everyone in the debriefing room to talk with them about the experience, redirect certain situations if necessary and clarify concepts that would have been confusing.

### **Discussion**

Escape rooms are common as a leisure game, but the novelty is to integrate this leisure activity as a methodology for competence development in undergraduate nursing students.

Using EER, students can participate in an experience that enhances and facilitates learning and interest through the active learning environment. Students also can take control of their learning environment by incorporating teamwork, critical thinking, prior knowledge, time management, and creativity.

## **Reference**

This work was supported in part by the Madrid Regional Government (Comunidad de Madrid) through the project eMadrid under Grant P2018/TCS-4307, and in part by the Spanish Ministry of Economy and Competitiveness/Ministry of Science, Innovation, and Universities through the Project SYMBHYO-TIC under Grant PTQ-15-07505, through the Project RESET under Grant TIN2014-53199-C3-1-R and through the Project Smartlet under Grant TIN2017-85179-C3-1-R"



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## **Effect of an 8 weeks mindfulness-based intervention on psychological and physiological stress in anesthesiology residents: The MAR study**

**Format:** ePoster Presentation

**Topic:** New Technologies and INNOVATION

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### **Introduction & Aims**

Anesthesiology is a medical specialty focusing on managing patients during the perioperative period or managing patients suffering from multiple organ failure. This specificity can cause a very high level of stress for residents leading to an increase of young anesthesiologists burnout. Interestingly, Mindfulness based interventions have been shown to reduce stress level. This positive impact has been highlighted for some medical and paramedical professions but not for anesthesiologists

The main hypothesis is that a mindfulness program can reduce psychological and physiological stress level in first year anesthesiology residents.

The aimed of our research is to study the effect of an 8 weeks mindfulness-based intervention on psychological and physiological stress in first year anesthesiology residents

### **Methods**

The study is a monocentric non-interventional randomized controlled study performs in Toulouse, France. Twenty first year residents in anesthesiology will be included in January 2019 and will be randomized between the interventional group and the control group. The interventional group will follow an 8 weeks program consisting in a daily session of 10 to 20 minutes of mindfulness with two seminars at week 4 and week 8 of the program. The psychological and the physiological stress level will be assessed respectively by questionnaires and heart rate variability measurement before and after the 8 weeks period (at rest state). A 3-month follow-up will be realized with the same stress level assessments.

### **Results & Discussion**

We expect to demonstrate an improvement in stress levels in this particular population of residents. We hope those data will allows us to provide Mindfulness programs in our department

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## **Enhancing substance abuse medicine course with case-based, simulated patients and mobile assessment**

**Format:** ePoster Presentation

**Topic:** New Technologies and INNOVATION

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### **Introduction & Aims**

University of Helsinki Faculty of Medicine, substance abuse medicine course (2 cme) consists of a compulsory two-day seminar with case-based and simulated standardised patient cases from alcohol, drug and gambling.

The aims of the substance abuse medicine course are to discuss about the attitudes towards abuse problems and to provide students with the skills and readiness to identify, diagnose, treat and educate the patients. The course also introduces the Finnish abuse care system and national guidelines. The course has a long history from 1983. In recent years several improvements have been made to increase students' motivation, interaction and feedback.

### **Description**

The course includes a final exam which was many years based on voting system. First students voted by racing coloured papers. Voting clickers were initiated 2008, but the system was laborious and plagued with technical problems. In 2015 a mobile assessment based on Socrative quiz system and students' own devices were adopted.

Students attitudes towards mobile assessment has been high, with 65,5 % preferring mobile exam over traditional exam in 2015. With continued support and continued increase of the use of mobile devices in studying in 2018 almost 98 % of students favoured mobile assessment (n= 129).

The level of student feedback has also increased significantly. In 2018 over 97 % of the students gave voluntary feedback on the course (n=129).

In 2018 case-based simulated patient cases were introduced with actors, who were trained and briefed to act as standardized patients. Based on the feedback, students appreciate the increased interaction. Interactive self-study materials and group assignments also motivate students to study.

In 2018 the course was also decided to be moved from 6th year students to 4th year students, based on student feedback. The aim is to prepare students better for clinical practice.

The changes to the course have been successful and has increased students' satisfaction significantly (4,1 in Likert scale, n=129).

### **Discussion**

Student volumes has grown rapidly from the 1980s with only around 60 students. to more than 160 medical students per year. To maintain the motivation and interaction during a two-day seminar is challenging.

Case-based simulated patient cases require resources but are an important and effective way to improve student motivation, engagement and learning.

Moving to mobile assessment has been cost-effective and has reduced the need of staff resources. Students can also participate from home and data is easily and rapidly accessible. Collecting feedback is also easier and more effective.

## **Evaluating a novel simulated electroconvulsive therapy induction for psychiatry trainees**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

Chris O'Shea

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### **Introduction & Aims**

Administering electroconvulsive therapy (ECT) and explaining its associated risks and indications is a key skill in psychiatric practice. The Royal College of Psychiatrists explicitly state in their curriculum for core psychiatry trainees that:

“All Core Psychiatry training programmes must ensure that there is training and supervision in the use of ECT so that trainees become proficient in the prescribing, administration and monitoring of this treatment.”

Depending on where one works as a core trainee, one may have variable experiences of delivering ECT in Scotland. A 2016 national trainee survey revealed differences between and within regions. Several regions had limited training opportunities for trainees in gaining competence in ECT administration and practice.

On a wider note, the General Medical Council explicitly state in their “Promoting Excellence” guidelines for medical training that:

“Learners must have access to technology enhanced and simulation-based learning opportunities within their training programme as required by their curriculum.”

Such learning opportunities were not available within South-East Scotland for psychiatry trainees.

We aimed to introduce a novel ECT induction programme to all new Core Psychiatry Trainees in South-East Scotland. We wished to incorporate appropriate simulation-based learning for acquisition of key skills related to ECT practice.

### **Description**

Starting in 2017, the authors introduced an ECT induction course to all new core psychiatry trainees in South-East Scotland. Trainees undertook supervised, simulated, practice of ECT titration and administration using a part-task trainer model created by the authors. They also received an overview of theoretical aspects of ECT relevant to their syllabus.

We evaluated pre-course and post-course perceptions and confidence in ECT practice amongst the trainees using Google Forms. Specifically, we explored confidence in explaining ECT's mechanism of action, accurate placement of ECT electrodes, explaining ECT to patients and relatives, and administration of ECT under consultant supervision.

### **Discussion**

Since 2017, 23 trainees have attended the training. Most were lacking in confidence across all questioned aspects of ECT practice prior to attending the course. We observed statistically significant improvements across all domains of confidence after the training (Table 1).

Our programme has now been formally incorporated into the Core Trainee teaching programme in South-East Scotland. In 2019 we intend to survey consultant ECT supervisors to assess if the induction has had a discernible impact on trainee performance. The authors would be happy for their materials to be shared and adapted under the appropriate Creative Commons License.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **Evaluating expertise in anaesthesia- assessing attitudes to decision making following simulated practice**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

Effective decision-making in high-stakes clinical environments is a challenging skill to learn. The literature suggests cognitive errors significantly contribute to delayed and incorrect diagnoses with health professionals prone to many cognitive biases. Expertise in Anaesthesia is a simulation course for senior anaesthetic trainees in Central and East London. It has evolved to be not just about patient safety strategies but also cognitive theories and the effect of cognitive bias on decision-making.

Course aims include increasing awareness of cognitive bias, changing perceptions of candidates' fallibility, developing skills to reflect on decision-making and giving candidates opportunity to explore strategies of monitoring and thinking in crises. We assessed the course series in 2018 in respect to these.

### **Description**

The course consists of workshops on current theories of thinking, types of cognitive bias and case discussions for reflective practice. Simulation scenarios involve time-critical diagnostic uncertainty, allowing deliberate practice with reflection on debiasing strategies during debriefing. The service evaluation involved pre and post course candidate questionnaires. These included 1) knowledge self-assessment about theories of thinking, cognitive bias and strategies 2) self-assessment of decision-making ability 3) assessment of attitudes to decision-making focusing on effects on decision-making, perceptions on fallibility, systems for decision-making. Four courses were provided, 28 candidates completed the pre-course questionnaire and 30 candidates completed the post-course questionnaire.

Less than 10% of candidates rated pre-course knowledge of theories of thinking, decision-making and cognitive bias as good or excellent. After, over 70% rated this as much or very much improved. Self-assessment of decision-making ability showed all improvements including challenging poor decision-making by a colleague (36% confident or very confident pre-course vs 67% post). Attitudes to decision-making showed changes mainly in perceptions of fallibility including 'quick decision making is an important skill in medicine' (57% at least agreed pre-course vs 90% post) and 'I worry about my colleagues' perception of my clinical decision-making skills' (29% at least agreed pre-course vs 57% post). Candidates recognised decision-making ability was impaired by affective bias, 90% at least agreeing that excessive work load impaired decision-making post-course compared to 64% pre-course. Over 90% agreed the course had relevance to future consultancy, promoted reflection on clinical decision-making and fallibility and provided strategies for effective decision-making

## **Discussion**

Reflective practice and metacognitive review are some strategies advocated for learning cognitive debiasing in medicine. This course achieves increased knowledge and confidence and some positive effect on attitudes to decision-making with deliberate simulated practice of such techniques.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Evaluating pilot data from a national simulated programme in Scotland focusing on challenging communication scenarios for junior doctors**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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Jennie Higgs	NHS Lothian
Nathan Oliver	NHS Lothian
Joe Roberts	NHS Lothian

### **Introduction & Aims**

Junior doctors in the UK face a significant increase in responsibility when transitioning from their first to second year (known as Foundation Year 2, or FY2). Research by NHS Lothian found FY2 doctors feel ill-prepared for this, especially in managing difficult conversations. They struggle to evidence communication skills competencies in appraisals. NHS Education for Scotland wished to address this by adopting a national simulation programme focusing on areas of challenging communication. The aim is for all FY2 doctors in Scotland to receive this training.

Such interventions are resource intensive. Effective evaluation is vital. Over 2017-2018 all FY2 doctors in South-East Scotland had the opportunity to attend the training. We were asked to pilot an evaluation to inform the national approach. Our aims were to assess the impact of attending the course on perceived trainee confidence and to demonstrate if this method of assessment could be adopted nationally.

### **Methods**

Over 2017-2018, 171 out of 199 FY2 doctors in South-East Scotland attended training encompassing four challenging communication scenarios: assertiveness under pressure, recognising vulnerable adults, dealing with confrontation and anger, and discussing end of life care. The session design is informed by nationally agreed learning objectives aligned to the Foundation Programme.

All participants were invited to complete a pre-course and post course questionnaire. Follow up questionnaires were sent via email 3 months after attendance. These consisted of Likert scales rating confidence in addressing challenging communication situations related to the scenarios.

### **Results & Discussion**

All attendees gave informed consent to participate in the evaluation. We collected 171 pre-course questionnaires, 171 post course questionnaires, and 62 3 monthly responses (a 36% response rate).

Statistically significant increases in attendee confidence were observed in managing all scenarios immediately following the course (Table 1). This confidence was sustained when surveyed three months later. There was a statistically

significant increase in confidence in managing challenging mental health scenarios from immediately after attending the course to three months later.

We have demonstrated FY2 doctors had significantly increased confidence in their ability to tackle challenging communication situations aligned to their curriculum following attendance at the course. Importantly this improvement was not lost 3 months later. We have informed the national approach by showing a 3-month email survey can yield acceptable response rates. One limitation in our approach was a lack of control data. Identifying this at the pilot stage led to the national questionnaires incorporating appropriate statistical process controls.

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**Evaluating the influence of a pilot programme combining early clinical skills teaching and clinical practice in the community in medical students' self-confidence**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

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**Introduction & Aims**

One of the main stressors for medical students is the transition from theory and simulation to the real clinical environment. Early exposure to clinical skills teaching is considered to be a helpful way to increase medical students' self-confidence prior to their first conduct with real patients.

Medical School of Aristotle University of Thessaloniki (AUTH) in an attempt to update its curriculum and improve students' clinical performance introduced in 2015 a pilot programme in the preclinical years of study, which combines early clinical skills teaching and clinical practice in the community.

Aim of this study was to evaluate the influence of this pilot programme in medical students' self-confidence and how it affected their performance in their following clinical placements.

**Methods**

All students who completed the pilot program were invited to participate in an anonymous online study, one week after starting their clinical placement. We used a 5-point Likert scale (1- strongly disagree to 5- strongly agree) to evaluate medical students' self-confidence in performing basic clinical skills. We also asked them to compare themselves with other students who had not participated in the pilot programme in terms of self-confidence in performing basic clinical skills. We analysed quantitative data with SPSS v.21 and qualitative data using constant comparative analysis to identify themes.

**Results & Discussion**

Of the 50 medical students who completed the pilot programme, 30 responded (60% response rate). Most medical students agreed that the pilot program helped decrease their stress levels (19/30, 63.4%) and made their transition from theory to practice smoother (26/30, 86.7%). Many students (25/30, 83.4%) suggested that their peers who had not participated in the pilot program faced more difficulties and felt less confident in performing basic clinical skills in their clinical placement compared with themselves. Findings suggest that medical students who completed the pilot program, thus had an early clinical skills training combined with early practice in the community, had a higher level of self-confidence and an smoother transition to the hospital setting. This study can be a valuable tool to the development

of the new curriculum of the Medical School of AUTh.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **Evaluation of nontechnical skills of novice nursing and medical students at interprofessional simulation setting**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

Nontechnical skills (NTS) are the cognitive and interpersonal skills, supplementing clinical and technical skills, necessary to ensure safe patient care. The purpose of the study is exploring the NTS of novice nursing and medical students at interprofessional simulation setting.

### **Methods**

The study has been conducted with novice nursing and medical students who participated in interprofessional simulation within the context of interprofessional course in 2018-2019 Fall Semester. As an interprofessional team one nursing and one medicine student interacted with a standardized patient. Two researchers watched the videos of simulated cases simultaneously and assessed the performance of interprofessional student teams by using the Anaesthesiologists' Non-Technical Skills in Denmark (ANTSdk) Rating Form. Since the interprofessional course will be continued until the end of the semester, the rating the videos is still ongoing process, so abstract includes preliminary data and results of randomly selected eighteen videos from first three weeks of the course.

### **Results & Discussion**

According to the preliminary data, 55.5 % of interprofessional teams had higher scores on situational awareness category, 28.0 % of teams had higher scores on leadership category 11.0 % of teams had higher scores on teamwork and 5.5 % had higher scores on decision making category. The results of this study might raise students' awareness related with the importance of non technical skills and their contribution to patient care. Moreover, the results of this study might help educators to get understanding about students' basal nontechnical skills performance in order to promote learning facilities.

## Evaluation of novel chest compression method with the use of a high fidelity neonatal simulator

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

### Authors

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### Introduction & Aims

The ability to perform high quality chest compressions is one of the basic skills that should be performed by medical personnel, especially paramedics. The European Resuscitation Council guidelines on neonatal resuscitation indicate that chest compression should be carried out using one of two techniques: two fingers (TFT), consisting of two fingers of one hand perpendicular to the chest; two thumbs (TTHT), where the other fingers encircling the patient's chest and provide support for the chest. However, both techniques have their advantages and disadvantages.

The aim of the study was to evaluate a new chest compression technique developed by Smereka & Szarpak during newborn resuscitation performed by medical students.

### Methods

The study involved 45 medical students who were not yet trained in infant or neonatal resuscitation, and have not performed any clinical or simulation resuscitation. Prior to the study, they participated in a 2-hour training in neonatal resuscitation, including physiology, neonatal pathophysiology, as well as a discussion and instruction on chest compression techniques recommended by the ERC. In addition, a third technique of chest compression, consisting of two thumbs perpendicular to the chest to form an extension of the forearms (nTTT; Figure 1) developed by Smereka & Szarpak, was demonstrated to the participants. Then participants took part in a 30-minute practical training during which, under the supervision of an instructor, they performed cardiopulmonary resuscitation with the use of three compression techniques. Torg® S2210 Tetherless and Wireless Full-term Neonatal Simulator (Gaumard Scientific, Miami, FL, USA) was used to simulate a newborn requiring resuscitation.

### Results & Discussion

The chest compression rates for the studied chest compression techniques varied between 133 [IQR; 122-139] for TFT, 118 [IQR; 115-122] for TTHT, and 110 [IQR; 110-125] for nTTT. The median compression depth with TFT, TTHT and nTTT was 27, 42 and 41 mm, respectively. The degree of full chest recoil was 94% for TFT and nTTT and only 29% for TTHT. In all three techniques, the correctness of chest compressions ranged from 98 to 100%.



The results show that the methods recommended by ERC (TFT and TTHT) have both advantages and disadvantages. The TFT compression technique, compared to TTHT, is worse for the depth of chest compressions, however, the chest relaxes much better. In the case of the evaluated nTTT technique, it is a combination of these techniques so that both the depth of compressions and the degree of chest recoil are optimal.

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SOCIETY FOR  
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## Experiences of in situ simulation in the emergency department on night shifts

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### Authors

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### Introduction & Aims

In-situ simulation is well established in medical education, being used from everything from assessment to human factors training. In emergency medicine, in-situ simulation has been used for many years to try and practice skills and understand human factors in teams better. With ever increasing patient numbers presenting through the doors of emergency departments, training and learning has become a challenge. This work will look at the experiences of doing in-situ simulations with the staff on night shifts.

### Description

We already have established in-situ simulation training weekly within our department, typically on a Monday in the paediatric emergency department and Wednesday in the adult emergency department. There are ad-hoc simulations around this as well. The whole team from nursing and medical students, through to senior doctors and nurses get involved. What we have started doing, is running simulations at night times to test the systems in place within the emergency department at night. We describe the first two of our simulations that occurred and the challenges of trying to enable them to happen along with strategies to overcome this. Scenario 1 was a trauma that presented at 6 am in the morning. Scenario 2 was a hanging in the emergency department toilets at 4 am.

### Discussion

Scenario 1 was pre-alerted via our red phone, and a paramedic crew brought in the simulated patient. The main focus for this simulation was getting staff to familiarise themselves with how to manage a trauma patient, bearing in mind we are not a major trauma centre. Scenario 2 the cleaners started the scenario by pulling the emergency call bell. The focus of this sim was how to manage a cardiac arrest in a small space. The positives included, good learning opportunity, was nice to be learning at night time and I never knew we had a toilet there. Negatives included people being unsure of the purpose of the simulation. The department learned that at night time it was unclear who was to respond to the emergency bells. Strategies to enable simulations to happen overnight include: senior nurses allocating staff to become available for the simulations, aim for a specific time in the night for it to happen, thus allowing staff to be freed up. Junior doctors will also be allocated for the simulation. It is clear in our early work this can be a valuable learning opportunity even on a night shift.

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SOCIETY FOR  
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## **Exploring simulation on a countrywide scale: a realist evaluation of the mobile skills unit**

**Format:** ePoster Presentation

**Topic:** Center Administration and Program Evaluation

### **Authors**

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### **Introduction & Aims**

Enabling access to simulation based education for health care practitioners, irrespective of their professional background, workplace context or geographic setting is challenging and complex. Within a backdrop of a National Strategy for Clinical Skills and Simulation Based Education in Scotland, research is underway to explore the questions; what has worked, for whom, how and why, in respect of a mobile skills and simulation vehicle in operation since 2009 in NHS Scotland intended to support the clinical skills training and education needs of the Scottish workforce.

### **Methods**

Realist Evaluation is a theory driven approach to research studies involving the exploration of heterogeneous contexts, mechanisms and outcomes of complex interventions, and is increasingly advocated in health and social care, and education research. Documentary analysis, field-trips, and semi-structured interviews have been employed to gather data from a range of perspectives and people. This includes faculty, simulation participants and stakeholders and uncovering and exploring the multifarious nature of this national simulation program in diverse geographic, professional and clinical contexts.

### **Results & Discussion**

This mobile simulation vehicle has achieved longevity in comparison to similar UK based exemplars. An analysis of retrospective data collected since its launch confirms in line with proposed outcomes, there has been reach throughout geographic areas, particularly in remote and rural locations. The training delivered focused on high risk, low frequency events, consistent with a training needs analysis. Simulation use is primarily by medical, nursing and paramedic staff proportionate to the makeup of the NHS workforce.

However the heterogeneity of contexts and causal mechanisms for success are manifold and impact upon capacity and sustainability. Exploring the variability of outcomes from this program through a theoretical lens such as Lahlou's Installation theory is deepening our understanding of the elements which support or thwart this simulation intervention including infrastructure, organisational, interpersonal and/or individual factors. This in depth interpretation is critical to the review and enhancement of mobile simulation and provides new knowledge that is of value not only for NHS Scotland and its workforce, but also internationally, where there is limited rigorous research in this field.



SOCIETY FOR  
SIMULATION IN EUROPE

## Eye tracking to assess multiprofessional situation awareness of a simulated PPH management

**Format:** Oral Presentation

**Topic:** Assessment using Simulation

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### Introduction & Aims

The management of postpartum hemorrhage (PPH) is an emergency requiring the intervention of several professionals. The eyes are the reflection of the cognitive processes involved in emergency situation. Visual behavior is an aggregate of learning reinforced by profession and experience. It is the support of Situational Awareness (SA) which is a cognitive system that links the physician's visual perception to his mental representation of a situation. We dissociate the SA into 3 levels (SA level 1: perception, SA level 2: comprehension and SA level 3: anticipation).

The aim of this study is to compare the visual behavior and the related level of SA of physicians from two different specialties—Anesthesiologists (AR) and Obstetricians (GO)—faced with the same situation of simulated PPH.

### Methods

The visual behavior of AR and GO was analyzed by an eye-tracking device when viewing a simulated PPH video. The scenario was a severe PPH complicated by a state of hemorrhagic shock. Heat maps were extracted at different times during the management. Regions of interest (ROI) were previously defined on the video. Associated number of fixation (NBF) and the fixation duration mean (FDM) were measured and compared between groups by Wilcoxon test. SAGAT (Situation Awareness Global Assessment Technique) questionnaires were administered during the viewing to compare the level of SA between our groups by ANOVA. The significance is retained at 5%.

### Results & Discussion

30 AR and 32 GO were included. Heat maps highlight a different distribution of visual attention between specialties (Figure 1). Statistically, GOs looked more often and longer the ROIs corresponding to the perineal area, blood loss, obstetricians and his equipment. While MARs looked more closely at the patient's vital parameters (heart rate, blood pressure, respiratory rate and ECG pattern). The level of SA is significantly higher in AR group ( $67 \pm 7\%$  vs.  $60 \pm 11\%$  in GO,  $p < 0.05$ ). Levels 1 (Perception) and 3 (Anticipation) are significantly higher in AR than in GO group (respectively SA 1:  $71 \pm 11\%$  vs.  $64 \pm 13\%$  and SA 3:  $72 \pm 10\%$  vs.  $61 \pm 16\%$ ,  $p < 0.05$ ).

ARs and GOs engaged in the same clinical situation develop different behavior and visual attention. These differences in integrated perception reflect a different cognitive functioning resulting in a difference in SA. We need to optimize our professional communication to facilitate the transfer of relevant information between professionals and to construct a group SA.

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SOCIETY FOR  
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## Faculty development for simulation technicians - The Role of The Stooge

**Format:** ePoster Presentation

**Topic:** Faculty Development

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### Introduction & Aims

Faculty development courses for facilitating and debriefing have been developed and refined in simulation centres in the UK. These mainly attract clinical staff, but while courses are not limited to clinicians, this may seem an intimidating environment for a simulation technician to learn their role as faculty.

The role of the simulation technician in simulation based education (SBE) is evolving, and varies significantly. There are pockets of development in creating a structured framework for a technician qualification, but nothing formal to date. This workshop aims to provide a training opportunity for technicians in a specific faculty role - the role of the stooge.

### Description

The workshop will be a two hour session, where a series of scenarios, with a technician playing the stooge, will be observed and debriefed.

An expert facilitator, and a technician will co-facilitate the debrief. Peers will critique performance using an assessment tool.

The workshop will have defined objectives, and scenarios will be chosen to achieve these.

A pre and post workshop evaluation of knowledge and confidence re the stooge role will be analysed.

Objectives:

1. Suggest communication techniques with faculty during scenarios
2. Signposting to courses for basic clinical skills
3. Provide a basic understanding of the clinical role
4. Suggest realistic tasks to occupy time in scenario
5. Signposting to technical troubleshooting courses
6. Opportunity to develop debriefing skills with a group of peers

### Discussion

In a recent poll of technicians (n=66), 81% of respondents replied that they often played a clinical role in scenarios, despite not having a clinical background.

This can be challenging for simulation technicians, and for other faculty. An experienced and effective stooge can help keep a scenario on track, give information not available from the simulator, and communicate with other faculty, taking cues through an earpiece. The stooge is also familiar with the layout and equipment available in the centre.

For a clinician playing the stooge role, the clinical tasks are second nature, but for someone without that background,

this poses challenges:

- Feeling self-conscious
- Communicating with faculty whilst carrying out procedures (cognitive overload)
- Unfamiliarity with clinical procedures
- Uncertainty of what to do voluntarily
- When is it ok to say "I can't do that"?

Impact:

It is hoped this workshop will increase technician's confidence in playing the stooge role, and be the first step to a professional development workshop as part of a larger framework.

## Formal versus informal introduction

**Format:** ePoster Presentation

**Topic:** Faculty Development

### Authors

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### Introduction & Aims

Prior to commencing simulation training participants are orientated to the room, equipment and mannequin (Burns 2015). The pre briefing is useful in delivering high fidelity simulation. Nicklin's (2016) survey showed there are a wide range of simulation technician responsibilities. Only 11.5 % of simulation technicians have a teaching qualification and yet they carry out this extremely important briefing with no standardised approach.

Does the style of introduction to the simulator and room given by the simulation technician influence the feelings of course participants?

### Methods

To ensure the consistency and reliability of results each introduction was delivered by the same technician following the same two pre written scripts (formal and informal).

Participants were given a questionnaire after the introduction. Each questionnaire contained qualitative and quantitative questions.

1) On a scale of 1-5, 1 being extremely nervous and 5 being not nervous at all.

How do you feel about participating on today's course? (Please circle)

1 2 3 4 5

2) Do you feel like this is a safe place to learn?

Yes or No (Please circle)

3) List three words that describe your feelings regarding today's course?

### Results & Discussion

In the initial research phase a small research group contained 12 medical students, 6 in each group. The mean score was 2.2 out of 5 for the informal introduction and 2.6 out of 5 for the formal introduction. All 12 participants in the initial phase of the research study felt like they were in a safe learning environment. The participants who were in the informal group reported feeling nervous (1), anxious (4), excited (4), intrigued (2), apprehensive(4), curious (1) and intimidated (1). The participants who were in the formal group listed poor knowledge (1), unprepared (1), anxious (1), apprehensive (3), excited (2), nervous (3), trepidatious (1), outnumbered (1), learning (1), self management (1), insight (1) and unsure (1).



In the initial small research studies undertaken the group who received the informal introduction reported feeling more nervous (2.2 out of 5), however interestingly they used more positive language to describe how they were feeling. The group who received the formal introduction reported feeling less nervous (2.6 out of 5), however they reported less positive feelings than the other research group. Further research of a larger sample size is required and will be undertaken to ascertain if there is a correlation between the style of the introduction given by simulation technicians and the feelings of course participants.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Foundation Programme for Anaesthesia/Recovery Room Care for Nurses/Midwives – Is Simulation workshop beneficial to their learning experience? An evaluation**

**Format:** ePoster Presentation

**Topic:** Center Administration and Program Evaluation

### **Authors**

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### **Introduction & Aims**

The College of Anaesthesiologists of Ireland in collaboration with the Trinity College Dublin and the National Clinical Programme for Anaesthesia has been running a Foundation Programme for Anaesthesia/Recovery Room Care for Nurses/Midwives since 2016, with the aim of facilitating registered Nurses/Midwives to enhance their knowledge, skills and competence in providing safe quality evidence informed care to patients in the perioperative setting. One of its main objectives is to provide Nurses/Midwives with the knowledge and clinical skills required to function competently as Anaesthesia/Recovery Room personnel. A simulation workshop is one of the learning stations required to complete the programme. The aim of the current evaluation is to ascertain whether the learning objectives, content and methods of delivery are relevant to participants taking part in simulation.

### **Methods**

The simulation workshop consists of two critical care scenarios relevant for the Anaesthesia and Recovery Room nursing practice. Participants are expected to activate the patient management, call for help and continue to provide assistance to the anaesthesiologist throughout the critical event. Each scenario is followed by debrief which is led by a Nurse Simulation Lead with both Anaesthesia/Recovery Room and Train the Trainer simulation facilitation background. Participants are asked to complete a post simulation feedback form with 8 statements using a 5-point Likert scale where 1 = strongly disagree and 5 = strongly agree.

### **Results & Discussion**

A total of 5 simulation workshops were conducted over the period of time 2016 – 2018 for a total of 253 participants. Participants scored the simulation workshop as highly relevant to their learning (Q2), training (Q3) and practice (Q4) needs (Table 1). Satisfaction scores (Q7) were also high. Participants agreed that participation in the simulation workshop would change their future practice (Q8). In the free text comments, participants identified the learning environment, non-judgmental debrief, experiential learning and crisis resource management workshop as aspects of the workshop that they liked most. Our conclusion is that the addition of simulation to the Foundation Programme for

Anaesthesia/Recovery Room Care for Nurses/Midwives was followed by excellent 'reaction' from participants (Level 1 Kirkpatrick learning).

Conflict of interest: None

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SOCIETY FOR  
SIMULATION IN EUROPE

## **From rehearsal to reality – how are junior doctors using their simulated experiences in their future practice?**

**Format:** Oral Presentation

**Topic:** Center Administration and Program Evaluation

### **Authors**

Jennie Higgs	NHS Lothian
Chris O'Shea	NHS Lothian
Nathan Oliver	NHS Lothian
Joe Roberts	NHS Lothian

### **Introduction & Aims**

Junior doctors in their second year of training in Scotland (known as FY2 doctors) now take part in a national simulation programme. This programme focuses on challenging communication scenarios aligned to their curriculum. The Foundation Programme curriculum closely mirrors the principles of Scotland's Chief Medical Officer's vision of Realistic Medicine. However, local research has found FY2 doctors do not feel confident or comfortable in discussing core parts of the Realistic Medicine agenda with patients and colleagues.

South-East Scotland served as the pilot centre for evaluating the national FY2 simulation programme in 2017-2018. Our aims were to gather information regarding whether participants felt they were utilising the learning from the course in their day-to-day work. Participants in simulated activities often only provide feedback immediately following a course. We introduced follow-up questionnaires 3 months after they attended to capture self-reported data on the attendees' perceived impact of the course on their practice.

### **Description**

Over 2017-2018, 171 FY2 doctors rotating in South-East Scotland attended a half-day session comprising of four scenarios: being assertive under pressure, recognising vulnerable adults, dealing with anger and complaints, and discussing end of life care. With informed consent, we emailed participants three months after the course. We invited them to complete a survey which included free-text responses specifically asking for examples where they had used the course in their practice. We then asked participants to appraise how this went, and whether they would have done something differently prior to attending the course.

### **Discussion**

62 participants completed the three-monthly follow up survey. The majority provided concrete examples of when and how they had used learning from the course in their practice. The examples closely matched the learning objectives set out at the training. Participants felt more able to have conversations aligned to the principles of Realistic Medicine. Specifically, they felt better prepared to have conversations around shared decision making and personalised patient care. Thematic analysis identified participants as feeling timid or nervous when facing these scenarios previously. Participants most frequently applied the skills learned on the course to conversations around end of life care and resuscitation.

We are pleased FY2 doctors feel empowered to make care more patient centred as a result of attending the training. They were able to provide meaningful examples of taking their learning forward. Following the success of this pilot study, the 2018-2019 national evaluation has elected to adopt this approach.



SOCIETY FOR  
SIMULATION IN EUROPE

## Highly realistic clinical simulation as a catalyzer of structural and organizational changes: design and transition to a new PICU

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

### Authors

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### Introduction & Aims

Designing, building and transitioning to a new workspace is a complex process and a significant challenge in terms of safety, quality of care and experience for patients, families and professionals.

In June 2018 a new PICU was inaugurated in our center, after a design project that had started more than two years earlier. The most important structural and functional change was the change from a common open space to 2 areas with individual rooms.

The aim of this work was to use highly realistic clinical simulation as a design and safety analysis tool in the planning of the new PICU, as well as an accelerator in the transition process to the new workspace.

### Description

The activity was designed and executed jointly by the Sant Joan de Déu Simulation Program and the Boston Children's Hospital Simulator Program. A working group was set up consisting of healthcare workers, clinical simulation experts and engineering professionals.

The size and functional design of the individual boxes, the analysis of the work processes and the training of the professionals to work on the new equipment were identified as critical elements of the project.

Simulation sessions were carried out in 3 phases:

In the first one (2016), during the period of architectural design, the minimum size of the box was determined, as well as the visibility and critical elements of the internal distribution of the equipment. For this purpose, highly complex simulation scenarios were executed in real-size spaces built with prefabricated plates: cannulation and entry into ECMO, resuscitation, serious incident in adjacent and non-adjacent box patients.

In the second phase (2018), once the PICU was built, critical work processes were tested and adapted through simulation: preparation and administration of medication, communication between professionals, alerts, organization of professionals in critical situation and movement of complex patients.

In the third phase (2018), all professionals in the unit attended specific simulation sessions for training before working in the new spaces.

### **Discussion**

High realism clinical simulation is a very useful methodology to help design safer work spaces and procedures, and to facilitate the process of change. It allows the participation of professionals of different profiles, who share their visions based not on predefined ideas, but on experiences lived through simulation.



SOCIETY FOR  
SIMULATION IN EUROPE

## **How does a simulated ward round change beliefs on technical and non-technical skills: an interprofessional comparison**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

Chris Schnieke-Kind	NHS Lothian
Jennie Higgs	NHS Lothian
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### **Introduction & Aims**

Doctors, nurses and pharmacists must work together effectively to provide high quality care. There are few opportunities for interprofessional learning at undergraduate level. University of Edinburgh (UoE), in collaboration with NHS Lothian (NHSL), have developed an innovative interprofessional simulated ward round for UoE final year medical and nursing undergraduates and NHSL pre-registration hospital pharmacists. Our aim was to understand what these respective disciplines thought were the most important technical skills (TS) and non-technical skills (NTS) for ward round participation, before and after our intervention.

### **Description**

We ran 45 high fidelity ward rounds with simulated patients followed by a 40 minute debrief. This was delivered to 199 medical students, 28 nursing students and 8 pre-registration pharmacists.

We asked all participants to rank what they had thought were the 3 most important TS and NTS for proficient ward round practice prior to the simulated ward round and what they now thought having completed it. TS were: dealing with sick patients, dealing with phone calls, inpatient prescription (IP) tasks, writing in patient notes, requesting investigations, developing a job list, discharge prescription tasks. NTS were: prioritisation, understanding of patient background, multitasking, making clinical decisions, dealing with hierarchies, listening to the patient, delegating tasks. For all professional groups rankings prior to and following the ward round were analysed.

### **Discussion**

Medical students showed a shift in TS from ranking individual practical tasks, including writing notes and IPs, to developing a job list to co-ordinate/delegate tasks. A shift in NTS was also observed. Emphasis changed from single, specific tasks towards task management, prioritisation and delegation.

Nursing students showed no shift in choosing TS, though there was some increase in the ranking of the importance of maintaining a 'jobs list'. There was a shift in NTS which was closely mirrored the medical students, away from single-task related skills towards those focusing on broader management.



Finally, pre-registration pharmacists displayed a shift away from 'multitasking' towards 'prioritisation', suggesting a greater focus on single tasks than the management of many.

These shifts may reflect participants being challenged to act up into their prospective roles. We suspect these changes reflect their realisation of the need to move towards a co-ordinated, collaborative approach.

Our data supports the position that learners from three separate professions can be taught together. Having the opportunity to rehearse skills in a safe and supported environment can lead to a real shift in understanding.

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SOCIETY FOR  
SIMULATION IN EUROPE

**How helpful are nursing and medical students at the very beginning of their professional education?  
Setting the first scene via interprofessional simulation.**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

**Authors**

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Cigdem Yucel	Asst Prof
Gulten Koc	Asst Prof
Melih Elcin	Prof

**Introduction & Aims**

Ultimate goal of health care providers is to help people with health problems by using the science and the art of their professions. Health care professionals must be able to show interest, sensitivity and understanding to the need of every individual in order to provide a quality patient care. The purpose of the study is exploring how helpful are the nursing and medical students who have limited professional knowledge, attitude and skill at the very beginning of their professional education.

**Methods**

This study was designed as qualitative research. The study has been conducted with novice nursing and medical students who participated in interprofessional simulation within the context of interprofessional course in 2018-2019 Fall Semester. In order to get students spontaneous reactions as much as possible, they were not informed about the aim related with their helping attitudes prebriefing of simulation. After simulation sessions two researchers watched the videos simultaneously and analysed whether the students recognized need for help of the patient and how they managed the helping situation. Content analysis will be used for analyses of data. Since the interprofessional course will be continued until the end of the fall semester, the coding the content is still ongoing process, so abstract includes preliminary data and results of randomly selected eighteen videos from first three weeks of the course.

**Results & Discussion**

According to the preliminary data, novice nursing and medicine students were very careful about patient's need for help and demonstrated willingness to help to the patient even though they are at the very beginning of their professional education. Results with codes and themes of this study might make important contributions to gain deeper understanding about students' behaviour patterns of helping to the patient not only as a member of a profession but also as a member of a healthcare team. Furthermore, the results might set the first scene related with the students caring attitude which is crucial for guiding teaching strategies for developing professional values of healthcare professionals.



SOCIETY FOR  
SIMULATION IN EUROPE

## Hybrid Simulation for Competence Based Medical Education

**Format:** ePoster Presentation

**Topic:** Curriculum Development

### Authors

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Tbilisi State Medical University

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### Introduction & Aims

Introduction & Aims: The development of clinical competence and preparation of highly-qualified professional staff is the main purpose of medical education. Despite proper theoretical knowledge recent graduates find difficult to perform appropriate manipulations and procedures. Teaching Clinical skills has become a part of Tbilisi State Medical University curriculum since 2004 which aims to further develop students' clinical skills and competencies.

### Description

Description : The objective of our study was to evaluate the effectiveness of clinical procedures and OSCE results and compare the graduates' performance of the 2015-2016 to the 2016-2017 academic year.

In the 2016-2017 academic year Hybrid Simulation Method was used in order to review clinical cases and perform procedures using High-Fidelity Simulation at the same time. The program included the following courses: Heart and Lungs Auscultation (using Nasco Life/Form auscultation simulator), ECG interpretation (using ECG training manikin torso simulator), Arrhythmia Interpretation and Management (using SimMan simulator). Hybrid Simulation teaching was added to the syllabus of the 2016-2017 academic year. Clinical cases were reviewed and students' team work was evaluated considering their performance on interactive SimMan simulator using CBL program and acquired skills.

### Discussion

Discussion: A 12-Station OSCE was used for Students assessment which revealed that the 2016-2017 academic year students' results, who had practiced Hybrid simulation, were about 30% ( $p < 0.001$ ) better than the results of the previous year. Students indicated the advantages of Hybrid Simulation Method (using Likert Scale) that greatly helps to develop clinical competence.



SOCIETY FOR  
SIMULATION IN EUROPE

## **I am SPARTACUS? There is no 'I' in an expert team.**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

The paediatric emergency response team (PERT) is a multidisciplinary team comprised of skilled members who work together, under significant stress, towards the time critical common goal of stabilising critically ill children. Errors in healthcare are frequently due to factors such as ineffective teamwork and communication.(1) Moreover, a team of experts does not necessarily ensure an expert team.(2) Focus groups held with members of PERT showed an awareness of risk of error, risk to patient safety and high anxiety surrounding it. Team training has been used extensively in the military and aviation to enhance team working skills. Its use in healthcare is growing.(2) We designed a one day interprofessional team training course for PERT members with the aims of improving teamworking skills increasing participant confidence in their role in the team.

### **Description**

Simulated Paediatric and Anaesthetic Response to Assist Children's Urgent Stabilisation (SPARTACUS) is modelled on the teamSTEPPS model of effective teamwork.(3) Interactive workshops generate discussion of the contributing factors and the dynamics of effective teamwork, barriers to effective teamwork, and strategies to enhance teamwork. These concepts are further explored in simulated scenarios which challenge specific domains of the teamSTEPPS model – communication, leadership, mutual support and situation monitoring. Scenarios are followed by a focused debrief highlighting behaviours related to the underpinning domain. Participants included anaesthetic and intensive care doctors, paediatrics and emergency medicine doctors, and paediatric specialist nurses. Post course feedback was collected in the form of an anonymous questionnaire.

### **Discussion**

There were 12 participants on each course (pilot and 2 subsequent courses) with an equal ratio from each professional group. Feedback showed 100% of participants found the sessions useful, very useful or extremely useful for their practice. Simulation sessions were better received in the pilot course than workshop sessions, prompting reorganisation of workshops for subsequent courses. Satisfaction scores for workshops improved from 3.86 to 3.95/5. Free text answers were encouraging with participants stating they had gained confidence in their leadership and communication skills and felt empowered to speak up when they observe something that is not safe. Finally, 86.8% of all participants reported that their understanding of the roles, concerns and expectations of other professional groups within the PERT had improved.

Post course feedback suggests that SPARTACUS delivers on its initial aims of improving teamworking and confidence. It now runs biannually in our simulation centre and improvements continue to be made in response to feedback.

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SOCIETY FOR  
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## **Implementation of debriefing in intensive care units using the TALK© Framework.**

**Format:** Oral Presentation

**Topic:** Debriefing

### **Authors**

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### **Introduction & Aims**

Complex intensive care (IC) environments represent a patient safety challenge. Errors are frequent. Interprofessional communication within IC healthcare teams has been described as the main contributor to these errors (Donchin 2003). Several tools have been developed to fill the communication gap in healthcare systems. Clinical debriefing has been reported as beneficial both in teamwork and patient outcomes (Couper 2013).

TALK© is a framework for structured feedback and team self-debriefing. It facilitates reflection and guides short, constructive and non-judgmental dialogues after clinical situations, whenever new insights might be learnt.

The aim of this study is to analyse the impact of introducing the TALK framework for debriefing in two IC units of a Spanish university hospital. This study is part of a wider TALK research project funded by the European Commission under a Horizon 2020 MCSA-RISE grant.

### **Methods**

Interventional study. Setting: two specialized 12-bed IC units (medical and digestive) in a tertiary referral hospital. Debriefing was considered a non-mandatory multidisciplinary (all staff groups) phenomenon. The implementation comprised 1h training sessions, focussed discussions and distribution of materials (flashcards, posters). Ethical approval and informed consent were obtained.

Debriefing events were systematically registered following an interview with the team at the end of every shift. We also explored leadership and participation in debriefing episodes, improvement decisions agreed upon during debriefing and barriers encountered. Data were collected in 15-day periods for baseline and immediate follow-up. Additional follow-up

measurements are planned at 3, 6, 12 and 24 months.

## **Results & Discussion**

Debriefing is not a mandatory process in intensive care settings. However, the World Health Organisation recommends its use after tasks, shifts and events since 2009.

The intervention was well received by all professional teams. Many staff members welcomed the possibility of having practical and solution focussed conversations following a pre-agreed process.

Preliminary data have been collected and are being analysed at the time of submitting this abstract. Consideration of debriefing has undergone a rapid and significant increase in the immediate post implementation period, from 36.9% to 94% of shifts. Three month follow up data results will also be available for presentation at the conference.



SOCIETY FOR  
SIMULATION IN EUROPE

**Improving Bag-Valve-Mask (BVM) ventilation quality of 3rd year medical students using real-time simulation feedback in preparation for Entrustable Professional Activity (EPA) #12**

**Format:** Oral Presentation

**Topic:** Assessment using Simulation

**Authors**

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**Introduction & Aims**

BVM ventilation is critical to learn and master in medical school, however it is not always feasible to teach or evaluate BVM ventilation in real time with patients. The Association of American Medical Colleges (AAMC) now considers mastery of BVM ventilation imperative for medical school graduation as part of the EPAs. Simulation offers a unique, safe opportunity for medical students to improve their BVM ventilation technique as well as master (perform unsupervised) BVM ventilation as required for EPA #12.

The purpose of the research we present here is to investigate the ability to use simulation to objectively improve BVM ventilation in preparation for EPA (Entrustable Professional Activity) #12: perform general procedures of a physician. Our null hypothesis is there is no difference in BVM ventilation when comparing pre-treatment (Day 0) with post-treatment (Day 2) BVM ventilation data. Day 1 "treatment" is real-time BVM ventilation feedback from the mannequin.

**Methods**

3rd year medical students performed BVM ventilation three times using the Laerdal SimMan 3G during their Anesthesiology Peri-operative clinical clerkship. On Day 0 (baseline) they performed BVM ventilation for 2 minutes without feedback from the mannequin ("blinded"). On Day 1 they performed BVM ventilation while receiving real-time mannequin feedback displayed on a computer screen (rate, volume). On Day 2 they once again performed BVM ventilation without feedback ("blinded").

**Results & Discussion**

Preliminary results from our first 50 medical students is presented in the table. Using the paired two-tailed t-test, ventilation volume increased from 233.94 ml to 427.94 ml ( $p < 0.005$ ) after real-time simulation feedback. In addition, percent adequate ventilation (400-700 ml) increased from 20.4% to 60.0% ( $p < 0.005$ ) after real-time simulation feedback. Ventilations per minute also improved from 9.15 ventilations/minute to 10.5 ventilations/minute, however this was not statistically significant ( $p=0.383$ ). Students also reported increased confidence in performing BVM ventilation on patients after these simulation sessions.



Our preliminary results show using real-time simulation feedback can objectively improve BVM ventilation performed by 3rd year medical students. Thus, simulation is a useful tool to improve medical student BVM ventilation techniques as they prepare for EPA #12.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Improving physiotherapy students confidence in assessment and treatment in respiratory care using clinical simulation**

**Format:** Oral Presentation

**Topic:** Assessment using Simulation

### **Authors**

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### **Introduction & Aims**

During the course of the 4-year BSc (Hons) Physiotherapy programme, students are required to undertake 1000 hours of practice-based learning as a requirement for registration with the Health Care Professions Council (HCPC, 2017), and the Chartered Society of Physiotherapy (CSP, 2016). At present, there is a shortage of practice-based learning placements within the area of respiratory, both locally and nationally (ACPRC, 2017). Also students graduating do not feel confident in treating respiratory patients (Roskell & Cross, 2000) and are anxious about being on-call in respiratory (Bendall & Wa, 2015). During practice-based learning, students are required to complete a competency-based booklet that includes respiratory techniques. Due to the shortage of respiratory placements, it is important to identify another clinical experience that would enable students to complete their required respiratory techniques and increase their confidence.

The aim of the programme was to investigate whether simulated respiratory care teaching can impact upon confidence levels of Level 4 Physiotherapy students, and does simulated respiratory care teaching allow for completion of respiratory competencies.

### **Description**

Prior to the session, students were required to undertake pre-reading regarding assessment and treatment. Teaching consisted of a review of respiratory techniques, followed by case studies regarding simulated respiratory assessment and treatment. The case studies utilized the patient simulator, SimMan (Laerdal, 2018). Mannequins are often used in Clinical Simulation as a patient substitute (King et al, 2016).

The Association of Chartered Physiotherapists in Respiratory Care On-Call Questionnaire was used to assess confidence in patient assessment and patient treatment before and after the clinical simulation session regarding assessment (15 questions) and treatment (12 questions) on a 5 point Likert scale.

Students confidence in patient assessment (mean improvement=11.7, SD=6.2) and treatment (mean improvement=11.2, SD=4.0) skills increased following the teaching session. All students completed the 3 competencies required.

### **Discussion**

The use of simulated respiratory care teaching improved the confidence of Level 4 Physiotherapy students in assessment and treatment techniques, and allowed for the completion of respiratory competencies prior to graduation. At present Clinical Simulation cannot replace clinical hours gained from clinical placements (CSP, 2016). However, due

to the lack of respiratory placements available for Physiotherapy students both locally and nationally, the use of Clinical Simulation for teaching and assessing competency in respiratory assessment and treatment skills amongst Physiotherapy students' needs to be explored further.

## Improving reaction times in a two-scenario simulation session

**Format:** ePoster Presentation

**Topic:** New Technologies and INNOVATION

### Authors

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### Introduction & Aims

During the 2014-2015 academic year, the Department of Anesthesia and Intensive Care of the University of Medicine and Pharmacy of Tîrgu Mureș, Romania, started implementing a new methodology concerning teaching activities taking place in the Simulation and Practical Skills Center. The new format of simulation sessions consists of two simulation scenarios, each with its own debriefing. This change raised the question whether the new methodology does improve the involvement of students in the simulation process. The aim of this study was to prove that two-scenario simulation sessions improve knowledge assimilation.

### Methods

Video recordings of the simulation activities during the 2014-2015 academic year were accessed and assessed for this study.

36 student groups, totaling 250 students of the Faculty of Medicine, were included in the study.

The criteria used in assessing the level of active student participation were: duration until blood pressure measurement, duration until pulse oximetry, time to ECG lead installation, number of students donning gloves, use of stethoscope, need for teacher intervention, and time to first therapeutic intervention after the first alteration of the patient's status.

The data obtained were analyzed by comparing each monitored parameter between the two simulation scenarios. We used the Wilcoxon for paired samples and Chi-squared statistical tests.

### Results & Discussion

All the analyzed parameters, except the need for the teacher to intervene, displayed significant ( $p < 0.05$ ) improvements in the second scenario compared to the first one. Thus, shorter reaction times and higher student involvement were recorded.



SOCIETY FOR  
SIMULATION IN EUROPE

## Improving the quality of skills education - lessons learned from 5 years of e-learning data

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

### Authors

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Andrea Baker	NHS Education for Scotland
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### Introduction & Aims

Scotland was the first country in the world to implement a national strategy for clinical skills using simulation in 2007 (1). Clinical skills are seen as the 'touchpoint' of the service and simulation as an effective way to reduce variation in safe skills practice as evidenced in other high reliability industries. The Clinical Skills Managed Educational Network (CSMEN) is the national innovative organisational structure used to design and deliver quality assured simulation-based education to healthcare practitioners irrespective of their geographic location or professional background. E-learning resources for skills were developed from the priorities of the Scottish Government 2020 Vision for Health and Social Care and with input from a clinical skills training needs analysis of remote and rural practitioners. The hypothesis was that the skills resources would provide both prepared practitioners for face to face simulation-based events and reinforcement to minimise skill decay.

Our aims in this descriptive study were to:

- analyse the use of the resources over the past five years;
- identify challenges to learning from feedback; and
- explore new technological bridges to disseminate and support learning.

### Description

CSMEN has used a quality assured process to involve experts both in the topic area and in simulation to develop the online resources which are linked to aligned simulation-based learning opportunities using part task trainers and immersive simulation scenarios to build both confidence and competence.

Each resource blends workplace activities and assessments with opportunities for face to face simulation events.

Data such as how each resource was accessed, completion time, location and job/role were gathered over 5 years to analyse and improve the use of the resources in a blended approach to learning.

### Discussion

Lessons learned in improving the quality of the e-learning resources include balancing local ownership with the incorporation of international evidence. The diagram below shows the collaborative working between universities and

health boards used to enhance the quality of the resources.

Linking the e-learning with face to face simulation events has proved challenging; this has been partially overcome by enhancing the quality of simulation opportunities through the use of a mobile clinical skills unit managed by CSMEN. Future improvements will include the use of virtual and augmented reality to provide an additional bridge to learning.

#### References

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## **Informed insight: Experiences building a near-peer simulation training faculty**

**Format:** ePoster Presentation

**Topic:** Faculty Development

### **Authors**

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### **Introduction & Aims**

Near-peer learning has been shown to be beneficial to both learners and near-peer tutors (NPT).[1] NPT led sessions benefit from rapid rapport building with learners due to the relatability of tutors and their informed insight.[2] Simulation training in particular relies on good rapport with learners to create psychological safety.[3] At North Bristol NHS Trust we have developed a 'train-the-trainer' course to empower junior doctors to deliver postgraduate simulation training in a NPT role.

### **Description**

This one-day course covers the essentials of using simulation equipment, scenario writing, delivery and debriefing. The course has been designed to be accessible and relevant to junior doctors, whilst having minimal impact on study leave time and budget. Following the course, participants are invited to return as NPTs on upcoming simulation events for further faculty development.

### **Discussion**

Over the last 3 months we have trained 13 junior doctors, and feedback has been extremely positive. All participants stated they would recommend the course to a colleague, that their confidence to deliver simulation had improved, and that material was pitched at an appropriate level. We have been encouraged by these early results, and hope that our NPT faculty will play a valuable role in ongoing delivery of simulation education.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **Innovative action research in Cancer, Mental Health and End of life simulation**

**Format:** ePoster Presentation

**Topic:** Patient Safety / Quality Improvement

### **Authors**

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### **Introduction & Aims**

This study was undertaken to understand the barriers to learning about mental health co-morbidity in the cancer setting, and using an action research cycle to develop an inter-professional simulation based training intervention to address these barriers.

The aim was to design, develop, implement and evaluate the effectiveness of a series of innovative simulation based training programmes at the interface of cancer, mental health and end of life.

The effectiveness of this intervention in empowering staff to better assess and manage patients with cancer and at the end of life with mental health co-morbidity, was investigated using quantitative and qualitative research methods.

### **Methods**

A learning needs analysis was conducted across healthcare professionals working in cancer settings. Following this a thematic analysis was performed to design relevant inter-professional clinical scenarios involving cancer, mental health and end of life components. A series of simulation days were carried out with the effectiveness of the intervention being assessed qualitatively (anonymised feedback and post course focus groups) and quantitatively (using paired t tests for pre v post intervention measures of confidence, knowledge and attitudes to mental health co-morbidity).

### **Results & Discussion**

Results indicate (\*likely study completion n=75-100, currently >70 completed participants) that the intervention was highly successful in improving staff knowledge and confidence in the assessment and management of co-morbid mental health and end of life complications of cancer patients. There were statistically significant improvements to staff confidence and knowledge across professions, and clear though not statistically significant improvements to attitudes to mental health. Qualitative analysis including focus group thematic analysis confirmed the educational robustness of the programme and its utility in breaking down professional barriers and cultivating a shared understanding of the possible complexities of cancer care. This information will inform the continued action research in improving care in this clinical



field.

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SOCIETY FOR  
SIMULATION IN EUROPE

**Interactive visualisation, virtual and augmented reality to enhance situational awareness, contextual intelligence and cognitive retention**

**Format:** ePoster Presentation

**Topic:** New Technologies and INNOVATION

**Authors**

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**Introduction & Aims**

Key-questions: 1) Is visual storytelling enabling more situational awareness, contextual intelligence and cognitive retention? 2) Does the association between visual storytelling and the check-list "Name-Claim-Aim" facilitate situational awareness and teamwork?

Brain activity from thoughts, visualization, evocation of memories and emotions should be able to contribute to the learning process, mainly during the early stage of a simulation based program. Visualization can be linked in interactive ways to the learners to allow for the better use of the neural processes. Augmented and virtual reality technology is being used, enabling learners to interact with interactive videos reproducing realistic scenarios.

**Methods**

Learners in a simulation based program for Labor & Delivery clinicians are shown short dynamic videos: they are challenged to recognize a situation requiring rapid intervention, communication, knowledge sharing, decision-making and management of unforeseen events--taking into consideration critical contextual factors such as a lack of time, scarcity of resources and tools, a multitude of impactful factors. Learners are asked to follow the check-list "Name-Claim-Aim" in order to manage the crisis by coordinating the team roles and efforts. The interactive videos feature real situations within complex scenarios that present a "more than real" wealth of information: this is augmented and virtual reality in a mixed environment, that adds value to the individual cognitive maps by enabling a multilayer vision and some systems thinking.

All the actions performed are logged, allowing instructors to immediately identify errors and difficulties of the trainees. Such information can also facilitate an effective debriefing.

**Results & Discussion**

Even if this simulation-based research is in the early development phase, we can say that simulation environments like ours are rich venues for the learning process and for storing information into memories based on experiences (learning by doing).

We are currently working to introduce (by March 2019) non-invasive technologies to monitor patterns of neural activity during the program delivery, because the application of computational and quantitative behavioral approaches combined with functional brain imaging can reveal important information about the strategies employed by human brains to acquire, store, and retrieve information in a variety of tasks and settings. Functional changes in neural circuitry, associated with learning, occur best when the learner is actively engaged.

So far, the early findings (from June 2018) show that an interactive learning environment is an effective simulation tool

for Labor & Delivery, because it offers realistic scenarios that can be easily reconfigured to generate many different situations, including extreme and dangerous ones.



SOCIETY FOR  
SIMULATION IN EUROPE

## Interdisciplinarity applied in the clinical simulation

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

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### Introduction & Aims

**Introduction:** the exchange of disciplinary contributions from different areas of knowledge, aiming to extrapolate the simple juxtaposition of knowledge, is known as interdisciplinary. Interdisciplinary is fundamental in the work process once it enable interaction and integration between expertise, promoting transformations, and aggregating knowledge with the objective of solving problems.

**Aims:** to assess health care professionals' perception of the interdisciplinary relationship between physician-nurse during a simulated chest drain insertion procedure.

### Methods

**Methods:** this study uses a mixed method with a qualitative, exploratory and prospective and quantitative, descriptive approach. It was held in a University Simulation Center in Paris, France. The data collection took place in June 2017 and was developed in two stages: participation in a simulated chest tube insertion with a multidisciplinary team (MDTs), and the second was the completion of a data collection tool.

### Results & Discussion

**Results:** 32 residents and nursing students were enrolled in MDTs simulations to manage chest tube insertion. Median age was 27 [20; 30] and 86% were male. It was the first simulation session for 58% of these students. 91% said they hadn't previously performed or assisted a chest drain in a real patient. MDTs simulations are essential for 84% of participants to improve interdisciplinary practice. 89% said that teamwork and communication were improved. 86% found that technical skills were improved.

**Discussion:** The simulation fits into the development of skills for interdisciplinary work. This study found MDTs simulation to be effective in the development of interdisciplinary skills, improving communication, interaction, technical skills and the ability to change professional practice.



SOCIETY FOR  
SIMULATION IN EUROPE

**Interdisciplinary simulation based team training during the World Economic Forum (WEF) 2018 in Davos: What can military and civil medical forces learn from each other?**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

**Authors**

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**Introduction & Aims**

The World Economic Forum (WEF) annual meeting takes place every January in Davos, a small town in the Swiss Alps. At the WEF 2017 we proved that it is possible to operate simulation based team trainings with the involved military and civil medical forces during the ongoing event without disturbing the day-to-day duties of the health professionals and the course of events of the WEF.

While the trainings were a big success and popular with the participants, we recognized that military and civil forces to some extent had different approaches handling the scenarios concerning the application of non-technical skills, interfering with the teamwork within the scenarios.

During the WEF 2018 we wanted to identify strengths and weaknesses of the two different organizations and recognize what and how the two organizations can learn from each other.

**Methods**

The trainings took place on temporary military medical bases and involved civil and military healthcare professionals composed of emergency doctors, paramedics and healthcare trained soldiers. We simulated scenarios in the context of a mass casualty situation, which was followed by an in-depth debriefing.

During the scenarios, the participants experienced the approach to the scenario of their own and the other organization. In two different questionnaires, all participants were asked to assess the non-technical skills of the other organization. They had to declare which skills they would want to improve most urgent in the opposite organization. Furthermore, we asked them which skills they should assume from the others and let them identify the fields, where they can learn most from the other organization.

**Results & Discussion**

The civil forces as well as the military forces identified several possibilities of improvement by observing the opposite organization. Within the organizations there was an agreement concerning the strengths of the others and potential to catch up.

We described them and discussed the reasons for the differences. We pointed out how the organizations can learn from each other to improve their performance and bring them to the same level. This seems particularly important with regard to scenarios, in which they have to work together as one team in simulated settings as well as in real life.



SOCIETY FOR  
SIMULATION IN EUROPE

**Interdisciplinary simulation based team training during the World Economic Forum (WEF) 2018 in Davos: “Speak up” culture in military and civil medical forces**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

**Authors**

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**Introduction & Aims**

The World Economic Forum (WEF) annual meeting takes place every January in Davos, a small town in the Swiss Alps. At the WEF 2017 we proved that it is possible to operate simulation based team trainings with the involved military and civil medical forces during the ongoing event without disturbing the day-to-day duties of the health professionals and the course of events of the WEF.

While the trainings were a big success and popular with the participants, we recognized that military and civil forces to some extent had different approaches handling the scenarios concerning the application of non-technical skills, interfering with the teamwork within the scenarios.

During the WEF 2018 we aimed to investigate the reasons for those differences.

We knew that one of the most noticeable discrepancy was the application of the “Speak up”. That is why we wanted to dedicate some research on this important non-technical skill.

**Methods**

The trainings took place on temporary military medical bases and involved civil and military healthcare professionals composed of emergency doctors, paramedics and healthcare trained soldiers. We simulated scenarios in the context of a mass casualty situation, which was followed by an in-depth debriefing.

Within the scenario, participants had to care for the patient in three different areas: triage, immediate life support and stabilization for transportation.

In a questionnaire, all participants were asked about their personal “Speak up” culture, their personal problems with this non-technical skill and the impact of our trainings on the future use of “Speak up”.

**Results & Discussion**

As expected, we have been able to prove that there are obvious differences in the use of “Speak up” between military and civil healthcare professionals in Switzerland.

In our paper, we will present the differences in detail and point out the reasons for the different application as well as the

issues, which prevent a consequent application. Furthermore, we looked for strategies to implement the consequent use of “Speak up” in military as well as civil emergency organisations.





SOCIETY FOR  
SIMULATION IN EUROPE

**Interest of the Hi-Fi Simulation in the bleeding control training for law enforcement personnel: a prospective randomized controlled survey.**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

**Authors**

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**Introduction & Aims**

The police officers are exposed to a targeted threat as part of their missions. Each of them may be injured in service. In the event of a gunshot wound, massive haemorrhage is the leading cause of preventable death. It is therefore essential that the Law Enforcement Officers (LEO) master the use of an arterial tourniquet. The Committee for Tactical Emergency Casualty Care (C-TECC) provides specific international recommendations on the techniques to be implemented. Learning methods of survival care in a tactical situation within a civilian context still need to be improved. They are based on the principle of deliberate practice. They must integrate technical skills and the situation awareness. The main objective of this study is to compare the level of LEO's skills in the self-aid control of a massive bleeding with an arterial tourniquet, before and after completing two distinct teaching methods: procedural only and blended (procedural and Hi-Fi simulation) curricula.

**Methods**

A prospective randomized controlled monocentric study is currently conducted. This is a non-probabilistic survey: the population is recruited from the operational LEOs into the district of Seraing-Neupré (Liège, Belgium) (n = 90). First of all, all participants are pre-tested: MCQ on theoretical content, self-assessment questionnaire and Hi-Fi scenario. The tourniquet used is the CAT® (Combat Application Tourniquet - 7th generation). The technical evaluation grid has been validated by a committee of experts. After randomization, a control group does not benefit from any teaching activity as part of the study. The second group benefits from procedural training only (Module 1): theoretical and technical approach for 60 minutes. The third group follows a mixed simulation training (Module 2): procedural teaching (60 minutes) and simulation (90 minutes). Simulation training offers realistic tactical scenarios. Scenarios are debriefed using the method of the Center for Medical Simulation (CMS) and the Harvard-MIT Division of Health Sciences and Technology (HST), Boston, Mass., USA. The 3 groups are subjected to a post-test similar to the pre-test.

**Results & Discussion**

The one-way analysis of variance (ANOVA) test, the Student's T-test and the  $\chi^2$  test will be applied to the sample. A multivariate test and a multiple linear regression model will analyse the post-test. The results, discussion and conclusion

will be presented at the SESAM 2019 Congress in Glasgow.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Interprofessional Collaboration: how team simulation can improve safety for paediatric dental services**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

Life threatening emergencies during paediatric GA dental treatment occur rarely but the outcomes are potentially devastating. With this treatment taking place in a hospital setting rather than in dental surgeries, staff from acute and community settings are delivering this service in an unfamiliar environment.

An efficient and effective team response to rapidly evolving emergency situations is required and the dental team identified a need to assess their ability to respond to a variety of emergencies using immersive simulation. NHS Lanarkshire's clinical skills team supported the delivery of two half-day interprofessional in-situ simulation sessions focusing on the management of such emergencies to achieve this goal.

### **Description**

The community dental service authorised the cancellation of a full day of surgery and a total of 16 staff comprising anaesthetic trainees, dentists, theatre and dental nurses were released from clinical duties to attend. A pre course scoping exercise was performed to ensure the high fidelity simulation could run effectively within the clinical environment and a further risk assessment completed on the day to ensure safety.

A high fidelity paediatric manikin was used to deliver four emergency scenarios that may present in this specialty at University Hospital Hairmyres. Candidates were asked to use all equipment, consumables and drugs as necessary to fully test local processes during the simulation. The interprofessional faculty controlled and observed the scenarios remotely from an adjacent room then facilitated a comprehensive debrief after each scenario.

Candidates were then asked to identify their individual learning that they could translate into their clinical practice in the format of "take home messages". Additionally, an action plan for both the morning and afternoon session was formulated to address identified latent safety risks.

### **Discussion**

Some of the latent safety risks identified involved elements of the safety brief; emergency help procedures; outdated emergency guidelines; difficulty navigating emergency drug guides and unfamiliarity with emergency equipment location and its use. The action plans identified key individuals to take on specific tasks to highlight, reduce or eliminate these risks in the dental room.

Three months after the session a questionnaire was issued to evaluate a continuing impact on confidence levels, knowledge and whether any changes in practice had resulted. Confidence scores increased through all areas and several changes in practice had taken place which have improved patient safety.

**Interprofessional Education in Immediate Life Support training improves simulated patient related outcomes.**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

**Authors**

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**Introduction & Aims**

Resuscitation training is a core element of many undergraduate healthcare curricula. Standardised resuscitation courses, such as the Resuscitation Council UK's Immediate Life Support (ILS) course, are delivered providing healthcare learners with a structured algorithmic approach to managing the critically unwell patient. It is known from the resuscitation literature that every minute that passes whilst a patient is in cardiac arrest with a shockable cardiac rhythm the chance of survival decreases by 12-15%, with effective cardiac arrest management requiring a team-based approach

**Methods**

A retrospective analysis of video recorded data collected from a study observing the differences in overall team performance post intervention of either Interprofessional or Uniprofessional ILS courses for medical and nursing students. Analysis focused on the time taken to identified 'time critical' points within the resuscitation, hypothesising that those who had undertaken the interprofessional training would be more efficient in team resuscitation leading to shorter time to critical intervention, thus potentially improving patient outcome.

**Results & Discussion**

The UPE trained teams confirmed cardiac arrest in a median time of 23.5 seconds from entering the room whilst the IPE trained groups confirming in 22 seconds ( $P=0.527$ ). The IPE trained group commenced CPR a median time of 10s faster than the UPE trained group ( $P=0.206$ ).

Similarly, the IPE group performed the first 'rhythm check' (a process involving connecting the mannequin to the defibrillator whilst CPR was ongoing) in a median time of 87s, compared to the UPE group median time of 116.5 seconds ( $P=0.006$ ).

The time from entering the room to delivery of first shock in the IPE group was a median of 106.5 seconds compared with the UPE group 158 seconds ( $P=0.005$ ). Analysis of the 'delay' between rhythm check and defibrillation showed that there was a median delay of 21 seconds in the IPE group compared to 41.5 seconds in the UPE group ( $P=0.005$ ).

**Conclusion**

Interprofessional education as a pedagogical approach to training has been on the increase over the past number of years, as educators realise that healthcare occurs in teams and to train effective teams all members must train together. This study has shown that, while in a simulated setting, the benefits of interprofessional team training can have an effect and potentially improve patient outcome.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Interprofessional High Fidelity Simulation in Emergency Medicine in Padova: a joint project between the Emergency Department and the Department of Medicine**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

In April 2018 the Emergency Department of Padova (ED) and the Department of Medicine of Padova (DIMED) teamed up to build an interprofessional HF simulation programme for all the ED personnel.

The project was quite ambitious due to the number of participants and the constraints imposed by the work shifts.

Nevertheless, a programme was planned and started in December 2018. In this work we will illustrate the development of this project and its first outcomes.

### **Description**

The ED of Padova is the biggest and busiest ED of the province of Padova, with almost 85000 patients per year and employing 45 nurses, 24 physicians and 40 residents of the Emergency Medicine School of the University of Padova. To have all of them simulate more than once per year required a careful planning. Finally, a 4 days programme repeated each season was devised; during each day 6 teams simulate, 3 in the morning and 3 in the afternoon, with each team playing one high-fidelity scenario and spectating the other two.

Teams are composed by 2 nurses, 1 physician and 1-2 residents, thus replicating one emergency room equipe. Each scenario is followed by a debriefing moderated by both nurses and physicians trained as facilitators.

A key aspect of the programme is that the shifts are planned so that the team simulating in the morning works in the afternoon and vice versa: this lets everyone simulate without hindering the ED activity. Furthermore the simulations count as CME, hence the trainees are more compelled to participate to the programme.

Due to the high number of daily patients, the simulation is not delivered in situ but in a room of the ER purposely fitted.

### **Discussion**

The first two seasons of the programme were a great success (figure 1A).

The trainees like the programme, are motivated and despite some initial scepticism, they now appreciate the opportunity offered by the scenario and the debriefing to enhance both their technical and non-technical skills and the team performance.

It's interesting to note that in the first season most of the participants appreciated to play the scenario itself, while in the second season they preferred the debriefing (figure 1B).

The trainers noticed an increasing commitment to the spirit of simulation, with the trainees being more willing to put themselves on the line, coping with the obvious limits of simulation during the scenario and open during the debriefing, getting past roles and hierarchies (figure 1C, 1D).



SOCIETY FOR  
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## Laparoscopy Simulation Training among Undergraduate Students

**Format:** ePoster Presentation

**Topic:** Curriculum Development

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### Introduction & Aims

The simulation based training is one of the main pillars of education in medicine. Current study curriculum in Slovenia does not offer any laparoscopic surgery skills to students. Therefore, each individual is foster to find his own way to receive first surgical experience. University Medical Centre of Ljubljana has a various history of laparoscopic surgery. In addition, Medical Simulation Unit offers free training among young residents and also senior year students of medicine. We developed a novel beginners course of laparoscopy (LPSC) to improve their knowledge and confidence in first steps before clinical practice.

### Description

We performed introductory classes of basics of laparoscopy for 5th and 6th year medical students. Classes consists of lectures and hands-on training. During the lectures, we introduced them to basic principles, instruments and LPSC tips and tricks. Lectures were given from Gynecology Residents and Specialist, who are daily performing LPSC procedures. In the second stage, we offered them individual practice in low-fidelity pelvi trainers and also on Training Simulator Simbionix (3D Systems Healthcare, Littleton, USA). The programme of training comprised two parts. Firstly, training in the two basic skills of "lifting and grasping" and "cutting" during which the students were introduced to the simulator environment. Secondly, one specific task/procedure on Simbionix, which offers various scenarios of laparoscopy. Student feedback was collected with questionnaire at the end of the training programme and after 1 year, when students already assisted at laparoscopic procedures. The training programme was rated highly, particularly improved confidence and decreased fear when entering Operating Theatre. Former students, now junior doctors kept returning to practice on simulators during their postgraduate training.

### Discussion

Over the last 3 years, 10 courses with 80 students were executed. Each course had 8 students. Students who applied to the course had nearly zero experience with laparoscopy. LPSC simulation training has proven to be effective in developing skills. Sustained training in our programme resulted in significant improvement in laparoscopic skills in all tested participants, regardless of prior level of experience. Overall, students were excited and requested these lectures to be incorporated in study curriculum before clinical rotations.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Learning and behavior change after a training program based on simulation to enhance bad news delivery**

**Format:** Oral Presentation

**Topic:** Center Administration and Program Evaluation

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### **Introduction & Aims**

In 2017 the Patient Experience Team of Sant Joan de Déu Hospital (SJDH) developed a Guide on how to deliver bad news based on professionals' and families' contributions. Professionals requested specific training to improve families' experience.

SJDH Simulation Program designed a two-part training program: a 5-hour workshop on relational styles based in Bridge Model and a 8-hour simulation session with professional actors. A debriefing after each scenario allowed participants to share their thoughts and feelings in a safe environment. We promoted deep reflection on different points of view and real difficulties, not the acquisition of a standard technique of communication.

Aims of this study are:

1. Evaluate the experience of the participants during the training program
2. Analyze the perception of learning after the course and over time.
3. Identify behavior changes of the participants in real situations.

### **Methods**

Levels 1-3 of Kirkpatrick's model were used as reference for assessment. Participants filled anonymous surveys at 3 different moments:

- Before the course.
- Immediately after the course: experience (level 1) and learning (level 2).
- 6 months after the course: learning (level 2) and behavior (level 3).

### **Results & Discussion**

In 2017 and 2018 we performed 4 editions of the training program with 69 multidisciplinary participants (78% women; 40.3% more than 15 years of clinical experience).

Experience (level 1): The mean of the scores in questions related to this aspect was 4.85 / 5.



Learning (level 2): Table 1 shows significant knowledges acquisition during the course and also significant maintenance 6 months later.

Behavior (level 3): The mean of the scores in questions about application of specific behaviors in real situations was 4.1 / 5.

In conclusion, training on how to give bad news based on highly realistic simulation scenarios is an experience well valued by participants, enables the acquisition of new knowledge that is maintained over time and facilitates specific behaviors in real situations.

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SOCIETY FOR  
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## Learning from serious incidents using simulation

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

### Authors

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### Introduction & Aims

The NHS defines serious incidents (SI's) as healthcare events where the human consequences or learning potential are so great a heightened response is justified. Over 500,000 SI's resulting in harm were recorded at NHS trusts in the 12 months to September 2018, with 1% of these resulting in patient death. Healthcare simulation has been shown to improve practitioner confidence, knowledge and skills (Hecimovich 2011, Jha 2001) as well as patient safety (Seaton 2018). A needs-assessment of our current foundation programme delivery identified a gap between current and desired performance which we felt could be filled by delivery of a simulation course based on SI's that occurred in our hospital. Evaluating the SI's that trainees are involved in (e.g. late recognition of sepsis) we could see that there were educational needs for which we thought simulation could be used as a tool to fulfil these requirements.

### Description

We approached the governance department of the trust to obtain permission to look at SI's from within the hospital. Scenarios were developed from real life anonymised SIs that had occurred within the trust in adult medicine, paediatric/neonatal medicine and obstetrics. Half day sessions were then run in each of these specialities within the simulation centre at Hillingdon hospital using a multi-disciplinary group of staff to undertake scenarios. Those not taking part were able to observe via SMOTS video recording equipment in a separate room. All members of the team then took part in group discussion and debriefing following each scenario. The focus of debriefing was on human factors and crisis resource management.

### Discussion

Several challenges needed to be overcome to run this course such as obtaining permission to utilise SIs in simulation with the subsequent collation and analysis of SI's to create scenarios. Despite having over 48 staff on our list of faculty it was also difficult to have staff released to facilitate these sessions. The sessions we have run have demonstrated that it is feasible to continue running this course and feedback has so far been overwhelmingly positive, both in terms of the running of the course as well as the content and outcomes.

We hope to continue running this course in the future with the aim of collecting objective evidence of its efficacy in changing staff behaviours and effectiveness of reducing SI's.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Low fidelity clinical simulation can significantly increase mental health staff confidence in assessing and managing medical emergencies**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

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### **Introduction & Aims**

Medical emergencies in psychiatric inpatient settings are common. Staff working within our main psychiatric hospital reported feeling ill-prepared to manage common medical emergencies. They also reported feeling intimidated by the prospect of attending a bespoke simulation centre for further training.

To address this, NHS Lothian developed the Medical Emergencies Assessment and Management for Psychiatric Inpatients (MEAMPI) programme. It is a low-fidelity simulation course, delivered on site, covering common medical emergencies within a psychiatric inpatient setting. It is multidisciplinary and open to all grades of staff.

We wished to assess staff attitudes and confidence in managing key medical emergencies before and after attending the training.

### **Methods**

Over 2017-2018 we held 10 MEAMPI sessions with 91 participants attending. The course comprises brief rehearsal of structured assessment and management of the unwell patient before running four simulated scenarios. Our scenario bank includes management of an attempted hanging, seizures, assessment following an opioid overdose, hypoglycaemia following electroconvulsive therapy, sepsis and cardiac arrest. We run the scenario in a 'pause-and-play' style, with a brief structured post-scenario debrief.

Participants were invited to complete evaluation forms immediately before and after each session. These consisted of free-text responses to questions on attitudes to managing medical emergencies, and five-point Likert scales assessing degrees of confidence in recognising, assessing and managing key medical emergencies.

### **Results & Discussion**

Two thirds of attendees had encountered medical emergencies in a psychiatric inpatient setting prior to attending the course. The most commonly described emotions when faced with emergencies were 'disorganised', 'panicked', 'calm', 'worried', and 'terrified'. Participants enjoyed the relaxed atmosphere of the course and commented favourably on the

lack of intimidating high-fidelity equipment.

Two-Sample T-Test comparisons of participant's confidence noted statistically significant increases in staff confidence in recognising medical emergencies, completing a structured medical assessment, and instigating appropriate management ( $p < 0.05$ , full data will be provided at the conference once we have run several more courses).

We found that staff were lacking in confidence in managing medical emergencies in a psychiatric inpatient setting. This is especially relevant as inpatients with mental illness are known to experience health inequalities including premature mortality. We have demonstrated a low-fidelity simulation course on assessment and management of common medical emergencies can significantly improve staff confidence in assessment and management of common medical emergencies.

Further research is indicated to evaluate whether the subjective perception of increased confidence in the learning environment translates to increased confidence and use of skills in clinical practice.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Low fidelity sim: bringing clinical skills to life**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

Within undergraduate medicine, clinical skills are often taught in isolation of context, in workshops or clinical skill tutorials. This may mean that when students are asked to perform these skills within a clinical environment, they are immediately out with their comfort zone. The authors aimed to evaluate the utility of low fidelity simulation embedded into curriculum orientated teaching sessions.

### **Description**

Over a two year period, at least one weekly session took the form of low fidelity simulation. One student was asked to take a history and perform an examination on a simulated patient (Resus Annie). They were expected to request examinations, prescribing medications/intravenous fluids and form a differential diagnosis, referring on to an appropriate speciality. This year we have embedded clinical skills within these simulation sessions. Should the student request blood tests, they were required to ask one of their colleagues to obtain them from a venepuncture arm. Likewise, if students required an ECG or an ABG to aid decision making, these skills were performed on the provided models. The decision to give intravenous medication or fluids meant a cannula was required to be sited, and if they identified the need for an accurate fluid balance then a catheter was inserted.

### **Discussion**

We propose that linking clinical reasoning and decision making to the performance of clinical skills early in the undergraduate medical curriculum has a number of benefits. Firstly, that repeated performance of a clinical skill in a simulated clinical environment will allow the student to be more confident in performing the skill within the actual clinical environment. Secondly, by allowing students to immediately visualise the results of their decisions to perform investigations and invasive procedures, we believe it may result in the students being more analytical, which could result in fewer unnecessary procedures; improving patient care and saving resources.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Making it "real": designing an evidence-based acute care simulation programme for final year medical students**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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The University of Edinburgh

### **Introduction & Aims**

Acutely unwell patients require high quality and timely care to reduce their risk of death. However, successive national reviews have demonstrated numerous deficiencies in the care of this vulnerable cohort whilst highlighting significant numbers of potentially avoidable deaths. The initial recognition and management of deteriorating patients is a critical responsibility of newly qualified doctors, but UK graduates consistently report feeling poorly prepared for this role.

Whilst Postgraduate Year 1 Doctors (PGY1s) report that undergraduate simulation-based education (SBE) equipped them with 'fire drills' for emergencies, such as the ABCDE approach, they still struggle with the complex and emotionally challenging nature of these situations. If simulation curricular are to truly 'bridge the gap' between education and clinical practice, they must go beyond simple rehearsal of acute scenarios; but, how do we mirror the stressful environment our graduates will face?

### **Description**

We developed an immersive SBE programme for the approximately 250 final-year students on the Edinburgh MBChB. The programme builds on both low-fidelity, and immersive simulation sessions in earlier years, as well as learning opportunities on clinical placements. It targets aspects of acute care that previous graduates had felt under prepared for by using scenarios designed to reflect key challenges faced by PGY1s.

The learning outcomes and content for each scenario was informed by a scoping review of the literature on transition and preparedness for practice. Tallentire's framework for 'understanding the behaviour of newly qualified doctors in acute care contexts' formed the foundation for scenario design, as the challenges identified by other studies in the review were consistent with this model. Six participants attend each session, undertaking three, 20 minute scenarios in pairs. Every scenario is followed by a 30-40 minute debrief facilitated by a multidisciplinary faculty. A summary of the scenarios and their mapping against Tallentire's framework is detailed in Table 1.

### **Discussion**

UK standards for simulation-based education recommend that programmes are developed in alignment with formal curriculum mapping or learning needs analysis, and then regularly reviewed to ensure their continuing relevance. We go beyond their recommendation to incorporate up-to-date, evidence-based clinical practice in course content and argue the importance of engaging with the available literature or undertaking new research, when developing programme

learning outcomes and scenarios. We have described how this process has moved us from simply rehearsing ABCDE and discussing generic non-technical skills, to scenarios focused on evidence-based learning outcomes and the real-world challenges facing newly qualified doctors.

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SOCIETY FOR  
SIMULATION IN EUROPE

**Managing the Soiled Airway: The effect of delivering a brief, targeted, multidisciplinary simulation of a rare but catastrophic anaesthetic event.**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

**Authors**

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**Introduction & Aims**

The potential for complications to arise whilst managing a patient's airway is well recognised by Anaesthetic Doctors and those who assist them. Whilst the much-feared "Can't Intubate, Can't Oxygenate" scenario is regularly drilled by anaesthetic teams, there are other equally catastrophic and yet more frequent events which hitherto have not lent themselves to high-fidelity targeted simulation training. Traditional airway simulation manikins cannot adequately reproduce the stress and urgency engendered by massive airway soiling. We delivered a targeted, in-situ training session for anaesthetic teams across the South West of England, using a Life/form® Suction-Assisted Laryngoscopy and Airway Decontamination (SALAD) manikin. Our aims were to demonstrate a range of de-soiling techniques, provide an environment in which participants could experiment with those techniques, and ascertain their preferred method for managing airway soiling in the future.

**Description**

A short, pre-session tutorial was produced to revise pre-operative risk assessment and modification strategies, in recognition that risk-reduction is the best defence against this complication. A pre-session questionnaire was completed by the multidisciplinary participants to gauge their prior exposure to (and training for) massive airway soiling. We also hoped to assess their priorities for management in an emergent aspiration event. Three different techniques for managing aspiration were demonstrated in a theatre setting, using the SALAD manikin: a traditional head-down and/or left tilt approach; the SALAD technique (DuCanto 2017), and; the oesophageal divert technique. The participants were invited to experiment with the described techniques, using the SALAD simulator (see figure). After this "play" time, a post-session questionnaire was used to gauge the participants' preferred approach to managing the soiled airway, and their assessments of the utility of this type of training.

**Discussion**

Aspiration of gastric contents was the single most common cause of death in a national audit of airway management complications (Cook 2011). Although rare, a soiled airway can be stressful for the anaesthetic team to manage and potentially devastating for the patient. Our survey data has demonstrated that, whilst prior exposure to airway soiling correlates to an individual's seniority, the majority of the anaesthetic team had not received formal training in its management. After simulation, the majority preferred the SALAD technique and all would recommend similar training to their colleagues.

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SOCIETY FOR  
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## **Maternity VR: preparing expectant parents for labour**

**Format:** Oral Presentation

**Topic:** New Technologies and INNOVATION

### **Authors**

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### **Introduction & Aims**

Childbirth is a unique and varied experience. Current antenatal preparation for parturients focuses on the practical aspects of labour and delivery, but does little to address environmental and experiential familiarisation and preparedness. A newly commissioned midwifery-led unit, which valued the contribution of environment, prompted a collaboration with The Hull and East Yorkshire Hospitals (HEY) Maternity Team, to develop a 360 degree virtual reality (VR) experience.

The aim was to better prepare expectant parents and pilot the feasibility of using VR at scale.

### **Description**

We used a 360 degree camera (Samsung Gear 360) to capture video of simulated birth experiences, in both standard labour ward and midwifery-led units. This included a general familiarisation and the following key aspects; birthing pool, bed, birthing ball, entonox and inclusion of birth partner. 100 expectant parents viewed the video on VR headsets (Oculus Go), during high throughput, multifunctional antenatal events. This was supported by a printed quick start guide. Data on usability, relevance and effectiveness was collected via questionnaire post event (fig 1).

### **Discussion**

Usability was high, with only 4% finding the headset clearly uncomfortable. This is higher than our experience in other settings and may reflect patient demographics i.e. generally young adults who may have less vestibular/ocular comorbidity and greater familiarity with VR the technology. Understanding of professional roles and the processes observed was high at 95% and 97% respectively. 84% report feeling better prepared for their birth experience and global assessment of use was high at 91%. Interestingly, 15% thought a flat screen video would have had the same impact.

Our experience suggests that effective 360 degree VR experiences can be delivered to large numbers of participants, instead of physical familiarisation with its inherent constraints. Only 3 headsets were used for this cohort. Success was

likely due a number of factors; anticipation of technical pitfalls, using the quick start guide; relevant, time limited content; adequate, trained support staff and a suitable VR platform. We used VR headsets at the lower end of the commercial spectrum, designed for domestic use. We suggest that higher specification technology is not required for this type of experience. The content was designed to be suitable for lower specification devices, utilising a bring your own device (BYOD) smartphone. We intend to pilot this option in future, using other experiences, as a platform for web-based distribution. This may increase engagement and access.

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## Medical simulation in macroscopic dissection: comparison of teaching methods

**Format:** Oral Presentation

**Topic:** Curriculum Development

### Authors

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### Introduction & Aims

A knowledge gap exists with regards to Pathology teaching of undergraduate medical students due, principally, to the elevated theory content of this subject in regards to the practical portion.

With the goal of reducing this gap, a macroscopic dissection workshop on simulated oncology surgical specimens was offered.

### Description

IFMSA students were offered a 1 hour macroscopic dissection workshop. Prior to the task, the students were provided with the same oral and written information with regards to how to perform the dissection of a neoplastic specimen, and they were split into 3 different groups according to the distinct additional information they were provided: still images (G1), video (G2), live viewing of a dissection performed by a pathologist (G3). At this point, the students individually performed the dissection of a handcrafted simulated surgical specimen made from 2 differently colored silicons (interior-neoplasia, exterior-healthy tissue) in a specific clinical scenario. An instructor assessed the activity using an OSCE checklist. The results were timed.

12 students participated in the workshop, and they were divided into groups of 4 individuals. The shortest average times to perform the task were observed for the participants of G3 (15'39"), followed by G2 (16'50") and, finally G1 (17'52"). Participants got higher ratings for their ability to perform the dissection in G2 (3.65) than in G3 (3.4) or G1 (3.1), who got

the lowest average rating. The participants' observations about the experience were recorded, and although 58% had previously witnessed a macroscopic dissection at university, they expressed greater understanding of the steps to follow (100%), the importance of resection margins (58%) and the satisfaction of completing a simulated scenario (33%).

## **Discussion**

- There was a high level of participation on the part of the exchange students from IFMSA (100%).
- Although the sample size was quite small, the live viewing variable was associated with a shorter completion time of the task.
- Likewise, the standardized video format may also lead to improvements in performance as opposed to viewing a randomized surgical specimen, which is what regularly occurs during practical rotations in Pathology Departments.
- While this is a procedure characteristic of Pathology specialists, acceptable uptake within the concept of a multidisciplinary working group was observed, favoring specialist understanding while dealing with a patient.
- The aforementioned tasks may improve knowledge and the medical students' perceptions of the pathologists and their daily work.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Midwives' experiences and professional benefit of a multi-professional full-scale simulation in Women's Clinic of Helsinki University Hospital**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

Simulation training has shown to be beneficial in teaching healthcare professionals and developing clinical practice and skills. It is also a safe and efficient way to learn the management of emergencies. In the field of obstetrics, midwives are trained to give women the best possible care during pregnancy and labor. The optimal and safe management of unexpected and rare obstetric complications and emergencies is of utmost importance.

The aim of our study was to evaluate midwives' immediate experience concerning the professional benefit of simulation training and their intention to make changes in the personal management of obstetric emergencies.

### **Methods**

The data for this study was collected during 2017. A multi-professional full-scale simulation training (FSST) with a high fidelity simulation mannequin was organized weekly in the Women's Clinic of Helsinki University Hospital (HUH). Obstetric emergency scenarios, i.e. shoulder dystocia, eclampsia, severe hemorrhage and resuscitation of a pregnant patient were used in training. All participants filled in a post-training questionnaire.

The questions included in this study were

- 1) Did you gain professional benefit, when participating in a FSST
- 2) Did you gain professional benefit, when observing a FSST
- 3) Do you plan to change your management of obstetric emergencies after this training

Answers were given on a scale from 0 (completely disagree) to 10 (completely agree). Numbers 8-9 were considered as "strongly agree" and numbers 1-2 as "strongly disagree". For this study only the answers from midwives were analyzed

### **Results & Discussion**

In total, the data consisted of 176 answers to questions 1 and 3 and 158 to question 2. The vast majority of midwives gained professional benefit both as participants (strongly agree 29,7%, completely agree 66,2%) and observers (strongly agree 27,8%, completely agree 62%). The majority of midwives also intended to change their management of obstetric emergencies after simulation training (strongly agree 35,4%, completely agree 41,7%). None of the participants experienced no benefit of the training and only few did not intend to do changes in their clinical management (completely disagree or strongly disagree 1,7%).

Based on our study the vast majority of midwives experienced FSST to be professionally beneficial. Even though the transition of new skills and changes in personal management of obstetric emergencies is difficult to measure, our results

indicate that as a result of simulation training, a strong intention exists.

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## **Mobile Academic-based Simulated Hospital experience (MASHe)- A unique in situ simulation paradigm**

**Format:** ePoster Presentation

**Topic:** Patient Safety / Quality Improvement

### **Authors**

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### **Introduction & Aims**

**Introduction:** We describe the development, implementation and early expansion of a Mobile Academic-based Simulated Hospital experience (MASHe). MASHe is a paradigm to create mobile simulations of previously identified patient safety issues in the clinical environment. These simulations are used to provide remediation and deliberate practice of skills that have been identified as contributors to patient safety issues. We describe our early experiences and give two examples of simulations developed from this program.

**Aims:** 1. To introduce and describe a paradigm of development of a simulation hybrid-based model used in the clinical environment

2. To describe 2 specific examples of in situ simulation scenarios that have been developed to remediate systems-based deficits in the clinical environment

### **Description**

**Methods:** Case scenarios for the MASHe program are developed based on the needs of a clinical site. These programs are developed based on patient safety and care delivery issues identified by departmental leadership during real-patient encounters. Two examples include: 1) the management of a woman in her late third trimester of pregnancy presenting with mortal gunshot wounds; 2) the management of an unconscious man with significant facial trauma secondary to a hockey puck injury on the hockey rink. In both cases, a standard production method was used which includes the development of a de-identified scenario. Standardized patients were trained, moulage was developed, appropriate task-trainers were integrated into the scenario, and checklists and scripts for debriefing were created. Encounters were recorded for teaching and debriefing purposes. Appropriate venues appropriate were selected—Emergency Department and center ice at a hockey stadium respectively.

### **Discussion**

The two cases have been performed several times in an interdisciplinary, team-based manner. Based on debriefing and video review, team-based and system-based deficits were noted and an action plan for resolution was made. Examples of such deficits included the observed need to improve airway maintenance skills and the need to streamline the call. We describe a paradigm to develop and produce sophisticated simulation-based scenarios that can be taken to the “real” environment to remediate skills, diagnose systems-based deficits and foster deliberate practice of team-based skills. This MASHe in situ paradigm has provided learners and supervisors in clinical domains the opportunity to complement simulation center based clinical skills learning into the clinical setting. We believe that this will have a positive impact on

patient quality of care and patient safety and plan on studying this in the near future.





SOCIETY FOR  
SIMULATION IN EUROPE

## Mobile simulation training for rural health providers

**Format:** ePoster Presentation

**Topic:** New Technologies and INNOVATION

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### Introduction & Aims

Simulation is an excellent way for health care worker to train their skills in a safe environment. But sadly, learning with simulations in healthcare is usually not available to professionals. Contributing factors to this problem are the lack of knowledge and poor equipment combined with high education costs and time shortage in medical teams. We have developed a mobile simulation unit (»SIM mobile«) that will enable all medical teams in primary healthcare access to modern simulation equipment. »SIM mobile« is a mobile education unit which brings state of the art, hands-on training, using high fidelity human patient simulators, to prehospital and hospital professionals. The »SIM mobile« is a 16 metres long trailer with two simulation spaces.

### Methods

We have used »SIM mobile« to conduct simulations in over 20 different healthcare teams (N = 100) in Slovenia. They were all at least 50 km away from CHC Ljubljana. At the end of training the participants filled out a question form about their previous experiences with use of simulations in healthcare, their need for this kind of education and availability of this kind of education. At the beginning and in the end we have measured the intake and outcome knowledge of every individual. Total training time was 120 hours and was used 100 % of the time by the participants of the study. The simulation that was carried out was the management of acute medical emergency – anaphylaxis.

### Results & Discussion

All of the participants have said that the physical environment of »SIM mobile« was very comfortable and appropriate for training. 10% of the participants have said that they have the access to simulation based learning in their workplace, but the equipment is too old and not realistic enough. All of the participants have agreed that the »SIM mobile« is a great program for renewal of knowledge for experienced doctor and nurse. It is also a great learning tool for a beginner doctor and nurse to prepare themselves for work with real patients. Pre- and post-evaluation experiment of qualification indicates, that the level of knowledge in simulation is higher for 60 %. This study has showed that the use of »SIM mobile« can be practical and efficient for maintaining proper medical team education available. »SIM mobile« was successfully used in this study across all of Slovenia to ensure proper education for medical teams in primary healthcare for 20 CHC in rural environment.



SOCIETY FOR  
SIMULATION IN EUROPE

## **More frequent simulation lab practice in a pre-clinical setting is associated with greater competency for Entrustable Professional Activities (EPAs)**

**Format:** ePoster Presentation

**Topic:** Assessment using Simulation

### **Authors**

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### **Introduction & Aims**

The Core Entrustable Professional Activities (EPAs) for Entering Residency were adapted in 2014 by Association of American Medical Colleges (AAMC). Accordingly, an EPA is a unit of observational, measurable professional practice requiring integration of competencies. While steps for implementation of EPAs was intended for post-graduate doctors entering Residency, EPAs are also used as achievement targets for medical students. At St. George's University (SGU) School of Medicine (SOM) students in the final term of Basic Sciences, assist in caring for hospital patients one morning per week, practice twice weekly with standardized patients, and since 2010, have attended the Simulation Lab with Laerdal and Gaumard manikins once per term. More recently, sessions in the Simulation Lab were increased to twice per term, allowing wider exposure to ill patient scenarios and more practice with skills that potentially enhanced practice in developing behaviors required of EPAs.

### **Description**

In the Spring 2018 term, SGU students enrolled in the Introduction to Clinical Medicine (ICM) course were scheduled to spend two separate three-hour sessions in the Simulation Lab over a 10-week period during the final term of Basic Sciences. Formative assessment during debriefing was provided in each scenario. Anonymous feedback via a Likert Scale survey was collected from over 700 medical students at the end of the second Simulation Lab session.

### **Discussion**

The Simulation Lab proved to be an ideal setting to practice essential skills. Since each EPA is comprised of competencies, practice in the Simulation Lab proved very helpful to students at this point of their medical education. Of the 704 students who responded to the survey, over half (51.7%) reported being extremely comfortable in assessing a patient with a focused exam. Nearly 80% strongly agreed that they were encouraged to integrate auscultation skills with knowledge during practice.

Each Simulation Lab scenario contributed to practice in meeting EPA1: Gather a history and perform a physical exam. Second, each scenario required students to use both history and patient exam to practice meeting the competencies needed for EPA 2: Prioritize a differential diagnosis following a clinical encounter. Finally, the simulation scenarios focused on critical skills and ill patients, so directly contributed to EPA 10: Recognize a patient requiring urgent or emergent care and initiate evaluation and management. Simulation Lab scenarios at SGU provided a unique opportunity to practice key functions, behaviors and skills required for eventual mastery of EPAs.



SOCIETY FOR  
SIMULATION IN EUROPE

## Multiple patient simulation in paediatrics- Challenges for faculty and trainee

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

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### Introduction & Aims

The use of simulation in Paediatric medical education has been well established and is becoming increasingly widespread. However, in almost all cases these are single patient scenarios which may not accurately reflect emulate clinical practice. This is especially true at the middle grade, or registrar, level where management of the whole ward environment is crucial. There is little literature describing simulations of this nature, especially in Paediatrics.

We designed and facilitated a scenario involving multiple patients in order to help junior doctors develop both clinical skills treating acutely unwell patients and non-technical and management abilities including prioritisation and delegation.

### Description

The multiple patient simulation session took place in a high fidelity simulated ward environment, and was run as part of a whole day course for paediatric doctors about to progress to the registrar grade. Faculty consisted of Paediatric consultants and registrars, and trained simulation staff including technicians and 'planted' nurses.

The scenario included three main elements – a new admission with severe asthma, an infant with sepsis, and new referrals and calls coming through to a bleep. The scenario was designed in such a way that each element could be tailored to either deteriorate or stabilise depending on the experience and progress of the candidate.

Candidates were given Likert scale questionnaires to collect feedback on various elements of the scenario and course overall.

### Discussion

Both the scenario and faculty had to be flexible and adaptable to the myriad possible events in a multiple patient setting. It was also important to be aware of and prepared for the possibility of trainees becoming stressed if the scenario fell outside their previous experience or pre-existing expectations of simulation – as well as how to mitigate this and how their actions may change as a result.

The multiple patient scenario has been run in two courses with eight participants to date, and the course continues to take place approximately five times a year. It has been well-received - all participants reported that the scenario was

realistic, in keeping with a real life on-call setting, and that they were better able to prioritise tasks in an acute situation. Free text feedback was overwhelmingly positive.

The scenario adds a management aspect to the Paediatric registrar preparation course, and could be further developed to include nursing participants, 'planted' junior doctors for delegation, and to include a larger variety of clinical problems.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Near peer interprofessional simulation programme improves non-technical skills of medical and nursing students**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

It is recognised that healthcare professionals need adequate non-technical skills in order to perform as part of safe and effective teams. Simulation based medical education is commonly used to teach and improve these skills.

We set out to determine if a faculty with no formal teaching experience could achieve an improvement in the non-technical skills of a group of undergraduate learners from different healthcare professions.

### **Methods**

A faculty comprising foundation year one doctors delivered a six-session course to a group of ten medical and nursing students. Each weekly session focussed on a different component of the “Airway to Exposure” approach to assessing acutely unwell patients and was delivered in a conserved format. Short small group sessions were followed by two simulated patient scenarios with debriefs, using a Laerdal high-fidelity patient simulator.

As part of a wider course evaluation of effectiveness, and with students’ permission, the two groups of students were filmed undertaking the same scenario in the first and last sessions of the course.

Five assessors then completed the validated Team Emergency Assessment Measure (TEAM) scores for each recorded scenario. Assessors were blinded and recordings seen in a random sequence. Assessors were consultants or senior associate specialists in acute medicine, anaesthetics and emergency medicine. Total TEAM scores were expressed as a percentage of the maximum score available.

Analysis was completed in Minitab 18. Item analysis of the TEAM score produced a Cronbach’s alpha of 0.98, suggesting high internal consistency between components of the team score. A paired T-test was used to determine whether a significant difference in TEAM scores was observed between the pre- and post-course scores. A significant ( $p < 0.001$ ) mean paired difference between pre- and post-test scores of +47.04 percentage points (95% CI 30.87, 63.20) was observed.

### **Results & Discussion**

This is a novel use of the TEAM tool to examine the effectiveness of a short structured programme of simulation based medical education at improving the non-technical skills of a group of interdisciplinary learners. Our evaluation suggests

that the novice team of newly qualified doctors were able to deliver an effective simulation programme with little formal training, which may contribute to improvements in non-technical skills. The high level of internal validity demonstrated by the item analysis implies concordance with the previous validation of the TEAM tool. Evaluation of the impact of the learning by teaching effect on the non-technical skills of the faculty would also be of interest.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Non-invasive haemodynamic monitor in high fidelity patient simulator to facilitate learning of cardiovascular parameters to anaesthesia residents**

**Format:** ePoster Presentation

**Topic:** Physiologic Modelling and Simulation

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### **Introduction & Aims**

Cardiovascular physiology can be simulated in high fidelity patients but is limited to the simulator monitor curves, missing some important data that today is known as essential to fluid management in high-risk patients. Our main objective was to project and implement an unidirectional communication channel between a pre-existing high-fidelity patient simulator and a minimally-invasive cardiac output (CO) monitor.

### **Methods**

To connect the Simulator (HFPS) to the CO monitor (Lidco rapid), we first had to assess both systems and design a communication channel between them. Lidco Monitor accepts as an input an analogue current varying between 0V and 5V and that every volt is directly proportional to a Blood Pressure (mmHg) value ranging from 0 mmHg (0V) to 500 mmHg (5V). We used a Raspberry Pi 0 (Rpi0) with a WIFI chip integrated and added a DAC converter connected to the board as in the (image 1). So, we designed a setup that would allow us to collect, interpret and modify it and feed it to the Lidco Monitor.

### **Results & Discussion**

We've developed a Python® script with three independent threads and a circular buffer to handle the data transmission between both systems.

This setup will be used latter to generate simulated scenarios where we can train student on a variety of hemodynamic instability clinical situations preparing them to face the analogue situations on real life patients.

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SOCIETY FOR  
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## Non-technical skills training in virtual environments

**Format:** Oral Presentation

**Topic:** Faculty Development

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### Introduction & Aims

Non-technical skills (NTS) are considered as a combination of cognitive and social knowledge, but also personal resources that complement the technical skills of the medical team. They contribute to improve the performance, but also to make the medical activity safer. The objective of this work is to evaluate if NTS can be trained using a screen-based simulator [1].

### Methods

Students in midwifery participated in a simulation session on a screen-based simulator Perinatsims (Medusims™) on post-partum haemorrhage management. Learners were randomized into 2 groups; the control group who performed 3 classic scenarios and the NTS group who performed 3 scenarios especially designed to mobilize NTS. At the end of the scenarios, a structured interview was proposed to the learner: on the PPH algorithm for both groups but also on non-technical skills for the NTS group. All learners then participated in a high-fidelity simulation session on a PPH scenario. NTS were evaluated according to 2 tools: a specific PPH-checklist [2] and the ANTS score [3]. Three independent evaluators, trainers in simulation and experts in the evaluation of the NTS analysed the videos. The statistical analysis was a Mann & Whitney test and the data are expressed in median [range].

### Results & Discussion

Twenty-four participants were included in the study (12 in each group). The scores and each of the sub-categories are significantly higher in the NTS group (Table 1). Midwives non-technical skills could be trained and improved by a screen-based simulation developed for this purpose.

A screen-based simulation can help to train non-technical skills of learners. This increases the educational interest of this kind of simulator, having the advantage of being usable anywhere and anytime.

Acknowledgment: The authors would like to thank L'Agence Nationale de la Recherche. This is a part of MacCoy Critical project (Models for Adaptive feedback enrichment and Orchestration based virtual reality in Critical situations), N°ANR-14-CE24-0021 (<https://maccoy.hds.utc.fr>).

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## **Non-technical skills, including Leadership and Follower-ship, in a water rescue scenario for the North Wales fire and rescue service**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

Simulation improves patient safety, individual performance, and team performance, especially in low-frequency, high-acuity scenarios. For the North Wales Fire and Rescue Service (FRS), water rescue is such a scenario: the frequency of water rescue events is low, and yet the acuity and expertise needed at each call is high, with drowning being a common cause of death worldwide. In high-reliability contexts, crew resource management, including aspects of leadership and followership, are critical to success.

We aim to develop and run an appropriate, realistic, simulated FRS scenario; to assess overall team non-technical skills; to determine individual participant followership styles and preferred leadership styles; and to assess the extent of correlation of followership styles and preferred leadership styles.

### **Methods**

Using accepted frameworks, we designed and delivered a realistic pre-hospital paddle-sport water-rescue team-training in-situ simulation scenario which involved a submerged casualty, immersed casualties, a shoulder dislocation, minor abrasions and lacerations, and a casualty with suspected c-spine injury. A previously validated questionnaire was administered to assess participant non-technical performance, and a second validated questionnaire assessed participant followership styles and preferred leadership styles. FRS member followership styles were categorised into 'Alienated', 'Conformist', 'Exemplary', and 'Passive', and preferred leadership styles were categorised into 'Delegating', 'Participating', 'Selling', and 'Telling'. Participant followership styles and preferred leadership styles were then compared to existing integrated theoretical models.

### **Results & Discussion**

All FRS members scored highly in both 'active engagement' and 'independent critical thinking' domains, which classified all members as 'exemplary' followers. Similarly, all FRS members' preferred leadership styles involved both high relationship behaviour and high task behaviour – a 'selling' style. Follower independent critical thinking and leader task behaviour were strongly negatively correlated. This partially supports theoretical integrated models of leadership and followership.

This is one of the first attempts to match leadership and followership styles in a real-life healthcare application. Leadership and followership are holonarchical: good leadership is a requirement of good followership, and vice versa. In contexts where other non-technical skills – for example, situational awareness – may be limited by workplace culture, followership interventions may improve team performance.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Optimising the clinical performance and learner experience of lumbar puncture via simulation-based mastery learning**

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

### **Authors**

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### **Introduction & Aims**

Work in progress:

Simulation-based mastery learning (SBML) is a robust, evidence-based teaching methodology, designed to improve the learning of procedural skills, with the aim of setting a standard of achievement that all learners can attain (1). SBML has been evidenced to improve patient outcomes in certain populations but, to our knowledge, not in UK NHS-based acute hospital settings with postgraduate clinical learners.

We have introduced SBML strategically within our organisation, focussing on complex, high risk procedural skills, including lumbar puncture (LP), intercostal drainage and central venous catheterisation. To date, we have shown that learners find this training extremely valuable and improve their simulated performance within the laboratory and in-situ. (Kirkpatrick's level 1 and 2).

Our goal is to evidence positive impact on real life performance and patient outcomes via this methodology. (Kirkpatrick's levels 3 and 4)(2).

### **Description**

This study will focus on assessment of LP in real life, following SBML LP sessions. We will establish current standards of practice by completing a retrospective audit of LP in a specific clinical area (Acute Medical Receiving Unit), including

metrics such as; time from decision to performance of lumbar puncture; number of attempts; and whether an additional operator was required for success of the procedure.

We will ensure all those who perform lumbar puncture in this clinical area receive SBML for this skill and achieve the expert-determined mastery standard for simulated performance, before progressing to directly-supervised real-life practice.

We will then complete a prospective audit of lumbar punctures looking at the same parameters. We will also assess real life performance of our learners, using the same checklist-based assessment tool from the SBML sessions. In addition, we will gather a combination of qualitative and quantitative data about patient and clinician experience.

## **Discussion**

We anticipate that the addition of our SBML programme will improve the measured clinical performance of lumbar puncture at individual and team level, in addition to enhancing the procedural experience of our patients and learners. Quantitative and qualitative data will be presented.

## **References**

1. McGaghie WC, Issenberg SB, Barsuk JH, Wayne DB. A critical review of simulation-based mastery learning with translational outcomes. *Medical Education*. 2014; 48: 375-385
2. Kirkpatrick DL. Seven Keys to Unlock the Four Levels of Evaluation. *Performance Improvement*. 2006; 45(7): 5-8



SOCIETY FOR  
SIMULATION IN EUROPE

## **OrthoSIM - A skills and simulation induction to orthopaedic trauma**

**Format:** Oral Presentation

**Topic:** Center Administration and Program Evaluation

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### **Introduction & Aims**

Trauma and orthopaedic surgery is a postgraduate specialty with proportionately low undergraduate exposure. Locally, the junior doctor tier comprises doctors with 2 to 4 years postgraduate experience. The disparity in their experiences and exposure, coupled with expectations to manage acute situations led to dissatisfaction amongst this group of doctors. The need for further training was recognised and a one day skills and simulation course was designed and provided to address these learning gaps.

We aimed to establish the participant and faculty perceived merits of this course and document associated logistical pitfalls encountered.

### **Description**

Content was designed based on feedback from prior cohorts. Pre-course manuals, including required minimum knowledge were distributed to a pilot sample of 22 junior tier doctors from 2 sites. They then participated in the course, including 4 short seminars, 2 practical skills sessions and 4 simulation scenarios. Participant feedback was collected by anonymised written feedback using Likert scales (0-8) and free-text, alongside a verbal debrief. Informal feedback was sought from participants several weeks later by senior clinicians to ascertain the application of the knowledge and skills covered in the course.

### **Discussion**

Feedback from Likert Scales (0-8) for the sessions were generally 'good' to 'excellent' with an overall mean of 7.1 (range 6.3-7.8). There were no statistically significantly preferred sessions between tutorials, skills or simulation (Mann-Whitney U test  $p > 0.1$ ). Free-text feedback and debrief feedback indicated that participants felt the course was necessary and relevant. Particular value was placed on utility of the practical skills and clinical sessions. There were conflicting opinions on the utility of the simulation scenarios, particularly related to derails. Feedback several weeks after the course confirmed that the juniors had implemented successfully the skills encountered in the course

In conclusion, an off-site simulation and skills day proved valuable to trainees and can aid implementation of skills in practice. Further work on the fidelity and structure of the simulations scenarios may prove of benefit in future iterations.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Out of hours access to low-fidelity part-task surgical simulators: the trainee perspective**

**Format:** Oral Presentation

**Topic:** Center Administration and Program Evaluation

### **Authors**

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### **Introduction & Aims**

Low-fidelity part-task computer based surgical simulators, including virtual-reality simulators, are an emerging training tool. They have been shown to provide benefit in the development of surgical techniques and transferable skills for surgical trainees. Despite our hospital providing 0900-1700, Monday-Friday access to a large variety of surgical simulators (laparoscopic, robotic, VR); anecdotally, these were scarcely used. We wanted to explore the factors impeding utilisation.

Hypothesis: Trainees would desire ad-hoc out of hours access to low-moderate fidelity part-task surgical simulators.

### **Methods**

A cross-sectional qualitative scoping survey was distributed to all junior doctor staff at a central London university teaching hospital. The self-reporting 26 point online questionnaire was completed by 30 junior doctors (Male:17; F1-2: 10, Trust grade SHO: 7, CST: 1, ST3-4: 5, ST5+: 3, Trust grade SpR: 4) between October 2019 and November 2019. Questions included assessing the importance of out of hours access to trainees and times when trainees would be most likely to use simulators, alongside demographic data.

### **Results & Discussion**

The majority (85%) of trainees report that out of hours access to surgical simulators is important to them with 51% suggesting it is extremely important. Given current work scheduling, 85% of trainees suggested they would use surgical simulators between 1700-2000 and there was also demand for 24 hour access (20-44%). Only 1 trainee reported currently using the surgical simulators (once a month) within the available access hours.

The results of this study show that out of hours access to surgical simulators is a highly desirable resource to junior doctors in training. Given current service pressures within the NHS, restricting access times to training doctors proves to be a barrier to the utility of a key training resource. The importance of usable access to simulators cannot be understated with 80% of trainees self-reporting that they do not currently get enough operative experience for their educational needs. Furthermore, 66% of trainees suggested having improved access to surgical simulators would increase the likelihood of joining a surgical speciality highlighting an interesting further research area (factors influencing this). Improving access may aid trainees in making career development decisions and contribute to shaping future specialities.

Although desirable, few trainees (17%) were prepared to pay for out-of-hours access, leaving the onus on centres to devise novel ways of making this sustainable. Our centre is dedicated to exploring this and we endeavour to develop 0800-2000 access.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Paediatric insitu interprofessional simulation - a method to identify system failures**

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

### **Authors**

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### **Introduction & Aims**

Paediatrics is a speciality with high patient turnover and relatively infrequent emergency situations, therefore it is paramount that skills are continually maintained and regular testing of systems and departmental protocols. In-situ simulation has been shown to improve confidence and understanding in participants whilst highlighting failures that have been recognised during simulation, preventing clinical incidents. . The aim of this programme was to test the systems being used within the department, and highlight any failures, preventing clinical incidents.

### **Description**

An immersive, in-situ paediatric simulation programme was designed and implemented in a busy district general paediatric department. The simulation sessions were run on average twice monthly, using scenarios written by experienced medical education faculty and paediatricians. The scenarios reflected realistic archetypal cases within the department. Each session was facilitated by an experienced medical education team and subject matter experts. Participants were consented to participate then orientated to the manikins, provided guidance on safe simulation practice and a safe learning environment was established. Each scenario was observed by faculty using SMOTS technology and was followed by a co-facilitated debrief to gather insights into the challenges and triumphs of each scenario. The faculty observation, candidate reflections and the debrief allowed identification of system failures, logistical difficulties and challenges which were rectified to prevent a real clinical incident occurring.

After only a small number of completed sessions, there were a number of system flaws identified and therefore efforts made to rectify the issue for a safer working environment. These included; lack of compulsory orientation to resuscitation trolleys in the department, failure for team leaders to routinely offer a 'hot' debrief after significant events or difficult clinical encounters to support the psychological well-being of staff, lack of essential paperwork available on the emergency trolley and no facility provided in the emergency areas to scribe/document (e.g whiteboard for emergency calculations or documenting medication timings).

### **Discussion**

This research demonstrates a crucial role of simulation in identifying potential hazards and risks to patient safety. It is therefore anticipated to continue with longitudinal structured data collection and analysis. Furthermore, the sessions offer the opportunity for team working development, clinical practice development and crucial learning opportunities for the participants.





SOCIETY FOR  
SIMULATION IN EUROPE

## **Paediatric STEPS course (Simulation Training to Enhance Performance at ST4+)**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

The transition to a paediatric registrar during training is a stressful and anxious time for trainees. Paediatrics is a senior led speciality; therefore with reduced training hours for doctors, trainees can have limited exposure of emergencies. There is also little time to practice decision-making and leadership in more junior posts.

A simulation course targeting these trainees that focused on the skills needed to step up to the middle grade role was developed and delivered in our region.

### **Description**

Paediatric ST2 and ST3 trainees are offered to attend a half-day simulation course run at a high fidelity suite in the West Midlands. Senior consultant paediatricians and experienced simulation faculty facilitate the course.

The STEPS course allows trainees to practice common scenarios they could face as a paediatric registrar which are mapped from the Royal College of Paediatrics and Child Health (RCPCH) curriculum. Example scenarios include cardiac arrest, arrhythmias, safeguarding and neonatal resuscitation. The focus of the course is to develop skills needed as a paediatric middle grade such as acute resuscitation, leadership, difficult communication and decision-making.

Candidates are asked for feedback through a course questionnaire, which includes a combination of free text comments and Likert scale questions.

### **Discussion**

The course has been delivered over the past four years with a total of 62 trainees attending the course so far. 100% of trainees would recommend the course to their colleagues. 100% of participants recorded that the course would change their future practice.

Free text comments from candidates focused on an improvement in their knowledge but also the opportunity to develop non-technical skills like communication and teamwork. Trainees enjoyed the realistic nature of the course, the opportunity to practice being a team leader and the feedback they obtained from debriefs.

The STEPS course has helped support trainees in our region who are transitioning to the middle grade role. Candidates have found the course extremely useful learning both clinical and non-technical skills. We are further developing the course to incorporate other non-clinical tasks trainees may face as a registrar such as management of a handover and conflict resolution. This course could be easily replicated in other specialities using the model we have outlined.

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## Perceived utility of high-fidelity simulation in the management of hyponatremia

**Format:** ePoster Presentation

**Topic:** Patient Safety / Quality Improvement

### Authors

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### Introduction & Aims

Hyponatremia (HN) is the most frequent electrolyte disorder in Critical Care Units (CCU). It is associated with an increase in morbidity and mortality. Its identification is essential to perform a good clinical practice, make the correct diagnosis to provide the best treatment, and avoid complications associated with an improper treatment. Despite the difficulty of simulating clinical situations over prolonged periods of time, we have considered using high-fidelity simulation (HFS). Thanks to this method, we will be able to develop the competencies regarding this pathology. Our work has two aims:

- Training any specialty doctor interested in HN: identifying its severity, developing the differential diagnosis, providing and monitoring the correct treatment to avoid deleterious effects.
- Evaluating the perceived quality of this training through validated surveys.

### Description

After evaluating the real needs in the diagnosis and treatment of HN in critical patients and defining general and specific objectives, a 5-hours course was designed. Relevant literature was sent to the students 15 days before the start of the activity. A CCU scenario with a HFS robot was prepared. Four cases of specific clinical situations were developed, with briefing, debriefing, and summaries of the action protocols after each scenario. At the end, the students completed a validated quality survey. There were 11 editions since 2015. From the total of 112 students, 57% were women, and 58% were under 34 years old. Regarding their roles and education levels, 62% were residents, 36% were attendings and 2% were chief physicians. The most common specialty was Intensive Medicine (75%), and the 25% remained were distributed among Internal Medicine, Endocrinology, Nephrology, Geriatrics, and Oncology.

## Discussion

The perceived quality surveys indicate an overall satisfaction rate of 4.85% out of 5 (weighted average of 100 answered surveys). The evaluated items were: 1) Information received about the objectives of the course (4.68); 2) Proposed objectives achieved (4.84); 3) The objectives of the course were those expected upon registration (4.80); 4) Level of knowledge of the concerning topics (4,88); 5) Acquisition of new knowledge (4.89); 6) Methodology (4.87); 7) Documentation delivery (4.78); 8) Organization (4.88); 9) Infrastructure conditions (4.88); 10) Received treatment (4.94); 11) Interest of the course for their daily activity (4,88); 12) Recommended attendance (4.86); 13) Fulfilled expectations (4.88); 14) Global satisfaction (4.88). Therefore, HFS is feasible and perceived as useful for the acquisition of specific skills and abilities in the management of patients with HN.

## Place of TrueCPR feedback device in resuscitation learning process. A randomized pilot data

**Format:** Oral Presentation

**Topic:** Assessment using Simulation

### Authors

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### Introduction & Aims

The ability to perform high quality chest compressions should be one of the key skills that medical personnel should have. However, according to numerous studies, the depth of chest compressions is in many cases insufficient. The aim of the study was to assess the impact of the use of TrueCPR in the resuscitation teaching process on the quality of chest compressions.

### Methods

The study was attended by 60 students of the first year of medicine studies. Before starting the study, all participants of the study took part in a training in basic life support. Then they performed a 2-minute cycle of one-rescuer cardiopulmonary resuscitation (Baseline). The participants were then divided into two groups, with the control group being able to practice chest compressions for 10 minutes, while the experimental group performed resuscitation using a TrueCPR feedback device (Physio-Control, Inc., Redmond, WA, USA). One month after the training, participants were asked to re-examine a 2-minute cycle of cardiopulmonary resuscitation (Evaluation phase). Only chest compression parameters were analyzed. The Resusci Anne® QCPR simulator (Laerdal, Stavanger, Norway) was used to simulate the patient requiring resuscitation.

### Results & Discussion

The chest compression rate achieved the value of 115 vs 126 ( $p < 0.001$ ), adequate chest compression rate (%) was 86 vs 68 ( $p < 0.001$ ), full chest release (%) 96 vs 65 ( $p < 0.001$ ), and correct hand placement (%) 99 vs 99 ( $p$ , not significant) in Experimental vs. Control groups, respectively. As for the assessment of the confidence of chest compression quality, 1 month after the training, the evaluation in the experimental group was statistically significantly higher (87 vs 65;  $p < 0.001$ ) than in the control group.

Performing chest compressions with a rate above 120 CPM does not affect survival, and may cause faster fatigue of the rescuer, so the most optimal frequency is 100-120 CPM. Perfusion pressure during resuscitation is the result of a difference in chest pressure caused by compression and relaxation of the chest, so it can be assumed that in the experimental group the perfusion pressure would be higher than in the control group, where both the depth of

compressions was insufficient and the percentage of complete relaxation of the chest was insufficient. To sum up, the use of CPR feedback devices in the resuscitation teaching process may influence the student's ability to develop correct habits related to chest compressions.



SOCIETY FOR  
SIMULATION IN EUROPE

**Plan, Do, Simulate, Study, Act (PDSSA): using simulation to augment clinical Plan, Do, Study, Act (PDSA) cycles. A quality improvement project to improve a new clinical pathway for catheter-directed thrombolysis for pulmonary embolism.**

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

#### **Authors**

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#### **Introduction & Aims**

Catheter-directed local thrombolysis (CDT) has emerged as an alternative treatment for acute pulmonary embolism (PE). Our hospital has introduced a new CDT clinical pathway. Plan, Do, Study, Act (PDSA) cycles can be used in quality improvement (QI) projects, by providing the framework to plan, implement and assess the effect of small changes. Relatively few patients in our hospital meet criteria for the CDT pathway, giving limited opportunities to undertake PDSA cycles. Simulation can provide valuable opportunities to perform Plan, Do, Simulate, Study, Act (PDSSA) cycles and test changes in a safe setting. Clinical Practice Groups have recommended standardizing care for PE across our local hospitals to reduce variations in care. The aims of this project were to assess and improve a new CDT clinical pathway using PDSSA cycles and to create a proforma for use in other local hospitals.

#### **Description**

Between October 2017 and October 2018, PDSA and PDSSA cycles were performed using clinical and simulated use of the CDT clinical pathway in a major teaching hospital. Three different in-situ simulated scenarios were created. The simulated scenarios focused on different aspects of the CDT pathway, including post-procedure complications on the ward and transfer of a patient from another hospital. The simulated scenarios allowed assessment of the CDT pathway in terms of latent errors, system logistics and multidisciplinary decision making. Each PDSA and PDSSA cycle was studied and learning points were identified to facilitate improvements to the CDT pathway.

#### **Discussion**

We describe a novel way to use simulation in QI projects by using simulation to augment clinical PDSA cycles. We have used PDSSA cycles to improve a new CDT clinical pathway and subsequently will create a CDT proforma for dissemination across local hospitals. Improvements that have been made to the CDT pathway as a result of PDSSA cycles include pre and post-procedure bed allocation, training in how to remove the catheter, a designated point of contact for all cases, guidance regarding when the infusion of thrombolysis should be started, and how best to utilize the multidisciplinary team. PDSSA cycles are especially useful to identify latent errors and system processes in a safe environment, and to augment QI when clinical scenarios are infrequent. We suggest this could be rolled out into other areas and that simulation and PDSSA cycles can be used to facilitate the introduction of new clinical pathways.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Procedural Skills And Simulation Training For Trainees In Acute Specialties (Emergency Medicine, Acute Medicine & Intensive Care Medicine)**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

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### **Introduction & Aims**

Simulation-based training is an established and popular teaching methodology for developing work-based skills, yet simulation is generally undertaken within one's own specialty. Acute specialties interact habitually in clinical practice, often in emergent and stressful situations, but trainees have little opportunity for shared learning opportunities. Furthermore these specialties are defined by acutely unwell patients for whom rapid decision making is paramount and where procedural techniques are called on regularly. With this in mind we hypothesised that simulation with trainees from a range of acute specialties would address common learning objectives, enable enhanced understanding of the acute interface and that participants would find it more valuable than single specialty learning.

### **Methods**

10 trainees were invited to participate in this course (4 Acute Medicine, 4 Emergency Medicine, 2 Intensive Care Medicine). Procedural skills were demonstrated by a faculty prior to supervision on simulated models. Procedures were chosen based on their perceived importance and frequency in acute care, with a particular emphasis on those appearing in the curriculum or those that are considered challenging to achieve (such as Sengstaken-Blakemore tube placement). This was followed by high-fidelity simulation involving mixed teams of trainees with scenarios written to reflect everyday clinical situations that interface acute specialties. Feedback was led by a faculty member in line with the 'diamond' method and a short presentation was delivered detailing updates and controversies in the clinical area being simulated. Participants were invited to complete a questionnaire to gauge their satisfaction of the course compared with single specialty learning and to understand the barriers to achieving procedural skills competences.

### **Results & Discussion**

90% of participants provided feedback. The most cited barriers to obtaining procedural competencies were an increase in other specialties performing them (56% anaesthetics, 44% radiology), lack of supervision (67%) and simulated training opportunities (56%). 100% of respondents considered multi-disciplinary simulation to be a superior learning experience compared with single-specialty simulation (89% to a large extent, 11% to some extent). By engaging trainees from a range of specialties that work together commonly but learn together rarely we observed high trainee engagement and positive feedback. We propose the expansion of multi-disciplinary simulation as a means of improving the training and working interface between specialties in clinical medicine.





SOCIETY FOR  
SIMULATION IN EUROPE

## **Promoting confidence in paediatric procedures for junior trainees using simulation based education**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

The Royal College of Paediatrics and Child Health (RCPCH) states that trainees should be competent in a range of procedures by the end of their Level 1 training.

With reduced training hours, trainees can have limited opportunities to practice these procedures and become competent.

We designed a simulation based skills course for first year paediatric trainees with the aim to improve their knowledge and confidence in performing core paediatric skills.

### **Description**

The 'ST1 Regional Training Day: Skills, Drills & Simulation' is a full day simulation based clinical skills course that runs twice a year for all first year paediatric trainees in the West Midlands Deanery.

Trainees learn a standardised, evidence-based approach for performing common paediatric procedures from senior registrars and consultants using simulated part task trainers. The procedures covered during the day include lumbar puncture, peripheral long line insertion, urinary catheterisation, 12 lead electrocardiogram (ECG) and intraosseous insertion.

Candidates are asked for feedback on their ability and confidence in performing the skills pre and post the course using Likert scale questionnaires and free text comments.

### **Discussion**

The course has been delivered for the last 3 years with a total of 53 trainees attending the skills day so far. The consensus from the feedback was that trainees had rarely performed the procedures independently or even under supervision in a clinical environment prior to course.

100% of trainees reported an improvement in their knowledge on how to perform the procedures from the course. There was a self-reported improvement in confidence in performing the procedures independently in their clinical environment in all five of the procedures taught. Trainees valued the opportunity to practice the skills in a safe environment with expert clinicians.

Our course has helped junior trainees to practice and perform these procedures earlier in their clinical environments with more confidence. We have recognised the huge benefit for our trainees with plans already in place to deliver a further course teaching neonatal skills within our region.

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**Randomised single-blind crossover trial investigating the effectiveness of a new low-cost manikin for central venous catheter insertion**

**Format:** Oral Presentation

**Topic:** New Technologies and INNOVATION

**Authors**

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**Introduction & Aims**

Central venous catheter (CVC) insertion is an essential procedure. The use of manikins to teach such skills is increasingly common. The CVC manikins available on the market, however, represent a significant cost which may discourage educators from using models for CVC training. We compared a new low-cost manikin [Bartikins], developed in Barts Health NHS Trust, to a well-established CVC manikin [Pharmabotics CVC200].

**Methods**

A randomised single-blind cross-over study testing the hypothesis that the new CVC manikin was significantly more effective than the established manikin at simulating right internal jugular (RIJ) CVC insertion. The primary outcome was “overall effectiveness” as rated by participants expert at CVC insertion. Secondary measures were user-ratings of other aspects of the two manikins.

The participants each performed ultrasound-guided (US) RIJ CVC insertion on both the new and the established manikins. The manikin each participant used first was determined using a random number generator. After using a manikin, participants ranked it on a 1-7 scale for overall effectiveness (the primary outcome) together with other aspects of the procedure, with 7 being positive and 1 negative. Results were analysed using Wilcoxon-signed rank test on SPSS [IBM] version 23.

**Results & Discussion**

Primary outcome: our data shows that expert practitioners considered both manikins to be effective overall at simulating CVC insertions. Since both manikins had a median score of 5/7 ( $p=0.084$ ), we did not demonstrate that either was superior to the other.

Secondary outcomes: the manikins scored similarly with small divergences in three areas: the new manikin scored higher for ease of obtaining an ultrasound view ( $p=0.04$ ) and the established manikin scored higher for simulating tract dilation ( $p=0.015$ ) and CVC insertion ( $p=0.024$ ).

These data suggest that experienced practitioners found both manikins effective for simulating CVC insertion and) the new manikin [Bartikins] performs similarly to an established manikin available on the market [Pharmabotics CVC200]. The new manikin is not yet available to buy but is expected to cost less than 5% of the established manikin used in this research.

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SOCIETY FOR  
SIMULATION IN EUROPE

## Rapid Sequence Induction - An Anaesthesiology Bootcamp, the initial Irish Experience

**Format:** ePoster Presentation

**Topic:** Assessment using Simulation

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### Introduction & Aims

**Background:** The novice anaesthesiology trainee must rapidly assimilate the cognitive, technical and non-technical skills necessary to competently respond to critical events in their new role. Deliberate practice in the safe and controlled environment of high-fidelity patient simulation is one method to compensate for gaps in trainee experience, offering the potential for effective training and direct observation of learner performance for competency evaluation.

The aim of this anaesthesiology boot-camp is to increase the knowledge, clinical, technical and non-technical competencies of the novice trainee, creating a framework for their future learning and practice. Furthermore, when combined with nurse training, training becomes realistic, incorporating teamwork and collaboration.

### Description

**Methods:** Seven novice anaesthesiology trainees (first exposure to anaesthesiology) and 3 nurses attended 3 morning boot-camp sessions. The boot-camp consisted of: (1) interactive didactic lectures; (2) task-trainers teaching technical skills; (3) high-fidelity simulations. Pre and post-course evaluation forms including a MCQs assessing knowledge were completed. All participants signed a voluntary consent form prior to participating.

**Results:** Nine participants fully completed the boot-camp. There was a significant increase in post-MCQ score ( $p=0.001$ ). Feedback from participants included "well organised", "helpful", "structured approach" with all participants agreeing or strongly agreeing that it was relevant training for their practice.

### Discussion

**Discussion:** There is no standardised induction boot-camp available for novice anaesthesiology trainees in Ireland at present. The success of this boot-camp makes us believe that this programme could be rolled out to other teaching hospitals. The introduction of a national boot-camp would give novice anaesthesiology trainees a solid foundation of

technical and non-technical skills required in anaesthesiology, in a safe learning environment.



SOCIETY FOR  
SIMULATION IN EUROPE

## Scenario-Based Simulation to Raise Awareness about Misogyny Among University Students

**Format:** ePoster Presentation

**Topic:** Assessment using Simulation

### Authors

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### Introduction & Aims

Women endure all kinds of hostile attitudes and behaviours such as being seen as second class citizens. There is sometimes avoidance of their participation in decision-making processes and the thought that their dependence on men should be maintained. Such examples reflect misogyny. Sexism, contempting of women, violence, hostility, prejudice against women, and their sexual objectification are reflections of a misogynistic behaviour. It can negatively affect women's health and social status. Different prevention strategies against such behaviours all over the world are being implemented. Creating awareness is one of the strategies against misogynistic attitudes and behaviours. Changing the attitude in young individuals can occur more rapidly than in adults. University education contributes to personal development and can help develop positive students' attitudes and values and raise awareness of all kinds of hostile behaviours towards women and positively change existing attitudes.

This study aims to eventually leverage on simulation education principles through the development and testing of relevant scenarios using standardised participants and first year university students.

### Description

Scenarios were developed by researchers before a mentorship programme which was focusing on misogyny using simulation and so the scenarios could be checked and corrected by an expert in the field of simulation, and then piloted. Three scenarios recreating misogynistic situations taking place in the workplace, through the media, and in a family context were piloted with volunteer educators either as "learners" or as standardised participants. During the briefing session, their knowledge about misogyny was assessed by the researcher through questioning. Volunteers were then briefed about the context of their assigned scenario and the role of the other "actors". After implementing the scenarios, the debriefing sessions explored the learners' feelings about the specific simulated misogynistic situations. The volunteers' feedback was also obtained about the appropriateness of each scenario and to determine if they needed to be adjusted.

### Discussion

Misogyny is an attitude which is reflected by speech and behaviours and is a term not well-known although people are generally aware of the concept. Our pilot study showed that creating awareness about misogyny can be provided using scenario-based simulation. The scenarios developed were realistic enough to trigger the emotions of the learners and provide a basis for valuable debriefing. It is believed that this approach can be used as part of a misogyny training

programme, and following ethical approval, this will be tested with first year students.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Second twin delivery simulator**

**Format:** ePoster Presentation

**Topic:** New Technologies and INNOVATION

### **Authors**

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### **Introduction & Aims**

Nowadays most Academic Obstetrics Societies try to reverse the trend in increasing C-section for twin deliveries. The skill needed for second twin delivery is at risk to be lost for the next generation. There is therefore an urgent need for a safe and acceptable pedagogic tool to train our students. Simulation procedure is one of these.

### **Methods**

We developed a simple and realistic device which mimics the whole second twin procedure including introduction of the operator hand deeply in the uterus , grasping of the fetal anterior foot and version of the whole foetus leading to its breech delivery. This device was offered to trainees under senior supervision in our Ilumens center. Two session were included in the study to detect any improvement of the trainees' skill and confidence/anxiety score.

### **Results & Discussion**

Ten trainees were included in the study. We had a significant improvement of the delay of the descent of the fetal foot to the vulva ( $p=0,02$ ) ; and a frank amelioration of the confidence score ( $p<0,001$ ). Our simulation model of internal podalic version and breech delivery was judged realistic by most of the students. This model seems to be a valuable tool to prepare our trainees to real life obstetrical maneuvers , avoiding the first time in the patient ; and could contribute to a decline in unnecessary C section.



## **Simulated clinical experiences: satisfaction and self-confidence of nursing students**

**Format:** ePoster Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

The use of clinical simulation as a teaching technique has been increasingly studied by providing mechanisms of active learning, knowledge construction, critical understanding of reality among other aspects, as well as greater satisfaction and self-confidence.

The objective of this study was to evaluate the satisfaction and self-confidence of nursing students.

### **Methods**

Quantitative study. Participating in the study were 106 students from the 2nd year of the undergraduate nursing course that were allocated to two groups and received educational interventions based on different teaching and learning strategies: Control Group (traditional strategies - dialogue and skills training) and Experimental Group (dialogical presentation, skills training and realistic simulation) for the first time with clinical cases in the curricular unit of community and family nursing. After receiving the interventions, the questionnaire of satisfaction and self-confidence in the learning was applied. Meeting the ethical and deontological requirements of research.

### **Results & Discussion**

The students of the Experimental Group showed greater satisfaction and self-confidence in all items compared to students in the control group. The experimental group showed higher means in the items "the teaching methods used in this simulation were useful and effective" with a mean of 4,803, and "I liked the way my teacher taught through the simulation" with an average of 4,821. Self-confidence presents higher averages in the items "my teacher used useful resources to teach the simulation" with average 4.660 and "it is my responsibility as a student to learn what I need to know through the simulation activity" with a mean of 4,607 for the experimental group.

The simulation strategy punctuates the requirements of good educational practice in that it provides active, collaborative learning, different from traditional strategies, and provides more satisfaction and self-confidence.





SOCIETY FOR  
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## **Simulating the Absconded Child - a novel approach to Safeguarding Teaching in Paediatrics**

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

### **Authors**

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### **Introduction & Aims**

Absconding, when a child or young person leaves hospital against medical advice, can result in a multitude of challenges for medical staff. Children and young people may come to harm both from the medical cause of their admission and by lacking a place of safety.

There is little existing training for staff in this area. These young people are often vulnerable and may have presented with self-harm or other mental health concerns. In addition, uncertainty around management of these events, which often occur out of hours, adds to the difficulties junior doctors may have in taking appropriate action during an on-call shift.

The purpose of this scenario was to teach trainees about courses of action to be taken when a child absconds from hospital, and to reinforce the importance of patient safety issues and escalation pathways, as well as rehearsing the interaction with other agencies (such as ambulance and police services).

### **Description**

We devised a scenario of a teenage girl who had been admitted after reporting taking a medication overdose. Candidates will be asked to review the patient and find the bed space empty except for patient notes and a few possessions.

The scenario is due to be run in both in-situ in the clinical environment and in a high fidelity simulation centre in the coming weeks. We will present the feedback from these sessions, including Likert scale questionnaires and free text feedback, and discuss the candidates' experiences in both settings.

Planned debriefing points include the processes to follow when a young person absconds from hospital, preventative aids before a patient leaves hospital, calculating the level of risk to the child or young person, and communication with other agencies.

### **Discussion**

This scenario is a novel method of training staff in the management of a child or young person who has absconded from hospital. It requires negligible resources which minimises the cost and set-up time required. It links in with multiple domains of the Royal College of Paediatrics and Child Health Postgraduate Curriculum (Progress), particularly in the

area of safeguarding.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Simulation for ICM in the West of Scotland - our experience to date**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

Simulation is well established within Anaesthesia as a tool to support education & improve non technical skills. The Medical Education Training Centre (METC) in NHS Lanarkshire has been providing simulation based courses for anaesthetic trainees for years. We have more recently developed an Intensive Care Medicine (ICM) multi-disciplinary simulation study day for West of Scotland (WOS) trainees with an interest in ICM. We have now been running this 1 day course for the last 3 years on a biannual basis.

Our aim is to introduce the candidates to the concept of technical and non- technical skills especially focusing on clinical human factors using the anaesthetists non -technical skills (ANTS) system. Objectives are set at the start of the session.

### **Description**

The faculty includes ICM college tutors & clinical leads for simulation from across the WOS and METC core simulation team members.

We have adopted a team approach to the scenarios and the candidates include 4 ICU nurses or ANPCCs & 4 ST3 & above trainees - ICM trainee or anaesthetic trainee with interest in ICM. The candidates come from across the WOS training program.

We use the Hi fidelity 3G simulation mannequin and an ICU ventilator to allow the recreation of a familiar environment. We run 4 scenarios comprising of 15-20 minutes within the simulation room and then a 30 minute debrief. Topics covered include anaphylaxis, blocked tracheostomy, serotonin syndrome & some scenarios are designed to focus on diagnostic uncertainty within the ICU environment. Candidates act in their normal clinical roles. We aim to promote situational awareness, team working & communication including use of SBAR handover and appropriate escalation.

Observations based on the ANTS debriefing format are used to help assess non- technical skills and debriefing uses video recorded during the scenario. Micro teaching is delivered with the main focus being on exploring the impact of human factors on the management of high intensity critical situations.

### **Discussion**

At the end of the session we ask all candidates and faculty to complete an online feedback to allow us to continually improve the day. These have consistently provided positive responses to what is being offered and allowed us to develop the day to meet the broad spectrum of needs of the candidates partaking. All candidates are then provided with a certificate of attendance.

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## **Simulation for Laparoscopic Liver Surgery Training: How far can we go?**

**Format:** Oral Presentation

**Topic:** New Technologies and INNOVATION

### **Authors**

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### **Introduction & Aims**

Human cadavers are lifelike training models for laparoscopic liver surgery (LLS). The aim of this study was to evaluate the feedback of training on Thiel embalmed cadavers. Subsequently, to solve the disadvantage of bloodless cadavers, postgraduates' experience during training on reperfused Thiel human livers was assessed.

### **Methods**

From 2010 to 2017, ten LLS masterclasses were organized at Ghent University. Under proctorship of international experts, graduated surgeons participated in hands-on training sessions on Thiel human bodies. Afterwards, an anonymous questionnaire was given to evaluate their experience. Considering the feedback of participants and to improve the training model, liver procurement from Thiel cadavers was performed. The portal vein and hepatic artery of isolated livers were connected to a pump and a tube was inserted in the inferior vena cava. Red liquid paraffin was pumped in the liver and venous outflow was pumped in the organ anew (Fig.1). Reperfusion parameters and appearance of the liver were noted. A minimally invasive surgical unit was then set up to train LLS. Participants evaluated the face validity, using a Likert scale (strongly disagree (1) to strongly agree (5)).

### **Results & Discussion**

Over the years a total of 119 surgeons attended the masterclasses. Training on Thiel cadavers was considered superior (49.2%) to proctoring in the operating room (34.9%), virtual reality (6.3%), video training (4.8%) and training on pigs (4.8%). Lack of bleeding was an essential drawback reported by most participants. In the second stage of the study, ten livers were reperfused. After venous drainage (mean time: 29.4 min), significant weight gain was observed ( $P=0.018$ ).

The gallbladder was always the first structure to be filled. All livers remained supple. Seven surgical residents performed LLS. They strongly agreed that tactility was as in vivo ( $4.3 \pm 0.5$ ). Most considered the perfusion as advantageous ( $4.9 \pm 0.4$ ) and believed it to be essential to improve realism ( $4.3 \pm 0.8$ ).

Thiel cadavers are considered as superior compared to other models to learn complex LLS. A prolonged reperfusion in isolated human livers was easily established. This innovative training model allows the simulation of lifelike conditions and to learn to control bleedings and can therefore be the last step before advancing to surgery on patients. Overall, participants were satisfied and strongly agreed that vessel circulation significantly improves realism. Validation of this training tool is, however, needed.

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## **Simulation scenario design- A Biggs Dilemma**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

Peak professional bodies in clinical simulation, such as the International Association for Clinical Simulation and Learning (INACSL) and the Association for Simulated Practice in Healthcare (ASPiH), strongly advocate a robust design process within immersive simulation scenarios in the health care setting. Not only this, but additionally within the process of simulation design and delivery there is an impetus for designers of clinical simulation, emerging both from stakeholders and the professional bodies, to demonstrate the effectiveness of these simulation scenarios and programmes. However to date there has been little research as to the experiences and perceptions of designers themselves as it relates to the factors of scenario design and the measurement of learning. This study sought to understand what methods, if any, simulation scenario designers use to drive and measure learning within immersive, non-assessed simulation scenarios.

### **Methods**

Seven experienced clinicians and simulation designers were interviewed across Scotland, Wales, England, and Australia.

The research question was “What methods, if any, do simulation scenario designers use to drive and measure learning within immersive, non-assessed SBE programmes?”

To answer this broad enquiry, several sub questions were asked:

1. What is the perception of the role of ILO's in the development of simulation scenarios?
2. What methods are used, if any, to ensure ILO's are fully engaged with within the scenario?
3. How is ILO attainment measured in immersive, training based simulation scenarios?

The researcher professed a interpretivist epistemological position and approached the research with a phenomenologically qualitative design. A series of semi-structured interviews were undertaken with the sample group and the data underwent thematic analysis to draw out emergent themes to respond to the research question.

### **Results & Discussion**

The results uncover several different approaches used in designing scenarios and the discussion explored the challenges associated with designing and measuring learning in immersive simulation. There was a clear delineation in scenario designers between those who professed a 'rigid' approach and other who advocated a much more 'fluid' approach in the context of both formulating immersive simulation scenarios and measuring the learning that occurred.

The paper concludes by making several key recommendations in the development of simulation scenario design.

Firstly in embracing the term 'intended learning outcome' as a unifying term to encompass two conflicting approaches in the delivery of simulation. Secondly in promoting broader stakeholder engagement in designing goals of interventions in workplace based education as a kind of proxy to measuring deeper learning processes.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Simulation to develop Clinical Decision Support App in Trauma**

**Format:** ePoster Presentation

**Topic:** New Technologies and INNOVATION

### **Authors**

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### **Introduction & Aims**

Trauma remains the fourth leading cause of death in western countries and the leading cause of death for people under 40. The development of the major trauma app will support clinicians to achieve three key aims:

- 1- Robust data collection to enable forensic analysis of clinical care processes
- 2- Cognitive aids to support and prompt clinicians during trauma care delivery
- 3- Provision of a reliable framework to deliver care aligned to the highest clinical standards to reduce variability.

The team have used trauma simulation to demonstrate that the app satisfies CE marking and MHRA regulations for a medical device.

### **Description**

Creation of clinical data for regulatory approval of apps is challenging and costly. To ensure that the app covered the data collection and clinical decision support elements simulation was used to test the app across teams and clinical events. Simulation enabled a robust approach to testing enabling granular data collection on both 'edge cases' and clinical exceptions.

During the process the team developed approaches for training for the app and further refined the user interface to enable rapid data entry. Repeat simulations of the same clinical scenario with different user groups allowed evaluation of the impact of the app on clinical care.

### **Discussion**

Simulation enabled rapid development of the app. Video recording enabled developers to socialise themselves with the clinical environment and understand the unique challenges of creating an app within the trauma environment. The transition to realtime use is greatly enhanced by the use of simulation to train clinicians and gain critical feedback. As further apps are developed and deployed into the clinical space simulation provides a safe and effective conduit to optimise the app and provide sufficient data to achieve regulatory approval.

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## **Simulation training as a driver for quality improvement on an organizational level**

**Format:** ePoster Presentation

**Topic:** Patient Safety / Quality Improvement

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### **Introduction & Aims**

Helios is the largest private healthcare provider in Europe. For standardization purposes, all relevant medical decisions regarding one subspecialty like Anaesthesia are made in biannual consensus meetings (Fachgruppentreffen, FGT). Three centers take care of all company simulation requirements and train more than 3000 participants every year.

### **Description**

Our simulation scenarios are standardized. We get input for the development of scenario contents from the "FGT" as well as from the company's Risk Management and the simulation centers themselves. We use this process as a feedback mechanism, as the simulation centers provide anonymous feedback to the "FGT" for improvement potential. It was noted that a specific test of the ventilator machine, which is recommended to perform before and between each patient, has been carried out regularly by some physicians and nurses of some hospitals, however not so regularly by staff from other hospitals. This "deviation of the norm" was notably a structural Problem. The test is mandatory at the beginning of each working day. The test in between patients (KURZCheck) includes a swift check for oxygen supply, oxygen flow, leakage, active suction and a ventilation-bag as a fallback measure.

Therefore we created an anaesthetic scenario where a rapid sequence induction was required and the ventilator was not leakproof.

### **Discussion**

When anaesthesia was induced the participant would be unable to ventilate the patient. This specific scenario was rolled out and given to 1006 participants in 12/2015 to 4/2016. Teams using the KURZCheck would be aware of this problem and therefore change the machine. In all debriefings, this topic and the recommendation of the DGAI was highlighted. After feedback to the "FGT" the machine check was made mandatory for all helios hospitals and head of departments were asked to provide a standardized process.

As a result, almost all participant teams since april 2016 completed the KURZCheck. Asked about the reason for doing so we could categorize the answers into three main classes:

1. "I always have to do this test, even in a time-critical emergency."
2. "Our head of department implemented a Standard Operating Procedure (SOP) after the meeting and stressed the importance."
3. "I learned the necessity in simulation training."

The answers were relatively even distributed between the three clusters.

Conclusion:

Due to a standardized simulation scenario as well as through the feedback mechanism to the FGT a change of behavior (Kirkpatrick level 3) could be achieved in the largest healthcare provider in Europe.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Simulation training in laser safety education: the use of technical and non-technical simulation in a comprehensive laser safety course**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

Lasers are commonly used in ENT adult and paediatric surgeries. However, lasers present a significant safety risk to the environment, patients and staff. Otolaryngologists managing a patient undergoing laser surgery have a responsibility to have undergone formal training in the safe use of lasers in the theatre setting. The completion of a laser safety course remains a requirement of the otolaryngology ISCP programme, and all trainees must be proficient in their use and certified as laser safe. The aim of this project was to develop a comprehensive laser safety course utilising non-technical skills simulation and evaluate its utility for teaching laser use in otolaryngology.

### **Description**

A one-day laser course was developed incorporating lecture-based teaching, non-technical and technical skills simulation. Two scenarios were developed for the non-technical simulation: a laser safety check, and an airway fire. Technical simulation involved each participant undertaking a laser safety check, firing the laser at an inert object, training in laser beam focussing, and ensuring accuracy of the guiding beam. All simulations were performed in-situ, with course participants able to observe each scenario through the use of live video-feed enabled by a smartphone, tripod and Apple TV®. This allowed real-time observation by participants and faculty, as well as post-hoc evaluation in simulation debriefing sessions. Course participants comprised 9 otolaryngology trainees and 2 otolaryngology consultants. Participants were provided with a questionnaire following the course, assessing each simulation scenario using a 5-point Likert scale for scenario realism, relevance of scenario learning points, utility of simulation as a tool to teach each scenario, and the overall utility of the scenario for improving learning. A score of  $\geq 4$  was set as the scenario validation threshold.

### **Discussion**

The methodology required to establish a laser safety course using non-technical skills simulation is described, allowing the democratisation of laser education and training. The course, and in particular the use of simulation training, received excellent feedback from otolaryngology trainees and consultants, with all participants 'agreeing'/'strongly agreeing' that simulation was useful for enhancing training. Qualitative feedback reflected these findings: "Laser safety simulation [...]"

was well structured, and applying knowledge into practice is very helpful". Furthermore, the two simulation scenarios were validated as training tools. This represents the first description in the literature, of the use of in-situ non-technical skills simulation training for teaching laser use in otolaryngology. Consequently, the course has been recognised as a laser safety course sufficient for otolaryngology 'Certificate of Completion of Training' (CCT).



SOCIETY FOR  
SIMULATION IN EUROPE

## Simulation training of the anaesthesia residents

**Format:** ePoster Presentation

**Topic:** Curriculum Development

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### Introduction & Aims

Number of authors demonstrated that simulation teaching most powerful outcome is achieved, when simulation teaching is incorporated in the standard curriculum. Slovenian society of Anaesthesiology and intensive care medicine recently adopted a new residency program which includes one month rotation in the Medical simulation centre. We present the development and experiences we had, with the first two simulation courses, designed as a part of residency program.

### Description

To successfully develop a comprehensive curriculum, we decided to split one month rotation in to the two parts, lasting two weeks. First, basic part consists of few introductory lectures, some skill station and three anaesthesia simulations daily. There were 24 simulation sessions (including exam sessions) which were followed by debriefing. Simulations were focused on a distinct part of anaesthesia (induction, maintenance and emergence). Each day there was a new patient introduced and in each simulation different anaesthesia problem was chosen as a teaching point. Exam simulations were identical aimed to test if the candidates have achieved the standard. Candidates feedback was collected using an internet survey at the end of the course.

### Discussion

There were 27 candidates, first year anaesthesia trainees included in our first two basic courses. More than 90 % were satisfied with the course (51,85 % very satisfied, 40,74 % satisfied) and only 7,41 % was undecided. Most of them believe that simulation based learning contributes to safer treatment for patients (66,67% completely agree, 29,63% agree, 3,7% not decided). Overall performance was scored as 11,11% excellent, 59,26 % great, 29,63% good. The design of the course was based on familiar methodology of the first week training in anaesthesia. The patient was replaced by Human patient simulator (CAE), the environment, documentation and behavioural situations were kept as real as possible. This was the first anaesthesia experience but only for the few of the candidates, the rest of them already had at least month or two of real experience. Still satisfaction was rated high and there is some room for the improvement in overall performance, reflecting personnel and equipment issues of our simulation centre. Simulation teaching is an important part of our new residency program. Replacing the patient with the simulator, in the first weeks of training, greatly increase patient safety. We have demonstrated that organizing such long, two week course is possible and feasible.





SOCIETY FOR  
SIMULATION IN EUROPE

## Sleep deprived but well prepared: a collaborative approach to an individual problem

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### Authors

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### Introduction & Aims

Night shift work confronts us with the physical, psychological, social, and emotional impact of acute sleep deprivation and fatigue on a regular basis. The decline of general cognitive and motor performance of individuals after delayed sleep may increase the risk for medical errors. Team performance under pressure of fatigue and sleepiness is however not only defined by individual roles and tasks, but also by a shared sense of responsibility and cohesion. Thus, collaborative training seems essential to improve overall team performance<sup>1</sup>, but is poorly investigated.

This study explored the perceived impact of nightshifts and the opinion of night shift workers about different aspects of resuscitation scenario training, as part of a multifaceted study aimed at leveraging positive coping mechanisms for the benefit of teams.

### References

1. L Reinke, JE Tulleken

Sleep deprived and unprepared

Br J Anaesth. 2017 Jul 1;119(1):11-13.

### Methods

This observational study used a survey to determine relevant demographics, the perspectives on night shift work and the perspectives on team performance during critical situations (5-point likert scales) of doctors and nurses from a Dutch mixed medical-surgical ICU. We further explored participants' opinions about the relative importance of specific aspects of resuscitation training such as fidelity, scenario, feedback, and the impact of training on job satisfaction, self-efficacy, engagement, and team collaboration.

### Results & Discussion

A total of 111 predominantly female (77%) specialized nurses (59%, vs 13% resident and 11% medical specialist), with an average age of 40 ( $\pm 10$ ) years, and 5-10 years of clinical experience responded to the survey (Table 1). Our preliminary data show that 76% considered themselves dealing well with nightshifts. 45% felt best equipped to resuscitate during the day, where 21% preferred the night. However, generally respondents did not expect to perform worse at night. Factors deemed most important for smooth resuscitation were calm and collected behaviour (85%) and frequent reassessment (77%). The majority gained confidence from resuscitation scenario training (88%), yet only 27% thought it would be of added benefit to train at night.

The full results of this survey will inform the design of an observational study investigating the behaviors seen in critical care teams during simulation scenario training after a night shift. This will serve as the foundation for the development and testing of tailored educational methods and determine the importance of considering human factors in workplace nightshift schedules. These may result in increased night shift tolerance, team performance under sub-optimal conditions, patient safety, and employees' wellbeing.

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## **Something for everyone: what do participants from three different professional backgrounds take away from the same simulated ward round?**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

Jennie Higgs	NHS Lothian
Alison Mackie	NHS Lothian
Chris O'Shea	NHS Lothian
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### **Introduction & Aims**

Doctors, nurses and pharmacists must immediately integrate into the multidisciplinary team (MDT) when they commence their working lives. Ward round competence is a vital skill across these disciplines. Despite being exposed to numerous ward rounds during training, local data suggests that final year medical and nursing students, along with pre-registration pharmacists, feel under prepared for their future role upon graduation or registration.

In NHS Lothian we have created a collaborative, high fidelity, simulated ward round for these groups. Participants act up into their prospective roles and rehearse ward round skills in a safe learning environment. We were interested to know what participants took from this experience and whether there was inter-professional variation.

### **Description**

Participants were asked to reflect on the simulated ward round, and their wider experiences, via a structured debrief. The ward round deliberately challenged participants by introducing distractions and unexpected events. The debrief aimed to emphasise the importance of managing tasks, working as a team and communicating within that team to all participants.

At the end of the session participants were asked to individually document up to six Take Home Messages (THMs) from the ward round. We were interested in what these were, whether they were aligned to our learning objectives and whether differences existed between professions.

Thematic analysis separated the data into eight themes, with several sub-themes: Communication, Task Management, Team, Knowledge, Preparedness, Patient, Accessing help, and Documentation (Table 1).

The proportion of THMs coded to each theme was different between professions with the three largest proportions for each profession being:

- Medical students: Task Management (35.5%), Team (26.0%), Preparedness (17.1%)
- Nurses: Communication (48.3%), Task Management (25.5%), Knowledge (13.4%)
- Pharmacists: Communication (86.8%), Task Management (5.3%), Team (5.3%).

## Discussion

Participants' THMs aligned closely to our learning objectives. All three professions reported similar but not identical learning. Medical students mentioned Task Management most frequently. This was unsurprising as the ward round is a key opportunity to agree with their consultant a management plan for each patient. As expected, nurses and pharmacists included communication most frequently indicating that the ward round provides a key opportunity to communicate specific care issues with the MDT.

The simulated ward round is rated highly by participants. Our analysis demonstrates that three separate professions can take away clear learning points which will contribute to their ability to transition into their prospective roles. We are proud to be able to offer a truly inter-disciplinary learning experience.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **Speaking up in teams: Evaluating the effect of in situ theatre simulation on team member's confidence**

**Format:** Research Studies - Oral and Poster Presentations

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

The reluctance that individuals may have in voicing their concerns to higher status team members can adversely affect multi-professional team working. Failure of junior team members to demonstrate assertiveness in voicing concerns has been cited as a reason for 'never events' in some investigations.

To support theatre team staff to speak up we were invited to establish a routine simulation based training programme for inter-professional theatre personnel.

This paper reports on the initial phases of the project, evaluating the effect of routine in-situ theatre simulation training on staff confidence in speaking up.

### **Methods**

We held a two-site pilot with intact theatre teams, using a standardised emergency scenario, requiring the recognition and management of loss of effective airway in a lateral or supine patient midway through an operation. Participants and observers were debriefed to discuss clinical, human factor skills and latent threats surfaced from the simulated theatre event. Post session reports on the effective way teams are working and the latent threats were used to disseminate shared learning to the wider teams.

### **Results & Discussion**

**Results:** Both the pilot and a large training event identified that staff recognise the importance of, and are confident in the following: clarifying information if needed for patient safety reasons, providing assistance to all team members under pressurised situations, raising concerns within their professional groups. Furthermore simulation participants reported leadership and appreciation of each other including junior and more senior colleagues as being important to reduce stress amongst the team, but that staff sometimes found 'speaking up' behaviours were either negatively challenged or ignored in real life. In addition staff felt that opportunities to speak openly across the whole team were not always available.

#### **Discussion:**

This needs analysis has evidenced that staff have capabilities to speak up and work together to mitigate for emergencies when there is an urgent need to address patient safety, however further interventions are required to enable team members to work in ways that maximise safety and reduce risk at routine times.

We are continuing with our yearlong in-situ theatre team safety training, focussing on ensuring representation from all levels of the MDT to be present. In addition we have developed a series of additional sessions to allow staff to practise their verbal and non-verbal skills.

We are assessing outcomes using a validated pre and post simulation human factors questionnaire (1) and will present the results of this phase at the meeting.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Stories of Success: Demonstrating improved performance in junior doctors after simulation**

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

### **Authors**

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### **Introduction & Aims**

A large amount of the credibility of immersive simulation rests on the assumption that the experience of simulation positively impacts on clinical behaviour. Whilst the literature has demonstrated an impact on confidence in participants undergoing simulation, there is a distinct lack of evidence which demonstrates direct clinical impact in these cohorts. With significant amounts of resources required to run simulation programmes internationally, demonstrating that this positively impacts on junior doctors' clinical performance is essential.

In 2013, a simulation programme was set up for first year junior doctors, to respond to areas of the curriculum which they were finding hard to evidence. This programme consists of three sessions that run over the year, focusing on technical and non-technical elements of patient care.

This study sought to look for what impact, if any, did the simulations programme have on the clinical performance of first year junior doctors in NHS Lothian.

### **Methods**

This was a qualitative study utilising a narrative enquiry approach. Between 2013 and 2018, a voluntary questionnaire was sent to all junior doctors at completion of their first year of training. This questionnaire asked them to briefly describe, if possible, two specific accounts of when they were able to apply what they had learned during their simulation experience into their clinical setting. Questionnaires were coded and analysed using thematic analysis.

### **Results & Discussion**

264 junior doctors (n=264) returned their completed questionnaire giving a total of 528 narrative accounts for analysis. The narratives draw strong, contextualised links from what was learned in simulation to direct positive impacts on their performance. The following five themes were identified: situational awareness, teamwork, communication, legal decision making, and the acute management of the unwell patient. The most commonly cited themes were impacts in performance in acute management (458 separate accounts), communication (374 accounts), and teamwork (364 accounts). The accounts in this study express a clear link between their experience in a simulation programme and their direct clinical performance, often months after the learning experience. Whilst acknowledging that the responses received in this study are inherently subjective in nature, it is asserted that the large sample size, along with the 5 year span of data collection, add a level of validity in responding to the question at the centre of this enquiry. Simulation has been seen to positively contribute directly to increased clinical performance, leading to the logical extension of impacting where it truly matters - safer patient care.



SOCIETY FOR  
SIMULATION IN EUROPE

## Suicide awareness for senior medical students through simulation

**Format:** Oral Presentation

**Topic:** Curriculum Development

### Authors

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### Introduction & Aims

Suicide is a tragic and preventable cause of death, accounting for 5821 deaths in the UK in 2017. Doctors are at increased risk for many reasons including stress, work/exam burden, shift work and the impact of mistakes or adverse outcomes. There has been a recent increase in suicide awareness within the medical community, however there remains a lack of formal education. This project targeted senior medical students, a group who will soon face the challenge of being junior doctors. The aims were to increase knowledge of risk factors for suicide, provide students with a framework to discuss suicide, and encourage open discussion about suicide through simulation.

### Description

**Scenario design:** A scenario was designed with the focus of a colleague upset at work and admitting to thoughts of suicide. The learning objectives were written based on the aims and in line with the GMC 'Outcomes for Graduates' curriculum (2018). A confederate played the role of the struggling colleague. Progress through the scenario was driven by the learning objectives in accordance with constructive alignment.

**Scenario running:** The simulation was run as part of an existing undergraduate simulation programme. Two students participated and the remaining five viewed via video-link. A debrief of all students took place, which included a micro-teach of a 'how to talk about suicide' framework which was adapted from an online training course (Figure 1).

**Safety:** Permission to stop the scenario at any time was given, and we ensured that experienced faculty were present in case any student required further support.

**Feedback:** Eighty-six percent of responses agreed or strongly agreed that the learning objectives had been met, and all students felt that they would now be more confident in approaching a colleague who they suspected was suicidal. Free text responses indicated that although they found the discussions difficult they felt they were of importance. Three students mentioned the supportive attitude of the faculty.

### Discussion

This is a novel method of increasing suicide awareness in senior medical students by application of simulation methodology. Feedback received was positive and indicated that measures taken to ensure a safe learning environment were successful. Our hope is that by increasing knowledge and providing a framework to facilitate discussion about suicide that we can prevent further tragic events of suicide in our colleagues. We have 12 further sessions planned over this academic year and look forward to reporting our progress.

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SOCIETY FOR  
SIMULATION IN EUROPE

## Teaching and assessment of basic clinical skills using simulation

**Format:** ePoster Presentation

**Topic:** Assessment using Simulation

### Authors

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### Introduction & Aims

The clinical skills course is involved in the main curriculum of the Faculty of Medicine of Tbilisi State Medical University. Second, fourth and sixth year students have the clinical skills course. The syllabuses of various courses are drafted to meet the standards defined by national benchmarks of medical education, which in turn meet the global requirements in medical education.

Changes were made in "Clinical Skills" course of 2nd year taking into consideration student's feedback. In particular, we have redistributed hours of a training course in such manner that one day was assigned when students could repeat those manipulations which they did on simulators during a training course.

We compared OSCE results of two study groups of second-year students before and after amendment.

### Description

We have studied exam results of 2nd year students of Faculty of Medicine of 2017-2018 (n=52) and 2018-2019 (n=50) academic years. Marking schemes of 5 groups have been randomly selected for our study from each academic year. In both cases, there were OSCE eight 6-minute stations on the following topics: BLS, Patient transportation, Intravenous injections, Intramuscular injections, Subcutaneous/Intradermal injections, First aid, Newborn's physical development and Pediatric patient care. The maximum score was 40 points. (5 points at each station). The exam was passed if the student had a minimum of 24 points

### Discussion

The study showed that students had received better results on each stations when hours of the training course were distributed optimally. (table 1)

The received results suggest finding of one day for repetition of practical manipulations on manikins few days before exam improves students ability to perform skills.

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**Teaching based on medical simulation: Evaluation of the efficacy of training in cardiac auscultation in medical students at the Agostinho Neto University, Faculty of Medicine, Angola, 2017**

**Format:** ePoster Presentation

**Topic:** Assessment using Simulation

**Authors**

ROSALINA LUFEFENA NUNES ARTUR

EUGENIO NUNES E CONCEIÇÃO IMACULADA

**Introduction & Aims**

Introduction: a medical simulation is an important tool in the teaching and learning process in medicine, offering students knowledge for the management of well-being, discarding in this phase of learning the potential risks to the patient and the student, giving possibility of repetition from exercise to gaining skills and competence without the handling of patients. The aim of this study was to evaluate the efficacy of cardiac auscultation learning by simulation, comparing it to the regular / traditional teaching of the 3rd year students of the Agostinho Neto University School of Medicine (FMUAN) in the academic year 2017/2018.

**Description**

Methods: A controlled clinical trial of educational intervention was carried out with 117 students, divided into two groups: group A 59 (control) and group B 58 (case) and both were submitted to a pre-test in simulators. Group A had traditional classes (in the ward) and group B classes in simulators (laboratory) on cardiac auscultation. All groups had 6 hours of training divided into 2 hours per day on 3 consecutive days. Real patients - with physiological and pathological sounds were randomly selected in the cardiology ward by the team of instructors. For training and testing with simulators were used mannequins of cardiac auscultation type NASCO auscultation trainer and SmartScope, which generates 12 different sounds, namely: normal heart, holosystolic blows, protosystolic, mesosystolic, holodiastolic, protodiastolic, mesodiastolic S3 and S4 gallops, systolic clicks, atrial septal defect, patent ductus arteriosus, ventricular septal defect, on the anterior aspect of the thorax. After the classes were submitted to a test in real patients. Data processing was done through SPSS 23 edition. To compare learning effectiveness, the chi-square test and the McNemar test with a significance level of 0.05 were used.

**Discussion**

Results: Correct responses in cardiac auscultation assessment in real patients between group A and group B after training averaged for group A was  $2.15 \pm 0.84$  and for group B was  $3.16 \pm 0.62$  with statistical significance ( $P < 0.05$ ).

Conclusion: Group B had better ability in cardiac auscultation and ability to differentiate between normal and pathological sounds compared to group A. Simulation teaching should be incorporated into the formal teaching process in FMUAN.

Key words: Medical simulation, cardiac auscultation ability, cardiac auscultation.



SOCIETY FOR  
SIMULATION IN EUROPE

## Teaching empathy to medical students in a resource constrained environment

**Format:** Oral Presentation

**Topic:** Curriculum Development

### Authors

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### Introduction & Aims

Empathy is an essential communication skill within the doctor-patient relationship. Teaching empathy however remains challenging due to poor understanding of what clinical empathy encompasses (Hojat, DeSantis and Gonnella, 2017), the time available for teaching, and personal perceptions of empathy.

A combination of teaching methods was selected following a scoping review of educational interventions to enhance empathy in undergraduate medical students (Archer and Meyer, 2018). Kern's six-steps of curriculum development (Kern, Thomas and Hughes, 2009) was followed to incorporate these interventions into the third-year medical curriculum of Stellenbosch University undergraduates as part of a longitudinal clinical skills module, aiming for students to understand the value and implication of empathy within the doctor-patient relationship and apply cognitive skills necessary for empathic communication.

### Description

During the course of the 3rd year, empathic communication was addressed in two experiential learning contact sessions. Students were asked to watch short introductory You-Tube video clips, read an article about the Science of Empathy (Riess and Kraft-Todd, 2014) and view a self-developed Sharable Content Object Reference Model (SCORM) package prior to the contact session. Student groups rotated through various learning stations during a two-hour training session. Stations included simulated patient contact sessions with different scenarios, eliciting constructive feedback from the simulated patient, facilitator and peers; games where students experienced not being listened to; recognising emotions in body posture; a practical perspective-taking exercise and an opportunity for students to practice a short guided meditation and self-compassion exercise. Finally students reflected on their learning experience and on how they would apply empathy in the future.

During a qualitative, interpretivist research study, focus group discussions were conducted with both simulated patients and facilitators regarding their experience of these sessions. Interviews were transcribed and the content thematically analysed.

### Discussion

The experiential learning sessions enabled simulated patients and facilitators to guide students towards understanding the value of empathy within the therapeutic relationship and equip them to apply cognitive skills necessary for empathic communication within their personal lives and in clinical practice. They acknowledged that most students reached the set

outcomes and described this as the “AHA” moment, pushing the “golden buzzer” or the “penny dropped”. Challenges identified included an unauthentic setting, students struggling to incorporate a bio-psycho-social approach when doing history taking, time constrained feedback and inconsistency of the simulated patients.



SOCIETY FOR  
SIMULATION IN EUROPE

## Ten years' experience of a mobile skills unit - To Unst and beyond...

**Format:** ePoster Presentation

**Topic:** Patient Safety / Quality Improvement

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### Introduction & Aims

Scotland's physical and human geography presents particular challenges to the delivery of high quality, consistent, simulation-based clinical skills education for health and social care. Ninety-five percent of the land mass can be termed remote and rural accommodating 20% of the population.

Following a once for Scotland approach, the Scottish Clinical Skills Strategy was launched 10 years ago providing both evidence based educational resources and a mobile simulation facility – the Mobile Skills Unit (MSU), to address effectively and efficiently the inequity of access. The MSU is one of the delivery units of the Clinical Skill Managed Educational Network – the organisational structure responsible for implementing the national Clinical Skills strategy.

This descriptive study shares the experience of the MSU over the past 10 years in terms of geographic coverage, course profiles, engagement by different health care practitioners and the public. Data was also collected from users to identify challenges and barriers to its sustainability.

### Description

The MSU is a dedicated specialist vehicle with video recording facilities, briefing immersion and debriefing areas and a range of manikins and part-task trainers which facilitates simulation based education. A standard logistics system to support each visit was developed training both hosts and faculty.

Between 2009 and 2018 the MSU had over 150 separate visits covering 12 territorial healthboards in 48 venues across Scotland, covering both urban and rural communities. A range of multi-disciplinary healthcare professionals were trained including nurses, medics, dentists, allied health practitioners, paramedics, other emergency services (e.g. coastguard, fire etc) as well as the public. Over 1300 courses were run on the unit covering 100 different clinical topics.

### Discussion

Lessons from the feedback from users and hosts identified some challenges which were explored in depth through a consultation process to support commissioning a new unit. These included:

- A multi professional working group regarding the content and layout
- Evaluation of courses run on the unit

- Steering group to involve decision makers
- Operational group

The new MSU has a more flexible central area for delivering scenarios with a debriefing area and easy access storage options for equipment. It has an innovative power management system (silent generator, solar panels, electrical hook up) ensuring it is truly mobile.

#### Sustainability

Partner organisations are more engaged and provide an improved range of educational courses on the MSU thus improving and widening user engagement.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **The black-box embedding the success of high-fidelity simulation training in nursing education**

**Format:** Oral Presentation

**Topic:** Center Administration and Program Evaluation

### **Authors**

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### **Introduction & Aims**

High-fidelity simulation (HFS) is a complex intervention, consisting of pre-briefing, simulated experience and debriefing components; and subject to changes with various factors in the intervention delivery process. Adoption of HFS in the training of undergraduate nursing students has been found to be beneficial to their learning. However, merely focusing on the outcome inferences from such complex HFS training program might fail to reflect the actual consequence from the program if the integrity of its delivery process has been compromised. The current study aimed to investigate the integrity of a HFS training program delivery process; and the contributing factors to the effect on clinical judgment (CJ) of undergraduate nursing students from the program.

### **Methods**

A process evaluation was adopted to evaluate the intervention integrity through observation on the nursing students' participation levels during the pre-briefing, simulated experience and debriefing of the training program; and recorded on an intervention activity log. Variations in six major elements of intervener behaviors during debriefing affecting the effect of the program were evaluated by the participants using the seven-point scale Debriefing Assessment for Simulation in Healthcare (DASH) - Student Version Long Form.

### **Results & Discussion**

Most of the sixty senior-year undergraduate nursing students in the HFS training program demonstrated moderate to high level of participation in various sections of the program (85 - 97%). A moderate-to-strong positive correlation was detected between the change in total CJ score, measured with the Lasater Clinical Judgment Rubric, and the participation level in discussion during debriefing ( $\rho = .70$ ;  $p < .001$ ) and immersion into simulated experience ( $\rho = .59$ ;  $p < .001$ ) analyzed with the Spearman's Rho. Other factor on the intervener behavior to set up a stimulating, engaging and secured learning environment for sharing in debriefing was found to have contributed to a higher CJ score ( $r = .302$ ;  $P = .019$ ) with the Mann-Whitney U test.

The current study evaluated the key factors contributing to a successful HFS training program in enhancing CJ of undergraduate nursing students. Further effort would be recommended to reinforce these factors, including the immersion of students in the simulated experience and debriefing for reflective practice in the intervention delivery process; and the capability of intervener to engage the students during debriefing when planning HFS training program in the future.



SOCIETY FOR  
SIMULATION IN EUROPE

## **The Development of In-Situ Simulation in the Emergency Department around patients with Psychiatric Illness**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

In-situ simulation is well established in medical education, being used from everything from assessment to human factors training. In emergency medicine (EM), in-situ simulation has been used for many years to try and practice skills and understand human factors in teams better. The emergency department (ED) is seeing an ever increasing number of patients with mental health issues. These patients present a challenge to manage. This work describes the development of in-situ psychiatric simulations specific to the ED.

### **Description**

We already have established in-situ simulation training weekly within our department, typically on a Monday in the paediatric ED and Wednesday in the adult ED. The whole team from nursing and medical students, through to senior doctors and nurses get involved. What was clear was there was a lack of psychiatric specific simulations in our repertoire, over the usual overdose patient. The three scenarios developed were: scenario 1 the psychotic who needs rapid tranquilisation, scenario 2: management of a patient who has hung themselves and scenario 3: adult patient who has absconded.

### **Discussion**

These scenarios are becoming more common presentations to the ED, especially the agitated and psychotic patient secondary to drugs. There is some literature around psychiatric emergencies simulations mostly these concern psychiatric emergencies in the ward context. There is little work around these typical patients that present to the ED with these scenarios. The first two scenarios were tested as part of a mental health study day for the senior EM doctors and the last scenario of the absconded patient, with the junior EM doctors. Scenario 1 was developed due to increasing number of these presentations. Security were involved and felt they benefited from practicing the restraining skills they learnt, the doctors felt they were able to practice their verbal skills and how you physically, rapid tranquilise someone. Scenario 2 was not a common scenario for this group of doctors and nurses; they felt they massively benefited from it as it allowed them to consider the technical management of these patients. The final scenario found the junior doctors stunned as it had not happened to them yet; it allowed them to understand the practicalities of what to do. It is clear in this early work these psychiatric simulations have benefited the department; these scenarios will be added to our formal in-situ simulations.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **The effect of simulation learning on pre-clinical and clinical practical training on the example of Tallinn Health Care College**

**Format:** ePoster Presentation

**Topic:** Assessment using Simulation

### **Authors**

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### **Introduction & Aims**

By upgrading the study infrastructure of the Tallinn Health College, a modern simulation center was set up in autumn 2014, the simulation environment and high-fidelity simulators inevitably set new challenges for lecturers in terms of both teaching planning and acquisition of student skills. In the framework of the "Institutional Development Program for Research and Development Institutions and Higher Education Institutions", the main aim is to increase the quality of teaching and research work, several applied studies focused on the assessment of simulation's impact, what is applied at school.

### **Description**

This study is empirical and descriptive, using both a qualitative and quantitative research method in combination. Material collection started in June 2016, the studies were carried out during the period from March 2017 to October 2018. The sample consisted of the second-year students and faculty members with at least one year of simulation teaching experience. In the first phase, semi-structured interviews with university lecturers(4) were conducted, which examined the experience of the teaching staff in implementing high-fidelity simulation and evaluated their positions on the achievement of learning outcomes. In the second stage, semi-structured interviews with students(16) were conducted and the tools the Educational Practices Questionnaire (EPQ) (78), the SET-M Simulation Effectiveness Tool (83) were used. The data was analyzed using the statistical program SPSS 22.0. In the third stage, the effectiveness of students' simulation training for conducting clinical practice was assessed, based on the students' practice documentation (118). The database of documentation analysis was made up of students' practice papers in the e-learning environment, which summarizes the information about the learning outcomes achieved in practice, students' self-reflection and student's and supervisor's evaluations. In the analysis of documents, the content of the texts was analyzed using a qualitative content analysis method.

### **Discussion**

Teachers rated high-fidelity simulation as the necessary teaching method, highlighting the positive impact of the teaching method in terms of students' skills and decision-making as well as learning progress with increasing self-confidence. Students highly appreciated the possibility of co-operation with other students and teamwork experience, the consolidation of theoretical knowledge and their own professional development as a whole throughout the simulation training course. Students considered simulation training as an encouraging experience, which reduced the stress of performance in clinical practice. The disadvantage of simulation training was the ability to receive individual feedback, and the played through scenarios distorted students' realities.



SOCIETY FOR  
SIMULATION IN EUROPE

## **The evolution of the Do-Not-Resuscitate (DNR) Order in the Pediatric Intensive Care Unit (PICU): A Cultural View**

**Format:** Research Studies - Oral and Poster Presentations

**Topic:** Patient Safety / Quality Improvement

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### **Introduction & Aims**

The Do Not Resuscitate (DNR) order is a widely recognized medical abbreviation and it is part of most hospitals' policies on the process for making and communicating decisions about a patient's resuscitation status. Yet it has not become a universally accepted part of the ritual of dying; there is no consensus on the practice (1) especially, on a cultural spectrum. As it did in 1976, the concept evokes controversy regarding the larger issue of appropriate care for dying patients (2). The topic is further complicated for the pediatric patient demographic; given the inability of the majority of pediatric patients to share their views on end-of-life decisions, the parents' and the medical teams' responsibility is to arrive to the optimal decision for the child. As studies have shown, in the context of culture, often perceptions of behavior and behavior in reality are drastically different (3-4).

#### **Aims**

- In phase I: To conduct a systematic review on the state of the DNR order and end-of life decision making in pediatric intensive care in different cultural regions (e.g. Europe, North and South America, South East Asia and Australia).
- In Phase II: To conduct a modified-Delphi, to develop and validate a tool to assess the views and perceptions of pediatric intensivists on the DNR order and end-of-life decisions per their cultural setting.
- In Phase III: To develop a simulation-based intervention to assess practioners' communication of the DNR order and end-of-life decisions.

### **Methods**

For phase I, each member of the investigating team will take a cultural region. The literature search will be based on a few key words agreed upon by the team. The files will be shared on Mendeley™. Based on the findings of Phase II, pediatric intensivists from different cultural settings will be approached to partake in a modified-Delphi, a preliminary questionnaire/survey developed by the team will be e-mailed to those who agree to participate, and the process will be repeated for a few rounds until a resolution on the questionnaire is reached. Lastly, the questionnaire will be implemented via a simulation-based intervention to assess pediatric intensivists' views/perceptions on end-of-life decision making and DNR order discussions.

## **Results & Discussion**

This is a work in progress; we anticipate a timeline of 2 years for all 3 phases. By SESAM19, we will share the results of the systematic review.



SOCIETY FOR  
SIMULATION IN EUROPE

## **The impact of simulation on Florence Nightingale's mental health nursing programs**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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### **Introduction & Aims**

Managing high-intensity psychiatric and physical deterioration is a challenge for any clinical service, even more so in mental health settings where clinicians may have less experience with such low-frequency, high-pressure occurrences. Simulation is used for training in medical specialties, but is used relatively infrequently in mental health, though recent projects have indicated its usefulness.

In collaboration with the Florence Nightingale School of Nursing and Midwifery (FNSNM) a half-day course was developed consisting of a three simulated scenarios alternated with didactic teaching sessions. The scenarios aligned with elements of the course's lecture-based content and addressed learning objectives that didactic methods alone could not with a strong focus on clinical management, the practicalities of teamworking and communication under pressure.

### **Methods**

Participants (n=71, eight courses) were from two different programs within the FNSNM. Each program chose 3 scenarios for their half-day simulation component; PGDip Mental Health Nursing chose management of a person found hanging, seclusion review and assessment and management of an acute dystonic reaction while BSc Mental Health Nursing chose seclusion, agitation and search. In addition to these, the following are discussed: handover best practice (SBARD), use of rapid tranquilisation, and de-escalation / communication.

Participants completed an anonymous tablet-based post-course survey designed to determine participant's beliefs regarding how the course met the school's learning objectives. Participants also completed anonymous feedback forms, consisting of both open and closed questions.

### **Results & Discussion**

Thematic analysis of qualitative feedback identified themes of confidence, knowledge, awareness, team working, communication and transformative, experiential learning. Most respondents identified specific lessons learned and changes they could apply to their own practice with some rating the adjunct as the most useful part of the program. Responses were overwhelmingly positive, with a majority rating the course as excellent as well as useful, relevant and recommended to colleagues. Post course measures derived from the FNSNM's own learning objectives for the entire program showed that 86.37% of students thought that the course either somewhat or completely achieved these and there was a significant increase on the Human Factors Skills for Healthcare Instrument1 ( $p < .05$ ).

Further research will be conducted on the usefulness of mental health simulation to supplement higher education as we continue to integrate it into various programmes, but these initial results indicate the potential for simulation to be a valuable learning tool in this context. In the future, we plan to follow up with this population to gain a more detailed picture of the educational impact.



SOCIETY FOR  
SIMULATION IN EUROPE

## **The influence of high-fidelity patient simulation training on self-confidence and stress in nursing education**

**Format:** ePoster Presentation

**Topic:** Assessment using Simulation

### **Authors**

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### **Introduction & Aims**

Nursing education and schools are challenged to best prepare students for the complex healthcare system. Previous studies have shown positive results regarding the use of high fidelity patient simulation (HFPS) within nursing education on several items such as teamwork and clinical reasoning. However, little is known about the effects of HFPS sessions on the perceived self-confidence and stress level of students during their internships. This study examines whether HFPS has an added value on perceived self-confidence and stress levels of first-year nursing students during their internship.

### **Methods**

First-year nursing students ( $n = 250$ ) of nursing schools in West-Flanders (Belgium), randomly assigned to an experimental and a control group, will be investigated. More specific, the students will be questioned twice using a self-developed and validated questionnaire which examines the perceived self-confidence and stress level of students during their internship. Both groups will receive this self-developed and validated questionnaire immediately after completing their first internship and immediately after completing their last internship. The experimental group will have completed HFPS before the start of their last internship, while the control group will not have received HFPS before starting their last internship that year. Instead, HFPS sessions are planned after their last internship. In addition, after each HFPS session, the Simulation Effectiveness Tool (SET-M) is used to estimate how students experienced that simulation session. This way, it will be possible to examine whether HFPS has an impact on the perceived self-confidence and stress level of nursing students during their internship. The results will be quantitatively analyzed using the statistical software program SPSS.

### **Results & Discussion**

Firstly, the validation process of the self-developed and validated questionnaire which examines the perceived self-confidence and stress level of the students during internships will be presented. As well, the results of the study will be described. Furthermore, this presentation provides an insight into the degree of perceived self-confidence and stress level of first-year nursing students. The added value/influence of HFPS on perceived self-confidence and stress levels of students during internships will also be described.



SOCIETY FOR  
SIMULATION IN EUROPE

## **The journey of developing cross-site multiprofessional recovery insitu simulation**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

Epsom and St Helier NHS Trust comprises Epsom General Hospital (EGH) and St Helier (SHH) Hospital, which are approximately 7 miles apart. While both hospitals have their own surgical and recovery teams, operations and post-operative complications differ.

In-situ simulation has been shown to improve patient safety in stressful environments such as recovery.

In 2017, as EGH had the onsite simulation department which included simulation educators, manikins and 'debrief' room, monthly multidisciplinary in-situ recovery simulation sessions were first introduced there. A 'simulation pack' was developed consisting of six scenarios and pre-and post-course materials including course surveys.

As the EGH sessions showed multidisciplinary learning, we extended the monthly multidisciplinary in-situ recovery simulation sessions to SHH.

Our aims were: 1. To provide monthly cross-site multidisciplinary recovery in situ simulation sessions to SHH and EGH.  
2. To compare experiences of staff at both sites attending the multidisciplinary recovery in situ simulation sessions.

### **Description**

We allocated, transported and stored a high-fidelity manikin in SHH.

We set dates for sessions, then liaised with departmental managers to pre-allocate two recovery nurses, one operating department practitioner, and one anaesthetic registrar to each session.

We reviewed the scenarios which had been used for the sessions at EGH and duplicated the 'simulation pack', except for scenarios which were less realistic for SHH.

The first cross-site session was in October 2018. On the day, faculty arrived at 07:30 to assemble the manikin in a recovery bay. The sessions ran from 09:00 to 10:15am. This included time for introductions, pre-course survey, briefing, scenario, debriefing and post-course survey.

The responses in surveys will be used to compare experiences of staff at both sites.

## **Discussion**

There were several challenges to implementing the course at SHH.

There were limitations of not having an onsite simulation centre at SHH such as time spent finding a secure place to store the manikin in SHH. Also, without a purpose-built debrief room, the scenario and debrief took place in the recovery bay. This raised concerns of impacting psychological safety during the debrief.

The scenarios could not be duplicated for use at SHH due to differences and so faculty time had to be allocated to review scenarios.

So far, we have carried out one session at each site and after more sessions, we will be analysing the responses to course surveys to compare the course between the two sites.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Using image examples to guide assessment of ultrasound images by non-experts including standardised patients**

**Format:** ePoster Presentation

**Topic:** Assessment using Simulation

### **Authors**

Felicia M. Toreno	Eastern Virginia Medical School
Lorraine Lyman	Eastern Virginia Medical School
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### **Introduction & Aims**

At many institutions providing feedback to imaging of medical students who produce Ultrasound images is an uphill battle. Many institutions lack enough faculty to complete this task on a regular basis, but students regularly state that feedback is a necessary component to their improvement as they continue to learn scanning techniques. Using image examples which demonstrate best practices and common mistakes can help non-experts develop a greater comfort during image assessment.

### **Methods**

This presentation covers a discussion of two important topics, Ultrasound imaging assessment and SP involvement in Ultrasound education. When learning the basics of Ultrasound imaging, students rely on feedback of early image acquisition to adjust and improve their scanning habits. Example images of optimal images, as well as images with some common mistakes can help guide students as they learn. They can also provide new mentors with a guide to providing useful evaluation of images to help student imaging progress.

This presentation will discuss the process of using a bank of master images to help non-experts assess Ultrasound images for medical students. The mentors assessing images include near peers and standardized patients. We will present examples of master images as well as reflections from SP's involved in the process. Additional observations regarding changes in SP enthusiasm toward their involvement in the education of medical students in medical diagnostic Ultrasound imaging.

### **Results & Discussion**

The imaging of medical students improve substantially with regular and meaningful image assessment provided to medical students. All learners need to know what their mistakes are so they don't learn to repeat them and subsequently anchor them into long term memory.



We will present examples of image guides to both good images and common imaging errors and discuss two of the ways we have used this process at EVMS. First, we use this as one of the tools which help guide student learning during Ultrasound imaging within their medical school curriculum. This includes helping near peers and other non-experts provide solid image assessment to learners. We will also present SP observations regarding their perceptions and attitude toward Ultrasound imaging and their participation in Ultrasound labs once they become more active and knowledgeable in imaging standards and requirements.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Using simulation to improve paediatric trainees confidence in performing common neonatal procedures**

**Format:** Oral Presentation

**Topic:** Curriculum Development

### **Authors**

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Birmingham Women's and Children's NHS Foundation  
Trust

Matthew Nash

Birmingham Women's and Children's NHS Foundation  
Trust

### **Introduction & Aims**

Undertaking your first neonatal job as a new paediatric trainee can be a daunting experience. Learning to perform common neonatal procedures is an essential part of neonatal care. Neonates are some of the smallest and most vulnerable patients. It is therefore essential these procedures are performed competently and in accordance with national guidance to reduce the risk of complications, for example catheter associated infection.

We therefore designed a neonatal clinical skills simulation course for first year paediatric trainees, aiming to improve trainee's confidence in undertaking commonly performed neonatal procedures, whilst simultaneously improving patient safety.

### **Description**

We designed and implemented a 1 day neonatal clinical skills simulation course for first year paediatric trainees at the start of their first neonatal placement. This consisted of 4 small group simulation teaching sessions, giving trainees the opportunity to learn and practice common neonatal procedures in a realistic environment.

Skills covered included;

1. Airway management and intubation
2. Central venous and arterial access
3. Chest drain insertion and needle thoracentesis
4. Capillary blood sampling, intraosseous needle insertion and peripheral arterial access

These practical skills were supported by small group discussions on indications, insertion guidelines and infection control considerations. In addition we delivered small group teaching sessions on stabilisation of the extreme preterm infant in the first hour of life and cerebral function monitoring (CFM).

### **Discussion**

9 first year paediatric trainees attended the pilot course in September 2018. We asked trainees to rate their confidence before and after the course on a scale of 1 to 5, 5 being very confident. All trainees reporting feeling more confident in all

skills after attending the course (table 1). Most notably, trainee's confidence improved from an average of 2.5 to 4.3 after attending the airway management and intubation simulation session. 100% of trainee's rated the simulation course as useful or very useful (4-5/5). Feedback comments included 'enjoyed having focused time to learn and practise clinical skills', 'I feel a lot more confident now' and 'very helpful and informative, loved it!' 100% of trainee's stated they would recommend the course to their colleagues.

Giving trainees the opportunity to learn and practice these skills in a safe, simulated environment improved their knowledge and confidence, theoretically leading to improved patient safety. Due to the success of the pilot simulation course, it is now ran twice yearly as part of the deanery wide Speciality Training year 1 (ST1) teaching programme.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **Using simulation to learn from significant incidents: a novel approach to simulation-based pericardiocentesis training**

**Format:** ePoster Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

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### **Introduction & Aims**

Pericardiocentesis is a potentially life-saving procedure for patients with cardiac tamponade, and the ability to diagnose and manage a pericardial effusion is therefore a core skill that cardiology trainees must achieve. Following a significant incident in which none of the trainees or consultants present were competent to perform pericardiocentesis, a simulation session was introduced using a procedural model to provide training on this procedure. The use of such models is widespread in medical education, however pericardiocentesis models are unable to accurately represent the echocardiographic features used to diagnose cardiac tamponade. This project therefore aims to incorporate the use of novel ultrasound simulation software into a high-fidelity simulation session, thus providing a more accurate representation of the clinical scenario and allowing trainees to develop the skills required to both diagnose and manage cardiac tamponade.

### **Description**

Pericardiocentesis training will be carried out in the cardiac catheter laboratories of a major teaching hospital, and will be delivered using an MDT approach to cardiology trainees, consultants, and nursing staff. The sessions will involve the use of a high-fidelity simulation manikin, in conjunction with ultrasound software which utilises images from real patients to simulate in real-time the images obtained during a bedside echocardiogram. This will enable trainees to identify the clinical and echocardiographic signs of cardiac tamponade, and once the diagnosis has been made trainees will perform ultrasound guided pericardiocentesis on a procedural model. Participants will be invited to complete questionnaires prior to and following the training session, exploring their satisfaction with the training and their confidence with the skills involved.

### **Discussion**

The use of simulation and procedural models provides trainees, consultants, and nursing staff with the opportunity to practice high-risk skills in a safe environment, and also increases their exposure to rare procedures that might otherwise be challenging to achieve competency in. Skills that are not practiced frequently are subject to skill decay, and ensuring hospital staff are trained in relevant life-saving procedures is therefore vital to improve patient safety and prevent further serious incidents. We propose that the incorporation of ultrasound simulation software into a training session on pericardiocentesis will provide a more realistic clinical scenario, and allow participants to practice a broader range of skills than with the use of a procedural model alone. The results of the study will be presented at this conference.



SOCIETY FOR  
SIMULATION IN EUROPE

## Using simulation with medical students to develop confidence in assessing and managing acutely unwell children

**Format:** Oral Presentation

**Topic:** Curriculum Development

### Authors

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### Introduction & Aims

Compared to adult medicine, medical students have much less exposure to paediatrics during their medical school training. As paediatrics is a senior led speciality, the opportunity to assess and manage acutely unwell children can be very limited during their five-week rotation. Simulation could help improve confidence and knowledge in managing acutely unwell children for medical students before commencing Foundation Training, in addition to developing common skills needed as a foundation doctor. An undergraduate medical student simulation programme was developed to determine if this was the case.

### Description

An in situ simulation programme has been delivered to medical students at our hospital during their paediatric rotation for the past two years. This consists of a half-day simulation teaching session during their fifth and final week of their rotation. The aim of the session is to improve the student's confidence, skills and knowledge in assessing and managing acutely unwell children, as well as encourage them to consider a career in paediatrics.

Each session consists of four common acute clinical scenarios, which are mapped from the paediatric medical student curriculum. The scenarios are performed in pairs and the students are asked to perform an ABCDE assessment, think of differential diagnoses, initiate and prescribe appropriate management and handover the patient to a senior colleague. Each scenario is followed by debrief with the faculty to provide feedback and consolidate any learning. Students are asked to complete a feedback form to determine if there has been an improvement in their confidence and whether they would consider a career paediatrics post the simulation session.

### Discussion

To date 77 medical students have attended our simulation session. 100% of students have reported an improvement in their confidence in managing acutely unwell children. Following the session, 39% of medical students rated they were more likely to consider a career in paediatrics.

Students commented the session was worthwhile improving their paediatric knowledge and allowing development of non-technical skills such as decision-making, teamwork and communication. Students also enjoyed the realistic nature and breadth of scenarios simulated.

Our results clearly show an improvement in the confidence of medical students in our hospital in assessing and

managing common paediatric problems, with more considering a career in paediatrics as a result. The programme could be implemented across the hospitals in the region to help build the confidence of all final year medical students in their paediatric rotations.



SOCIETY FOR  
SIMULATION IN EUROPE

## Using simulation-based training to advance safety mindfulness of radiation therapy therapists

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

### Authors

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### Introduction & Aims

Radiation therapy (RT) is used to treat  $\approx 50\%$  of patients with cancer. Errors in RT are estimated to occur in  $\approx 5\%$  of the  $> \approx 600,000$  patients receiving RT per year in the US; with serious/lethal events occurring  $\approx 1$  of 1,000-10,000 patients. RT therapists (RTTs) are the professionals who deliver the prescribed radiation and thus are the last line of defense to catch any upstream errors. Approximately, 40% of the errors reported to a national event registry were discovered by the RTTs. Thus, to help with ongoing safety challenges in RT the objective of this research was to develop and assess the impact of simulation-based training intervention on RTTs' performance during treatment delivery tasks.

### Methods

16 RTTs completed routine treatment delivery and quality assurance (QA) tasks on clinical scenarios in a simulation laboratory. Performance was quantified based on adherence to pre-set/standard QA tasks and discovery of purposefully embedded errors. 8 RTTs were randomized to receive (vs. not receive) our innovative simulation-based training intervention focused on safety mindfulness and underwent repeat measurements of performance. We define safety mindfulness as an adherence to evidence-based medical procedures, including documentation and communication standards, while maintaining moment-by-moment appreciation of the potential for latent and active failures pathways (see Figure). We emphasize the term moment-by-moment to emphasize the cognitive aspect of safety mindfulness that are involved in monitoring real-time performance, and in particular maintaining awareness of risks, and being both willing and able to detect, interpret, and intervene in abnormal, and potentially hazardous situations. Baseline vs. post-intervention vs. 30-day post-intervention changes in performance from participants who received (vs. did not receive) were compared using repeated measure analysis of variance (ANOVA).

### Results & Discussion

Simulation-based training was associated with significant improvements in procedural compliance to QA tasks and discovery of embedded errors immediately post-intervention ( $p < 0.01$ ) and at 30-day post-intervention ( $p < 0.01$ ). Simulation-based training focused on safety mindfulness may be a tool to improve procedural compliance of RTTs and to acquire new skills and knowledge to proactively maintain RTTs' preoccupation with patient safety. Our experiences indicate that our proposed training could be generalizable to other medical disciplines and settings.

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SOCIETY FOR  
SIMULATION IN EUROPE

## Using Virtual Reality in developing clinical situational awareness in healthcare professionals

**Format:** ePoster Presentation

**Topic:** Patient Safety / Quality Improvement

### Authors

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Angus Cooper

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### Introduction & Aims

The use of virtual reality (VR) in both undergraduate and postgraduate healthcare curricula is rising as technology improves and becomes less cost prohibitive. In this presentation we will demonstrate how through the use of VR we are developing clinical situational awareness in undergraduate medical students and the data from the project to date.

### Description

Using the Oculus Go stand-alone VR head set we have imported high-definition 360-degree images of various clinical situations. Students at the various years within their degree programme are then asked to wear the head set and have a look around the clinical situation. They are then asked to remove the head set and describe the setting and answer various clinical situational awareness questions. Prior to undertaking another clinical VR situation

### Discussion

Results and analysis of the data collected to date is still being analysed but will be ready for presentation at the conference along with examples of the images shown to the students to assess their clinical situational awareness

### Conclusion

Virtual reality is yet another way in which healthcare education can use technology to enhance the students experience and in this case providing training in clinical situational awareness, which often can't be taught but just learned through the ward or clinical setting.



## Value of debriefing process in healthcare simulation

**Format:** ePoster Presentation

**Topic:** Debriefing

### Authors

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### Introduction & Aims

The evolution in Clinical medical education over the past 10-20 years brings to the forefront a move towards proficiency-based medical education, with the necessary accompanying development of instruments for formative and summative assessment. So with the advent of teaching through clinical simulation the element of debriefing has established itself as a crucial learning process, highlighting defects that had been assessed during the simulation process while simultaneously giving feedback to improve performance, making it one of the central learning tools in simulation along with its recommendation to be integrated after a real-life emergency response. The process of debriefing is defined further as a dialogue between two or more people, with the objective to elaborate on the specific course of action that was followed in a particular patient care situation, support the process of reflection on those actions and lastly to induce improvement into future performance. The function of debriefing is to identify aspects of team performance that went well, and those that did not. The dialogue is directed towards identifying opportunities for betterment at the individual level. The aim of the study was to understand the effectiveness to the debriefing on the participants.

### Methods

A standard operating protocol was established in accordance to which the clinical scenarios in various fields were conducted through workshops from August 2018 to November 2018 the data from each was collected through evaluation forms utilizing the likert scale to evaluate the effectiveness of the debriefing process. The debriefing process consisted of an audio visual replay of the performance of the individuals which was discussed in detail by specialist in the field to highlight both the positive and negative points of the performance.

### Results & Discussion

Out of the 69 participants who took part in the study it was noted that no respondent stated that the debriefing session had no effect as can be seen with a response of 0% for score 1 where as the rest of the results showed responses ranging from 4, 13,27 and 25 for score 2, 3, 4 and 5 respectively. It can be concluded from the high percentage of responses for score 4 (39.1%) and score 5(36.2), that the debriefing sessions that were conducted had a beneficial effect on the attendees and their learning process, highlighting the quality and skill of the faculty undertaking the debriefing session.

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SOCIETY FOR  
SIMULATION IN EUROPE

## Virtual and augmented reality to improve ABC assessment and management

**Format:** Oral Presentation

**Topic:** New Technologies and INNOVATION

### Authors

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### Introduction & Aims

We report our experience of a work in progress: development and piloting of 360 virtual reality (VR) and augmented reality (AR) experiences, to train medical students in the ABC model of patient assessment.

Year 4 and 5 medical students in our region reported feeling underprepared in assessing and managing acutely unwell patients, using a standard ABC approach. We are creating and piloting 2 training tools to assist this: a 360 degree video (360 VR), for familiarisation with the concepts, conduct and technical procedures and augmented 360 video (360 AR), for decision making competencies.

### Description

We surveyed self-reported perception of preparedness to assess and treat acutely unwell patients, using an ABC approach. This identified need for additional training in the following themes; constructing a practically applied ABC assessment from the theory, when to utilise key interventions and how to translate the ABC framework to different acute presentations.

The 360 VR tool is created as a single, real time, simulated sepsis case. The global approach is demonstrated using 3rd person perspective, with technical skills and key interventions using 1st person perspective. The 360 AR tool uses the same simulated sepsis case framework and core material, but adds an additional layer of augmented reality assessment and management decision processes. This allows students to select actions and experience the subsequent outcomes. Students complete both tools using a VR headset (Oculus Go) after a standard VR briefing. Decision making data from the 360 AR tool is logged and both groups are debriefed on their experience. We will evaluate and compare the educational effectiveness of each intervention in 2 separate groups of year 5 medical students, through self-reported data and qualitative interview.

### Discussion

360 VR and AR has been selected as the intervention to address the identified need, due to its ability to create an immersive, emotive and credible experience. These features may support the formation of explicit memory, aiding subsequent recall. The ability to manipulate the experience through perspective, camera location and spatial sound, creates opportunities unavailable to conventional real-time simulation. The ability to log performance data objectively may support debriefing and add educational value. One limitation of standard real-time simulation, has been consistent delivery to large undergraduate cohorts. If pilot data is supportive of this intervention, the platform supports scalability to a web distribution model, utilising smart phones and low cost VR viewers.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Virtual reality-based simulation in Mental Health Care**

**Format:** ePoster Presentation

**Topic:** New Technologies and INNOVATION

### **Authors**

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### **Introduction & Aims**

Introduction and aims: Division Mental Health Care at Innlandet Hospital Trust ( IHT ), one of seven hospital areas in South- Eastern Norway Regional Health Authority, has established Center for Simulation and Innovation with following mission. The vision of the Simulation Center is to contribute to clinical competence, improve treatment quality with focus patient safety. In addition to traditional medical simulation we have developed several programs using Virtual Reality (VR) programs based on scenarios from clinical situations using 360 degrees videos making possible to facilitate scenarios and give VR participants located at other hospitals sense of participation in the virtual room. Initially external competence was used to contribute with necessary technical support, eventually we have established this competence in-house, the first programs were launched in May 2018.

### **Description**

Description: The first program focused on relational competence. Sixty participants were given basic training in the use of VR simulation and a theoretical introduction and conceptual explanation of the main subject and divided into groups of 5 members.

The program included 4 sessions of processual exercises with duration of 1 hour 45 minutes each lesson. All participants completed a baseline form at each startup and an evaluation form on completion.

### **Discussion**

Discussion: We consider VR-based simulation as a supplement to traditional medical simulation. The program is designed as observation training with focus on non-technical skills with emphasis on the analytic and reflection phase. The participants have responded very positively on the program.



SOCIETY FOR  
SIMULATION IN EUROPE

## **ViSiElse: An R-package to visualize behavioral raw time data in high fidelity simulation**

**Format:** Oral Presentation

**Topic:** New Technologies and INNOVATION

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### **Introduction & Aims**

With the increase of simulation training programs in medicine, the need to understand learning processes occurring in those sessions arises. Many methods summarizing information based on the timestamps extracted from the video recorded sessions exists in high fidelity simulation sessions. However, none allow a visual overview of the medical procedure's raw data. Here, we present a package from R, the open-source software for statistical analysis, conceived to examine how a medical procedure is realized by caregivers. ViSiElse is a graphical tool providing an overview of individuals and/or groups' behavior.

### **Description**

The package focuses on procedures defined as a list of actions carried out over time. The ViSiElse main features are illustrated based on the example of the first steps of the neonatal resuscitation procedure (see Figure). The algorithm is composed of five punctual actions and three longs: from the moment the timer is turned on to the first heart rate evaluation. A punctual action is an action not lasting long enough to be measured. A long action is an action with a duration defined by two punctual actions, one for its beginning, and one for its ending. ViSiElse represents actions one under the other, and their executions are distributed along the time axis. The color's intensity of the plot is proportional to the number of individuals who realized the action during the time interval. Options for the package include adding graphical information as statistical indicators (mean, standard deviation, quartiles) but also, for each action, green or black zones providing visual information about the accuracy of the realized actions. Green zones represents time obligation i.e. when actions should be achieved. Black zones characterize time interdiction i.e. when actions should not occur. This feature is remarkably helpful in care protocols where respect of the timing is essential. Finally, ViSiElse can compare group behavior as it enables the differentiation of two populations through color distinction.

### **Discussion**

The free R-package ViSiElse gives, in a single one page graph, an overview of the time distribution of a medical process executed in a simulation session and can be extended to all behaviors. This innovative visualization facilitates the comprehension of individuals and/or groups' behavior. However ViSiElse only offers a descriptive support, and it should

be integrated with complementary tools to provide complete statistical analysis. Note that ViSiElse was designed to visualize the results from runtime raw data solely from procedures that can be linearized.

Link : <https://cran.r-project.org/package=ViSiElse>



SOCIETY FOR  
SIMULATION IN EUROPE

## What is the state of art of simulation within healthcare education? An overview over systematic reviews

**Format:** ePoster Presentation

**Topic:** Curriculum Development

### Authors

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### Introduction & Aims

design, didactical approaches, effect, and measuring outcomes and lasting change. Simulation leads to better skill performance, but it's difficult to find sustainable effect on non-technical skills.

To explore the field of Simulation-based training within healthcare educations, we will conduct an umbrella review (an "Overview over reviews") from all Systematic Reviews globally with the research question: What is the state of art of simulation within healthcare education?

The aim is to summarize the evidence from the former synthesis that exist regarding the use of simulation within health educations globally. Quantitative Systematic Reviews (narrative or meta-analysis), Qualitative Systematic Reviews (meta-synthesis), Integrated Reviews, Realist Reviews, Rapid Reviews, Scoping Reviews and Mapping Reviews will all be included.

### Methods

A protocol following the Prisma-P Checklist is made and registered at Prospero, (CRD42018112230).

A skilled librarian has developed a search strategy which consists of two concepts: Simulation AND systematic reviews. Each concept is described using controlled vocabulary terms and free-text terms. We plan to conduct searches in the following databases MEDLINE, EMBASE, PsycINFO, The Cochrane Library (Cochrane Database of Systematic Reviews (CDSR), Cochrane Database of Abstracts of Reviews of Effect (DARE)), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Educational Resource Information Centre (ERIC), Epistemonikos, and Campbell Library

### Results & Discussion

The first search in MEDLINE are finished. The four review authors have completed the calibration of the inclusion/exclusion criteria in the screening-tool (?) Rayyan. Further on titles and/or abstracts of the studies retrieved will be screened independently by two and two review team members to identify studies that potentially meet the inclusion criteria. The full text of these potentially eligible studies will be retrieved and independently assessed for eligibility by two reviewers. A standardised, pre-piloted form will be used to extract data from the included studies. Two review authors will independently assess the risk of bias / quality in the included systematic reviews using the tool to assess Risk of Bias in systematic reviews.

The results will give the state of art us of knowledge concerning simulation in health care education worldwide, and may show the direction and need for further research at the area.



## **When simulation poses a safety risk: reflection and actions taken following an incident during simulation**

**Format:** ePoster Presentation

**Topic:** Patient Safety / Quality Improvement

### **Authors**

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### **Introduction & Aims**

Simulation is increasingly used in order to reduce patient harm - but what if our simulation actually causes a risk to patient safety? This is a reflective report of an incident which occurred during a simulation course.

### **Description**

During a simulation, a participant dialled '4444' to request 'trauma team to the emergency department' (ED). The emergency number in our trust is '2222', but '4444' is an alternative mechanism of activating emergency calls. Our simulation centre is sited inside a hospital, and the phone connects to the switchboard. As a result, the trauma team received an emergency bleep requesting attendance to the ED. On identifying the issue, faculty called switchboard to request a 'stand down' bleep, and the ED to alert them to the error.

What had been done to prevent this?

During orientation, participants were informed that the phone is a live system and to only call the number written on a sign on the cupboard (which connects to the control room). The '2' is covered to prevent '2222' calls.

Why did this happen?

Post-event analysis discovered that 'dial 4444' was printed on a protocol which was being used by participants. Stress likely caused the participant to forget the information given in orientation. The sign showing the number to be dialled had been moved so was not easily visible.

Harm identified:

No actual harm to patients, hospital staff or simulation participants occurred. Potential harm included: stress to trauma team members, patient harm as these staff were taken away from current tasks to attend the ED, and disruption to the ED as staff turned up for the trauma call.

Actions taken:

A debrief took place to identify methods of reducing the risk of reoccurrence. These include: the protocol advising 'dial 4444' has been edited to remove this advice, the phone number to be used printed in large directly above the phone and on the phone itself, and all numbers apart from those required to dial this number have been covered. Extra care will be taken during orientation to point out the live phone system and the number to be used.

### **Discussion**

This event had the potential for harm, and demonstrates that simulation can put people outside of the simulation at risk. Our actions demonstrate a pro-active response. We need to be prepared to interrogate issues and implement change in

order to ensure simulation is a safe educational method for everyone.

**Witch technique for intraosseous access learning is more effective? Simulation, randomized, crossover trial**

**Format:** Oral Presentation

**Topic:** Patient Safety / Quality Improvement

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**Introduction & Aims**

The ability to obtain intravascular access in life-threatening conditions is an extremely important aspect of emergency management. However, obtaining intravenous access in cardiac arrest or hypovolemic shock can often be difficult. In this case intraosseous access may be helpful. However, in order to learn this technique of vascular access, it is necessary to have knowledge of how to operate the devices and where to obtain the intraosseous access .

The aim of the study was to assess the attitudes of medical students towards different ways of teaching how to obtain intraosseous access.

**Methods**

The study protocol was approved by the Institutional Review Board of Polish Society of Disaster Medicine (Approval. 03.10.2018.IRB). The study was attended by 45 medical students. None of them previously had experience in the intraosseous access devices. All of them took part in an instruction on the correct application of the intraosseous access devices. NIO Adult (PerSys Medical, Houston, TX, USA) was used in the study. The study participants learned how to use the intraosseous access devices using two techniques: A) a standard insertion using a sponge as the material into which the intraosseous needle was injected; B) a training insertion equipped with a truncated needle and a stick enabling the exercise of correct insertion on the other individual (Figure 1).

At the end of the training, all participants filled in a questionnaire concerning the preferences of the techniques the intraosseous access.

**Results & Discussion**

Concerns about the establishment of the IO were declared by 88.8%, however, after practical training only 4.5% of the participants declared their fears. In the study 100% of the participants stated that learning with the use of B technique is the more preferred method of intraosseous access learning.

This method allows to learn the exact locations of intradoses access puncture on the basis of palpation localization. Moreover, by conducting exercises on a human being, this technique allows to break the resistance to the use of intraosseous access.

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SOCIETY FOR  
SIMULATION IN EUROPE

## **Young person community simulation outreach initiative**

**Format:** Oral Presentation

**Topic:** Interprofessional / Team Education

### **Authors**

Laura Harrison

Bristol Medical Simulation Centre, University Hospitals  
Bristol

Adam Holden

Gloucestershire Hospitals NHS Foundation Trust

### **Introduction & Aims**

With 45,000 vacancies within NHS England there are a multitude of strategies to combat the issue and prepare for the future NHS employment needs. One of these is through widening participation from a variety of backgrounds within the workforce to promote increased community and patient engagement and therefore aid the potential recruitment deficit. A twelve-month project, funded by Health Education England, was set up within the Bristol Medical Simulation Centre with an ethos of creating a link between young people interests and potential NHS careers. The Young Person's Community Outreach Simulation Programme's aim is to make a difference in raising aspiration and widening participation of NHS clinical and non-clinical careers with eight-eighteen-year olds through the medium of situational simulation.

### **Description**

Social deprivation can impact upon a young people's participation in higher education and employment [1]. The project used data collated by Bristol University to understand which schools in Bristol had a higher proportion of social deprivation of young people. The markers for this were eligibility for free school meals and second language English. The different avenues of simulation-based interaction within the community included workshops, skills stations and simulated scenarios. Community outreach and running these within schools, colleges, museums as well as within the hospital allowed broader exposure. Based on those in NHS employment, 54% of NHS roles are made up of qualified professionals [2] therefore it was felt important for the project to be reflective of both qualified and unqualified career roles. Using the NHS core values, the simulations were organised to cover team working, communication and commitment to high quality of care. The highlight of the year was the 'Big Sim' where a multi-casualty trauma scene at a school was designed to facilitate and encourage interaction with the pupils during the entire patient hospital journey and all the related disciplines.

### **Discussion**

The effectiveness of the project was evaluated using feedback documentation and end of session pupil questionnaires. These demonstrated the simulation experiences had a positive effect on young person awareness and long-term career aspirations. Of the 200 young people that completed the questionnaire, an increase of 50% (Total: 70% n=140) were now interested in pursuing an NHS career, with ten still not being interested.

Young Person Community Outreach Simulation has made a positive difference in the aspirations and knowledge of Bristol's socially deprived young persons. However, long-term implementation and follow up will be required to ascertain the true effectiveness.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Best practice in SP methodology basics**

**Format:** Workshop

**Topic:** Curriculum Development

### **Facilitators / Moderators**

Tonya M Thompson and Valerie Fulmer

### **Introduction & Aims**

Participants will have the opportunity to develop techniques, tools and strategies for working with Simulated/Standardized Patients (SPs) in education. ASPE's Standards of Best Practice (SOBP) will guide the workshop. Discussion is encouraged and a demonstration simulation, group conversation circles, and other opportunities for reflection will be used. Participants will work with templates and key resources as a guide. Those new to SP Education will benefit most from this workshop. However, more experienced participants may appreciate a deeper understanding of the fundamentals of SP methodology as it applies to individual practice and standard alignment.

### **Learning objectives**

1. Define key simulation concepts as defined by ASPE's SOBP.
2. Create strategies for implementation of basic SP selection, case development, and essential training techniques.
3. Provide resources, references and tools for continued learning.

### **Session description (planned activities)**

As the international organization for professionals in the field of Simulated and Standardized Patient methodology, ASPE is excited to offer this workshop on foundational concepts and skills for SP methodologists. In this experiential workshop, led by ASPE experts, participants will explore the methodology that defines the rapidly expanding contribution of SPs to the field of simulation-based education. Standards of Best Practice and evidence-supported approaches to key SP practices, including the selection of quality SPs, case development, SP training, and elements of feedback training will be explored.

10 min- Introductions and define key standards (SOBP) as applied to the following areas:

10 min- How to select strong SPs

20 min- Case development with template

30 min- Training techniques with demonstration

- Interactive discussions will occur with each section.

20 mn- Closing discussion Q and A

### **Educational methods (e.g. group dynamics, interactive methods)**

1. Small group development of SP case, using ASPE case development template.
2. Demonstration of an SP case with audience practice in giving feedback to SP and case trainer.
3. Large group discussion of learning objectives and applications for personal use.

**Expected impact**

Provide to novice/ intermediate learners the elements of choosing SPs, developing and training SPs to a case, and practicing feedback delivery for further refinement of the case.

**Target audience**

Novice to intermediate

**Maximum number of participants**

50

**Equipment requests**

power point compatible computer



SOCIETY FOR  
SIMULATION IN EUROPE

## **Create the optimal experiential learning environment: The critical importance of psychological safety**

**Format:** Workshop

**Topic:** Interprofessional / Team Education

### **Facilitators / Moderators**

Kate Morse RN PhD, Andrea Reifort RN BN, Melanie Barlow RN PhDc, Sasa Sopka MD

### **Introduction & Aims**

This presentation will provide the learners an opportunity to identify, discuss and apply the critical elements required to create and maintain a psychologically safe learning environment in simulation-based education including center-based and insitu learning.

### **Learning objectives**

- 1) Identify the key elements of a psychologically safe learning environment
- 2) Assess facilitator behaviors that impact learner psychological safety
- 3) Demonstrate key skills in creating a psychologically safe learning environment

### **Session description (planned activities)**

Welcome to the workshop  
Participant Introductions at the tables  
Activating prior knowledge  
Introduction to workshop  
Psychological Safety Content  
Introduction to the DASH  
Model Pre-Briefing Video  
Craft Pre-briefing script at tables  
Video (review using element 1 of DASH)  
Table discussion  
Video 3 - Element 2 of DASH  
Table discussion  
Take aways

### **Educational methods (e.g. group dynamics, interactive methods)**

Lecture  
Reflective discussion  
Expert feedback  
Videos

### **Expected impact**



The expected impact is to highlight the critical skills for a simulation facilitator in establishing and maintaining psychological safety. Engage the learner in critical self reflection regarding their own current skill level and opportunities for improvement. Discuss the cross over of these skills from simulation based learning to all learning activities

**Target audience**

Interprofessional simulation educators

**Maximum number of participants**

30

**Equipment requests**

Ability to play and hear videos

VGA HDMI cable connector for Mac laptop

lapel Mic

2 - 3 portable microphones

Room set-up with round tables 6 - 8 participants per table



SOCIETY FOR  
SIMULATION IN EUROPE

## **DASH to Faculty Development**

**Format:** Workshop

**Topic:** Faculty Development

### **Facilitators / Moderators**

Kate Morse RN PhD, Mel Barlow RN PhDc, Sasa Sopka MD, Andrea Lenes RN BN

### **Introduction & Aims**

Structuring feedback to develop debriefing skills can be a daunting task. Which skills are foundational? Which can be developed later? How should scarce faculty development time be focused? This workshop uses the elements of the DASH (Brett-Fleegler et. al 2012) as a framework for planning debriefing faculty development.

The DASH provides a rubric for selecting debriefing skills to target for feedback, and topics to discuss in such developmental feedback

The Debriefing Assessment for Simulation in Healthcare (DASH) is a six-element, behaviorally anchored rating scale designed to assess the skill of debriefers. It evaluates the strategies and techniques used to conduct debriefings by examining concrete behaviors. The DASH is designed to allow assessment of the debriefings from a variety of disciplines and courses, varying numbers of participants, a wide range of educational objectives and various physical and time constraints. Designed for use with any method of debriefing, the elements can assist the debriefing mentor with recognizing debriefer behaviors to be addressed, and prioritizing the content of faculty development discussions. The elements address: creating and maintaining an engaging learning environment, structuring the debriefing discussion, providing clear feedback, and helping learners improve or sustain performance.

In this workshop, participants will work with trained DASH raters. A brief overview of the instrument will be provided, including the six elements and their associated dimensions. Through interactive discussion, participants will identify debriefing behaviors that they commonly see that they wish to target for developmental feedback. High-yield targets for feedback will be identified. Using several rounds of videos of debriefers, participants will first familiarize themselves with the elements and dimensions of the DASH as they recognize opportunities to provide feedback to debriefers for skill enhancement. Next, participants will categorize identified behaviors according to the element of the DASH. Finally, participants will plan faculty development needs based on both aggregate and individual DASH scores, emergent learning needs, and recommendations based on more than 10 years of experience using the DASH and conducting debriefings.

### **Learning objectives**

1. Use the elements and dimensions of the DASH to recognize faculty development needs
2. Categorize faculty development needs according to the elements of the DASH
3. Prioritize faculty development based on individual and aggregate DASH scores, emergent needs and organizational priorities

### **Session description (planned activities)**

Based on a 90 min workshop  
Introduction - 10 min  
Review the elements of the DASH - 15 min  
Discuss the faculty challenges and high priority areas - 15 min  
Group Practice Applying DASH - 25 min  
Approach to Faculty Development - 15 min  
Wrap up and Questions 10 min

**Educational methods (e.g. group dynamics, interactive methods)**

Lecture  
Small group work with feedback and coaching  
Discussion  
Videos  
Reflective questioning

**Expected impact**

The expected impact is to expand the faculty's ability to assess peers and self, create a pathway for reflective faculty development and hone your assessment skills as a faculty member in simulation-based education

**Target audience**

Interprofessional Simulation Educators Novice to Expert

**Maximum number of participants**

30

**Equipment requests**

projector  
Screen  
VGA/HDMI cable for mac  
Video capability for videos to be played  
Lapel mic  
2 mobile floor microphones



SOCIETY FOR  
SIMULATION IN EUROPE

## **Data-driven learning: helping trainees interpret assessment data generated by simulators**

**Format:** Workshop

**Topic:** Assessment using Simulation

### **Facilitators / Moderators**

Briseida Mema, Luciana Rodriguez, Bettina Willi

### **Introduction & Aims**

Making sense of the massive amounts of assessment data generated in competency based medical education will be critical for educators and trainees.

Data can be very powerful if used in the right way. This workshop focuses on the use of data from trainees and how data impacts their learning. Authors share their experience with data from a virtual reality simulator.

We propose three dimensions of the simulator assessment data for the trainee to consider.

1) The value that data has for the trainees. The value of data is closely linked to what trainees think of the validity of the data they receive, the context in which data was generated and feedback received while that data was generated.

2) Trainees' access to data

3) Interpretation of assessment data by the trainee and the impact on their future learning.

Data generated automatically from virtual reality simulators is a supplementary source for understanding competency and at times difficult to interpret. Data has the potential to significantly impact the learning in a positive or negative way, therefore the educators need to be aware and guide learners in the optimal use of assessment data.

### **Learning objectives**

Describe a framework for data informed learning

Demonstrate ways to support trainees to interpret the data

Discuss pitfalls of assessment data

### **Session description (planned activities)**

Throughout the workshop we discuss: selecting the data, enriching the data with feedback and helping learners interpret their data to support further learning and trajectory to expertise

### **Educational methods (e.g. group dynamics, interactive methods)**

Case study discussion to highlight the elements that impact the value of data for trainees

Small group discussions on accessibility of data for trainees

Mini lecture on data informed learning and large group discussion on supporting the learner to make the best use of assessment data.

### **Expected impact**

Better use of simulator data from educators and simulator instructors to support learner to competence.

**Target audience**

Educators and simulator instructors

**Maximum number of participants**

40

**Equipment requests**

none



SOCIETY FOR  
SIMULATION IN EUROPE

## **Debriefing: From simulation to reality**

**Format:** Workshop

**Topic:** Debriefing

### **Facilitators / Moderators**

Bastian Grande, Michael Hanusch, Julia Seelandt

### **Introduction & Aims**

In this workshop, we aim to apply simulation-based debriefings methods to clinical practice. Particularly in intense, high-risk medical domains such as anesthesia and surgery improving patient safety is a major concern. The science of teams provides a promising lens for examining work in these high-risk domains. Applying this lens reveals that work is performed by ad-hoc teams which are fluid and dynamic rather than definite and stable.<sup>1</sup> Despite the growing presence of these so-called acute care teams (ACT) in today's organizations, not much is known of what drives their effectiveness and enables their learning.<sup>2</sup> Current team learning theories do not apply to ACTs because they do not factor in their lack of temporal stability.<sup>2</sup> Due to this temporal instability, learning has to be transitional, that is enable team members to use the team experience from participating in one ACT to improve participating in another ACT.<sup>2</sup> However, there is only limited knowledge on what ACTs do and need to learn. Our objective is to examine how structured debriefings can provide a suitable learning infrastructure. Although widely used in simulation-based trainings (SBT) and studied in the context of simulation<sup>3-11</sup>, debriefings are underutilized and understudied in clinical practice.<sup>12-15</sup>

### **Learning objectives**

In this workshop we hope to show that though being one of the core elements of SBT, the use of debriefing is not limited to the simulated setting. Debriefings most likely offer multiple learning possibilities for ACTs. From workshop we expect participants to learn

- (a) how learning and performance of ACTs will be effectively enhanced by structured debriefings in clinical practice which could provide a cost-effective and potentially powerful learning infrastructure,
- (b) how ACT debriefings have to be embedded in organizational learning, set up, and conducted to provide an effective yet feasible and low-threshold learning tool for ACTs, and
- (c) what health care providers need in order to learn and apply debriefing techniques during clinical practice and how faculty development programs can be targeted most usefully.

### **Session description (planned activities)**

In this workshop we show existing debriefing structures for SBT<sup>6,11</sup> and social-constructivist methods<sup>11,16</sup> to explain the design of an ACT debriefing tool for clinical practice. It is important to debrief based on a pre-defined structure, because when not well-structured debriefings are at risk to fail due phenomena on the individual and social level such as preference-consistent information sharing or a lack of psychological safety that may inhibit structured information sharing.<sup>12</sup> We compare the effects of the ACT debriefing tool with the effects of a conventional debriefing method (plus/delta)<sup>17</sup> via SBT applying a pre-post, control group design. In addition, we will provide an in-depth analyses of debriefing communications.<sup>9</sup>

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## Educational methods (e.g. group dynamics, interactive methods)

We will use Kolbs learning cycle and interactive debriefing sessions as educational methods.

## Expected impact

We expect the learners to transfer their debriefing experience into clinical context after the workshop

## Target audience

Experienced debriefers and clinicians.

## Maximum number of participants

20

## Equipment requests

Web Browser, Beamer.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Developing standards for safety procedures in SP based education**

**Format:** Workshop

**Topic:** Faculty Development

### **Facilitators / Moderators**

Melih Elcin, MD, MS, CHSE, Tonya Thompson, MD, MA, FAAP, FACEP, Val Fulmer BA

### **Introduction & Aims**

The Association of Standardized Patient (ASPE) Educators published Standards of Best Practice (SOBP) related to SP Methodology in 2017 to provide practical and sometimes aspirational guidelines for working with SPs. The importance of safety for all involved in SP simulation is reflected in the SOBP value statement and, more specifically, in the details of Domain 1. Safe Work Environment.

Standardized / Simulated participants have an ever-increasing role in the education of health care professionals. As the scope and context of their work expand, so do the contextual complexities of their work environment. Protecting the psychological and physical safety of our SP peers is paramount as they work in an increasingly wide spectrum of venues and roles.

As skilled interpersonal, communication and physical exam workers, SPs have special needs because of the context of their work. Training and quality control standards must meet emotional, physical, and psychological safety needs of SPs and the students with whom they work.

### **Learning objectives**

1. Describe rationale for referring to ASPE SOBP in development of safety standards.
2. Develop a process for assessing the safety of an SP simulation.
3. Identify ways that safety standards can be applied to your context.

### **Session description (planned activities)**

After a brief overview, handouts of the ASPE SOBPs will be provided to participants in hardcopy. Initial discussion will address the large variability in locations, settings and roles, in which SPs work. In an interactive format, we will divide into small groups to discuss specific case studies that include a safety issue as a point of reference for the exercise. After group discussions, the small groups will present their case study and safety solutions to the entire group. After each small group presentation, feedback and suggestions from the entire group will be discussed. Together we will build a worksheet of questions and suggestions to serve as guide in creating safety in an SP simulation.

### **Educational methods (e.g. group dynamics, interactive methods)**

1. Small group development of safety standards based in real life case studies using the ASPE case development template.



2. Large group discussion of the standards developed by each group.
3. Compile identified standards into a document that addresses applications for personal attendee use.

#### Timing

Overview: ASPE Standards of Best Practice- 20 min

Case Study Introduction- 10 min

Small group strategy breakout- 20 min

Strategy Presentations per case- 30 min

Open Q and A- 10 min

#### **Expected impact**

Application of the theoretical concept of "safe practice" will result in a functional script of key questions and directives from the small and large group discussions that can be applied to SP simulation design.

#### **Target audience**

all levels of learner

#### **Maximum number of participants**

30

#### **Equipment requests**

Overhead projector/ computer

Flip charts 5-6 depending on size of group



SOCIETY FOR  
SIMULATION IN EUROPE

## **Enhancing authentic SP based OSCE stations: Harnessing techniques and technologies from the discipline of simulation**

**Format:** Workshop

**Topic:** Assessment using Simulation

### **Facilitators / Moderators**

Gerry Gormley, Linda Ní Chianáin, Paul Murphy, Debra Nestel

### **Introduction & Aims**

Objective Structured Clinical Examinations (OSCEs) are a widely used form of assessment in health professional education. In their summative form, they strive to provide objective, reliable measurements of behavioural competency skills. As a constructed phenomenon, they aim to simulate aspects of real clinical practice, but often fall short in terms of authenticity. Many OSCEs stations are socially situated activities, where candidates interact with a 'patient'. The 'patient' can take the form of a real patient or a simulated participant (SP). However, there are growing concerns regarding this manufactured form of assessment. Firstly, real patients are increasingly not partaking in OSCEs. Secondly, educators often default to assessing what is easy rather than what is challenging to examine e.g. uncertainty, ethics and interpersonal skills. Lastly, if assessment does drive learning – are OSCEs driving more test performance rather than clinical performance? Many have called for greater authenticity in OSCEs, while retaining reliability and cost effectiveness.

### **Learning objectives**

After this workshop participants should be able to

- 1) Describe the 'life cycle' of developing an OSCE station.
- 2) Identify important scenarios that are 'challenging' to authentically frame in an SP OSCE context and permit repeated candidate examinations.
- 3) Offer techniques, grounded in the discipline of simulation that can help to realise and deliver 'challenging' SP OSCE stations.
- 4) Translate this knowledge into their own educational practice.

### **Session description (planned activities)**

- General introductions, 'ground rules' and overview of session.
- Introduction to assessment of clinical competency, with focus on the OSCE and characteristics of 'best practice' in assessment.
- Provide an overview of the 'lifecycle' of developing an OSCE station.
- Buzz group activity regarding difficult SP OSCE stations to write.
- Think, pair and share' activity regarding simulation based techniques and technologies to assist in delivering authentic SP OSCE stations. Some examples will be demonstrated for an immersive experience.
- Conclusion, wrap up and take forward messages.

### **Educational methods (e.g. group dynamics, interactive methods)**

A range of educational techniques will be used in this session including:

- Buzz groups
- 'Sandpit' activities
- Small group work
- Immersive role play (performance)

### **Expected impact**

The intended impact of this workshop is to aid participants in harnessing techniques and technologies from the field of simulation in developing more authentic SP OSCE stations. The workshop is designed to promote critical reflection on common approaches to OSCE station development.

### **Target audience**

Health professional researchers and educators who design, deliver and implement OSCEs and anyone who is keen to develop more authentic SP based OSCE stations.

### **Maximum number of participants**

12

### **Equipment requests**

Laptop, data projector, audio, flip chart, markers, pens, postcards and envelopes.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Enriching simulation teaching with quizzes, voting and instant feedback**

**Format:** Workshop

**Topic:** New Technologies and INNOVATION

### **Facilitators / Moderators**

Teemu Masalin, Maarit Raukola, Taru Suppula

### **Introduction & Aims**

In this workshop educators will learn how to introduce interactive quizzes, instant voting and polling, online forms, mobile exams and instant feedback into simulation teaching to increase interaction, support teamwork, assess the teaching and to support flipped learning. Several easy to use mobile and online applications are presented with established user-cases from the University of Helsinki, Faculty of Medicine.

### **Learning objectives**

The participants will learn how to plan, create and integrate quizzes, forms, exams and feedback into their courses effectively. Office 365 Forms and free to use applications: Kahoot and Socrative and will be practiced in small groups with participants own devices, supporting BYOD (bring your own device) environments, where laptops, tablets and smartphones can be used despite different operating systems and devices.

Participants will learn how to increase the level of feedback significantly, how to form balanced groups, and provide teachers instant feedback. Workshop also discusses how different applications can be used in preparing pre-questions, in-class activities and assessment, which can support flipped learning type of teaching. Additionally, quick quizzes and online mobile exams can be used both to assess teaching and learning. Finally, online forms can be used to collect, analyze and visualize data easily.

### **Session description (planned activities)**

Introductory presentation, demos of the discussed applications and services, hands-on practice in groups where participants will communally practice, discuss and evaluate the use of the different applications. Discussion and take-home messages, evaluation.

### **Educational methods (e.g. group dynamics, interactive methods)**

Interactive presentation, group work, activities, teaching hands-on skills with provided example cases and active participation.

### **Expected impact**

To introduce practical skills, techniques, and share ideas how to improve teaching.

### **Target audience**

Teachers and staff from all fields. All levels from introductory to advanced.

**Maximum number of participants**

25

**Equipment requests**

Wireless network, projector or screen with HDMI-connection.



SOCIETY FOR  
SIMULATION IN EUROPE

## **FIRST DATE with the simulator: the importance of a structured familiarization as a critical step ahead of a simulation scenario**

**Format:** Workshop

**Topic:** Faculty Development

### **Facilitators / Moderators**

Irina Ban, Sorana Truta, Vanda Abi-Raad, Benedikt Sandmeyer, Marc Lazarovici

### **Introduction & Aims**

The familiarization is the first contact of the participants with the patient simulator and the simulation environment. The impact of this part of a simulation training is often underestimated. A failed familiarization can influence the whole simulation day.

The aim of this workshop is to highlight the importance of the familiarization, collect pitfalls and define important steps of an effective familiarization.

### **Learning objectives**

By the end of the session, the participants are expected to:

- become knowledgeable in various methods of performing the familiarization with the simulator and the simulation environment
- identify the advantages and disadvantages of each method and choose the style that suits best their learning context
- gain clarity about the terminology used interchangeably during familiarization
- become aware of the 'do's and don'ts' on making an effective familiarization

### **Session description (planned activities)**

After a short introduction, participants will be invited in an interactive group exercise that highlights the importance of a well-organized introduction of the simulation environment. The exercise will be followed by a practical demonstration by the bedside of the patient simulator with a debriefing after each presentation. Comments and suggestions will be collected on the spot in a projected document that will further be offered to the participants as a result of the group work and collective brainstorming.

### **Educational methods (e.g. group dynamics, interactive methods)**

Participants will be actively involved in all the activities on a voluntary basis. The workshop will follow a learner-centered approach and will be focused on a direct experiential learning, cooperative learning and peer feedback. During the workshop the following methods will be used:

- Group Exercise
- presentation and hands-on experience of different familiarization methods
- group discussions
- summary of the collated insights which could be further used by the participants as a practical guide

**Expected impact**

This workshop aims to raise the awareness of participants regarding the importance and the impact of a structured, comprehensive and well conducted familiarization with the simulation environment before the immersive simulation activity takes place. They will be encouraged to share their experiences, insights as well as to think about possible strategies for optimizing this step in their training units. A second expected impact is to provide an incentive to measure the impact of such strategies in relationship with the educational goals of their current training programs.

**Target audience**

simulation educators, instructors, facilitators (physicians, nurses, psychologists)

**Maximum number of participants**

20

**Equipment requests**

PC, projector, audio system, writing board, markers, paper, Patient Simulator, minimal medical equipment bed/table for the patient simulator



SOCIETY FOR  
SIMULATION IN EUROPE

## **From problem solving to organisational innovation- designing simulation scenarios and debriefings for critical engagement in the organization**

**Format:** Workshop

**Topic:** Debriefing

### **Facilitators / Moderators**

Bruun, Dieckmann, Lippert/Helsoe

### **Introduction & Aims**

Simulation scenarios are often designed to optimize the training and improvement of individual and team skills. But what if scenarios and debriefing frameworks invited to looking beyond skills to organizational aspects of patient safety? What if our scenarios and debriefings could be laboratories for improving organizational performance? In this workshop we would like to explore the potentials of simulation as a medium of organizational innovation from below.

### **Learning objectives**

To be able to design scenarios and to conduct debriefings that highlight organizational as well as individual and team factors in good and safe performance. To be able to constructively point to organizational interventions for improvement.

### **Session description (planned activities)**

10 min Active introduction of the faculty and the participants

20 min Presentation of differences between simulations and debriefings that aim at problem-solving and at structural changes. Participants in the session will be invited to contribute with examples of organizational problems or limitations that might be illuminated through simulation.

20 min Small group discussions (scenario design / debriefing)

15 min Challenge: small groups swap scenarios and discuss their potentials as pointers to organizational change.

25 min Concluding plenum discussion

### **Educational methods (e.g. group dynamics, interactive methods)**

presentation, discussions, feedback, film clips,

### **Expected impact**

Participants will be helping their learners to systematically point to ways to improve working conditions in the interplay of human, technology, and organization. This will improve the impact of simulation on a strong basis.

### **Target audience**

Simulation facilitators, course developers, researchers who work with simulation to improve work and safety.

### **Maximum number of participants**



### **Equipment requests**

projector, loud speaker, flip charts, pens



SOCIETY FOR  
SIMULATION IN EUROPE

## **How to implement debriefing in clinical environments using the TALK framework**

**Format:** Workshop

**Topic:** Debriefing

### **Facilitators / Moderators**

Cristina Diaz-Navarro, Sigrun Qvindesland, Kirsten Engevik, Rebecca Wheeler, Iago Enjo Perez, Jose R Alonso, Esther León Castelao

### **Introduction & Aims**

The TALK group is leading implementation of clinical debriefing in culturally different environments across UK, Spain and Norway. During this session, the faculty group will share their experiences of implementing debriefing processes across culturally diverse institutions, and present available training resources. Delegates will discuss what implementation approach might be most suitable for their own environments and how to develop appropriate training and cascading strategies.

Clinical debriefing is the process of an individual or team formally reflecting on their performance after a particular task, a shift or a critical event (World Health Organisation 2009). TALK© proposes an easy way to guide a constructive conversation between team members whenever new insights might be learnt from clinical experience. This includes cases or sessions both where treatments went well, and near misses or untoward events.

TALK© is a communication tool which aims to guide multi-professional clinical teams learning and improving quality of patient care and patient safety together. It is a simple and practical approach to multi- professional structured feedback and debriefing, to be used after unplanned learning events in clinical environments.

This project is currently funded by a Marie-Sklodowska-Curie Actions RISE grant awarded by the European Commission under the Horizon 2020 programme. This grant supports a 3 year research and innovation project on the use of the TALK framework for clinical debriefing, [www.talkdebrief.org](http://www.talkdebrief.org).

### **Learning objectives**

Delegates will gain familiarity with debriefing implementation processes and access to available training resources.

Delegates will practice clinical debriefing using the TALK© tool.

Delegates will discuss implementation approaches, suitability for their own environments and training program development.

### **Session description (planned activities)**

The session will consist of interactive presentations, debriefings following videos and simulation scenarios, and facilitated discussions.

Coordinators:

Cristina Diaz-Navarro, University Hospital of Wales;

Sigrun Qvindesland, SAFER Simulation Centre;

Kirsten Engevik, Stavanger University Hospital;

Rebecca Wheeler, University Hospital of Wales;  
Iago Enjo Perez, Universitat de Barcelona;  
Jose R Alonso, Hospital Clinic Barcelona;  
Esther León Castelao, Universitat de Barcelona.

### **Educational methods (e.g. group dynamics, interactive methods)**

Interactive lectures, facilitated discussions, scenarios and videos.

### **Expected impact**

The introduction of TALK into clinical environments aims to promote guided reflection within clinical teams as a way to improve and maintain patient safety, increase efficiency and to contribute to a supportive culture of dialogue and learning, which would in turn enhance staff wellbeing. Furthermore, it encourages individuals to take responsibility for identifying improvement opportunities and implementing the necessary changes.

### **Target audience**

This workshop will be of interest to any individuals with an interest in implementing debriefing in clinical environments.

### **Maximum number of participants**

30

### **Equipment requests**

We would like this abstract to be considered for a pre-conference workshop.

Its content builds on last year's pre-conference session at SESAM Bilbao, which was well attended and well received.

1 lecture room with space for 30 people and 2 small adjacent rooms for scenarios.

Tables and chairs that can be organised flexibly.

AV equipment to allow powerpoint presentations and videos.

Simulation mannequins and props will be organised by the coordinators.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Innovation meets conversation: Our challenging journey into virtual reality debriefing**

**Format:** Workshop

**Topic:** New Technologies and INNOVATION

### **Facilitators / Moderators**

Lloyd Campbell, Gareth Evans, Kiran Virk, Leonie Williams

### **Introduction & Aims**

Simulation has always attracted forward thinkers and those interested in innovation and new ways of doing things. As an educational modality simulation has many strengths, but has encountered difficulties due to its resource intensive nature leading many to see it as either economically prohibitive or limited by virtue of its inflexibility/unapproachability.

To address the issue of scalability Maudsley Simulation is working to use high-definition 360o video to provide learners with a way to access our immersive, informative content anywhere, at any time through any internet ready device and with the use of a virtual reality (VR) headset anyone can experience being in the middle of the action as it unfolds. But one question remains – How can these VR products be incorporated into a meaningful pedagogic process for the best educational effect?

### **Learning objectives**

Our workshop will provide a stimulating forum to reflect on how faculty can incorporate immersive 360o virtual reality recordings into educational interventions to improve scalability, accessibility, emotional fidelity and perspective taking in simulation whilst also providing lessons learned from Maudsley Simulation's own journey.

By the end of the workshop, participants will be able to:

1. Understand the challenges and opportunities presented when developing 360o virtual reality productions in simulation
2. Consider a variety of methods for delivering virtual reality productions in simulation and their relative strengths and limitations
3. Develop ideas and strategies for debriefing virtual reality simulation adjuncts

### **Session description (planned activities)**

The proposed workshop will describe Maudsley Simulation's journey from the initial rationale and aspirations, through several challenging developmental stages, to the current position of having developed several immersive 360o virtual reality products ready for their latest stage of beta testing.

The initial presentation will also detail the many, often unexpected, practical challenges encountered and the lessons learned from the experience as well as offering several opportunities for participants to observe the products (through VR headsets, equipment permitting) at various stages of completion offering an opportunity for comment and reflection.

There will then be a brief description of Maudsley Simulation's considerations and efforts to incorporate these products into a meaningful learning process, followed by an interactive exercise that will provide a forum to discuss how to debrief virtual reality products as well as an opportunity to attempt such a debrief.

**Educational methods (e.g. group dynamics, interactive methods)**

The proposed workshop will rely on a combination of classroom presentation to describe Maudsley Simulation's journey and relevant themes, several demonstrations of 360o virtual reality footage with group discussion and a group task.

**Expected impact**

The proposed workshop will aim to enhance simulation faculty's awareness and knowledge around the process of creating virtual reality simulation products along with the likely challenges and opportunities as well as providing an interactive forum for reflection on how to best incorporate these into a pedagogic process for the greatest educational effect.

**Target audience**

This workshop is aimed at simulation faculty across specialties, including technicians and will appeal to anyone with some experience of simulation training development, scenario design, technical support and/or debriefing and with some interest in VR innovations.

Level-Introductory/Intermediate

**Maximum number of participants**

40

**Equipment requests**

Paper board (Flip chart)

Monitor with HDMI port

Laptop



SOCIETY FOR  
SIMULATION IN EUROPE

## **Integrating cultural diversity into simulation education**

**Format:** Workshop

**Topic:** Curriculum Development

### **Facilitators / Moderators**

Dr Gabrielle McClelland & Amanda Briggs

### **Introduction & Aims**

Introduction: Equipping health professionals and educators with the tools they need to assess and improve their cultural competence will undoubtedly benefit patients by increasing awareness and communication around matters linked to diversity.

This project aims to integrate cultural diversity into simulation education in order to increase the interface between patients and health professionals in the context of diversity. Simulation education is designed to increase the safety quotient and effectiveness of clinical practice through the rehearsal of skills in an artificial and authentic environment. Diverse patient characteristics may be conveyed through cultural, sensory, language, physical or psychological difference and may increase communication error and threaten patient safety. Culturally competent health professionals are more able to respond to patients with diverse needs relating to, for example, their gender, ethnicity, disability and age. The focus of this workshop is equality, diversity and inclusive practice; for example, those from an ethnic minority background, transgender persons or people experiencing sight impairment.

### **Reference**

Equality and Human Rights Commission (2010). Higher Education providers Guidance <http://www.equalityhumanrights.com/private-and-public-sector-guidance/education-providers/higher-education-providers-guidance> (accessed 24th November 2018).

### **Learning objectives**

1. Understand diversity in a healthcare scenario
2. Examine the importance of cultural diversity awareness and appreciation of how this benefits patients
3. Discuss a simple method for the integration of cultural diversity into simulation education

### **Session description (planned activities)**

Six anonymised case studies adapted and drawn from real life examples of patients with diverse characteristics and staff interactions, will be used to facilitate discussion around safe and effective ways to respond to 'diverse' patients. The discussions will inform ideas for content for curriculum development. For example how to integrate context relating to gender, ethnicity, age or disability into simulation education. The Equality Act Protected Characteristics Framework (2010) will be used to illustrate the importance of inclusive practice in the context of professional legal, ethical healthcare. This workshop will also demonstrate the use of a bespoke Simulation Education Diversity Assessment Tool which has been designed as part of a funded EU project between four countries including Slovenia, Finland, Ireland and

England partners (09/17-08/2020). The facilitators are the project leads and therefore able to share innovative ways to include diversity into simulation education.

**Educational methods (e.g. group dynamics, interactive methods)**

The approach will be participatory with discussion and feedback with signposting to key online resources (Simulation Education Diversity Assessment Tool and website).

There will be structured and facilitated groupwork with case studies.

A brief powerpoint presentation will be used to reinforce key points and to stimulate participant interactions

**Expected impact**

The expected impact is an increase in knowledge and awareness of patient diversity and how to incorporate these important attributes into simulation education in order to benefit health professional students and ultimately patients in their care.

**Target audience**

Health and social care professionals. Public and patients.

**Maximum number of participants**

30

**Equipment requests**

PC, 6 round tables and chairs



SOCIETY FOR  
SIMULATION IN EUROPE

## **International Fellowship in human simulation. -the next step for faculty development**

**Format:** Workshop

**Topic:** Faculty Development

### **Facilitators / Moderators**

Kenneth Krarup, Peter Jaye, Colette Laws-Chapman, Gabriel Reedy, Lotte Abildgren, Michaela Kolbe

### **Introduction & Aims**

One of the essential drivers for a vibrant faculty program is collaborative learning. We believe that developing an international fellowship in human simulation across borders and cultures can only enhance this process. We present our experience from a 2 year program run between Denmark (Simulationcenter SimC Odense University hospital) and the U.K.(SaIL centre, Guys and St Thomas' NHS hospital trust, London)

The aims of this workshop are that attendees will get an understanding of the benefits and challenges of this process. We will discuss the pitfalls and in so doing improving the possibility of the participants to do an equivalent program in the future, and thereby driving towards an international fellowship program in human simulation across Europe. Furthermore we hope to encourage a discussion within SESAM of how to support this process.

### **Learning objectives**

After participating in this workshop participants will be able to identify important issues in developing and setting up an international faculty and program. They will have learned some lessons on how to overcome challenges on setting up an international faculty developing program.

Identify and address cultural differences

Participants will have to develop a draft of an international fellowship program in human simulation in their own setting.

### **Session description (planned activities)**

Setting the scene with a short didactic session.

Facilitated group work Pro et cons international fellowship in human simulation followed by shared feedback

Describe a potential template for an international fellowship in human simulation program within Europe

small group work identifying cultural differences

Facilitated small group work developing their own faculty program followed by shared feedback

Facilitated session: Making plans in to reality –developing commitments.

### **Educational methods (e.g. group dynamics, interactive methods)**

Facilitated small group work.

Peer to peer feedback

didactic sessions

worksheet

### **Expected impact**



Development of a template for a new international fellowship in human simulation.  
Development of new international fellowships in human simulation

**Target audience**

Simulation facilitators  
Potential fellows in human simulation  
All staff involved in faculty development

**Maximum number of participants**

30

**Equipment requests**

Lap top projector with AV capability, 4 flip charts, pens, room set up in carousel.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Live.Die.Repeat: Our Experiences of Gamification in Simulation**

**Format:** Workshop

**Topic:** Faculty Development

### **Facilitators / Moderators**

Matt Aldridge and Jeremy Purdell-Lewis

### **Introduction & Aims**

Sunga(1) first described the Live Die Repeat (LDR) simulation format in 2016. LDR uses levels and repetition in a gameplay format to enhance learning. The learner completes a simulation level, either 'passing' or 'failing' based on their performance against specific level criteria. The group then de-briefs before the learner re-enters the same level to repeat the scenario and implement specific targeted improvements following the debrief. Having completed the level for the second time, the clinical narrative continues onto the next level and learning cycle. Educationally, the format draws upon deliberate practice to re-enforce learning.

The original paper was based on the experiences of middle grade emergency medicine physicians in North America. Our seminar will discuss our institutional experience of LDR simulation for UK foundation doctors.

(1) Sunga K, Sandefur B, Asirvatham U, et al. LIVE. DIE. REPEAT: A novel instructional method incorporating recursive objective-based gameplay in an emergency medicine simulation curriculum. *BMJ Simulation and Technology Enhanced Learning* 2016;2:124–126.

### **Learning objectives**

By the end of this session you will be able to:

- Give diverse examples of structure for simulation
- Apply examples of gamification to simulation planning
- Define rapid cycle deliberate practice and mastery learning
- Apply these techniques using Live Die Repeat Simulation (LDR)
- Evaluate the effectiveness of LDR in practice

### **Session description (planned activities)**

- 0-5 mins - Introductions and Icebreaker
- 5-10 mins - Sim Formats, Discussion of Examples, Evidence Base
- 10-20 mins - Gamification Activity. In groups using given session template apply 3 'gamification principles' chosen at random from a deck of gamification cards.
- 20-30 mins - Description of Rapid Cycle Deliberate Practice using illustrative movie clips.
- 30-35 mins - Group discussion of benefits/challenges with described Live Die Repeat sim format
- 35-40 mins - Modifications made to original format plus example sim scenario video
- 40-50 mins - Roleplay Debriefing based on two example clips
- 50-55 mins - Group discussion of application of this format to own institutions and other gamification ideas

55-60 mins - Q&A

**Educational methods (e.g. group dynamics, interactive methods)**

Mix of small group discussions, post-it note idea generation, interactive 'game' using principles of gamification, movie clips and simulation scenario examples with role play debriefing.

**Expected impact**

Introduce participants to a new simulation teaching format, basics of gamification and opportunity to apply new gamification ideas to a 'standard' simulation format.

Support participants in introducing gamification into their own simulation practice taking into account best practice literature and wider education theory.

**Target audience**

Anyone involved in writing and designing simulation teaching sessions to any participants in any location (in-situ or lab based).

**Maximum number of participants**

30

**Equipment requests**

Projector, powerpoint laptop with audio/speakers.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Mass casualty pre-hospital scenarios: Sharing our experiences**

**Format:** Workshop

**Topic:** Interprofessional / Team Education

### **Facilitators / Moderators**

Guillaume Alinier, Vitor Almeida, Kenneth Krarup, Ulufer Sivrikaya, Esther Leon

### **Introduction & Aims**

Major incidents are common occurrences nowadays so it is important that emergency services and hospital facilities regularly test their response systems, strategies, and capabilities in dealing with a variety of potential scenarios. The aim of the session is to introduce the audience to a range of approaches available to test various learning objectives of a healthcare system and its staff when it comes to responding to a mass casualty incident (MCI). It may range from a single service or facility to a regional or national exercise, with multiple agencies involved. The simulation may be a tabletop exercise taking place in a very large room and or be a distributed locations' exercise with each team addressing the exercise from their own workplace command centre and emergency department, as well as the scene(s) managed by the pre-hospital care team and partner agencies yet in another location, hence involving a lot of radio and telephone communication, as well as other technologies to share information. Each facility may have its own sub-learning objectives depending on how their local exercise planner has arranged for them to respond to the exercise, for example by involving simulated patients in the ED or simply paper patients with timed interventions to test the facility in terms of theatre intervention capacity and bed occupancy.

### **Learning objectives**

By the end of the session, participants will have:

- Learnt about various ways of running MCI simulations such as tabletop exercises, command posts simulations, and full-scale simulations using a variety of patient representations including patient cards, mannequins, and simulated patients.
- Been given explanations about how to save physical/human resources (responders and patients) while still running full-scale exercises and dealing with very large numbers of casualties.
- Seen and discussed examples of MCI scenarios.
- Been explained how to debrief MCI exercises that may run across several locations at the same time in relation to the same event.

### **Session description (planned activities)**

- Introduction of the panel members (5min)
- Introduction of participants (Show of hand or in person depending on numbers) (10min)
- Series of 5 short presentations by the panel members (50min)
- Floor open for questions and reactions from the audience (20min)
- Wrap up of session (5min)

### **Educational methods (e.g. group dynamics, interactive methods)**

Expert panel session with short presentations with pictures and video clips , interaction with audience.

**Expected impact**

Remind participants that simulation is not only about patient simulators and simulated patients, but that other approaches can be used to test a variety of learning objectives very appropriately.

**Target audience**

Pre-hospital care professionals and educators, Emergency medicine physicians/nurses, hospital administrators

**Maximum number of participants**

100

**Equipment requests**

Data projector with audio system, audience microphone.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Money isn't everything, but everything needs money – some financial aspects of simulation**

**Format:** Workshop

**Topic:** Center Administration and Program Evaluation

### **Facilitators / Moderators**

Kai Kranz (1), Nicole Kissling (2)

### **Introduction & Aims**

In Switzerland, and most likely in other countries as well, increasing healthcare costs are heavily discussed politically, socially and within healthcare organizations. Several measures have been taken to reduce costs and one of them is budget transparency. Out of that a frequently asked question is: "What does a simulation program or a particular simulation based course cost?"

The workshop aims to provide awareness and knowledge in terms of financial aspects of simulation based courses. Furthermore, a concrete and simple method for calculating costs for a simulation based course will be introduced.

### **Learning objectives**

The participants are able to identify the different entities of costs arising during the organization of a simulation based course.

The participants can determine the different sorts of costs by using standard accounting procedures.

The participants are able to apply a simple calculation process to determine the total costs of their own simulation based course.

### **Session description (planned activities)**

- Step 1: Introduction, aims of the workshop, experience (10 min)
- Step 2: Collecting cost entities within a simulation based course (10 min)
- Step 3: Introduction to cost calculation processes (20 min)
- Step 4: Applying the calculation process to an own course (30 min)
- Step 5: Presenting results and discussion about the process (10 min)
- Step 6: Take home messages (10 min)

### **Educational methods (e.g. group dynamics, interactive methods)**

Interactive plenum discussions for steps 1, 2, 3, 5 and 6

Small group work for step 4

### **Expected impact**

A clear picture about the financial aspects of simulation can help to get proper funding, using resources effectively and to argue a simulation program within an organization.

**Target audience**

Persons responsible for financial issues with regard to a simulation based course or an entire program.

**Maximum number of participants**

20

**Equipment requests**

2 FlipChart boards



SOCIETY FOR  
SIMULATION IN EUROPE

## **National assessment, of individual within a team: organization, role in CBME, lessons and future directions**

**Format:** Workshop

**Topic:** Assessment using Simulation

### **Facilitators / Moderators**

Briseida Mema, Bettina Willi, Lucian Rodriguez

### **Introduction & Aims**

Simulation is an attractive adjunct for assessment of clinician's abilities in Competency Based Medical Education (CBME). Simulation augments the clinical experiences and assessment opportunities, especially for high stakes and low frequency skills. Such a skills are necessary in many specialties, especially that of Intensive Care. There have been calls in many countries regarding national simulation curricula. While simulation curricula are context dependent and hospitals and university programs build their simulation curricula depending on level of supervision and clinical load and exposure for different cases, there needs to be national assessment standards where trainees from different programs are assessed together.

Authors share their experience of building a national simulation assessment for Pediatric critical care trainees.

### **Learning objectives**

Describe a framework for a national assessment blueprint

Demonstrate strategies of assessing an individual within a team through simulation

Create an evaluation strategy for a national simulation assessment

### **Session description (planned activities)**

Authors share their experience of building a national simulation assessment for Pediatric critical care trainees.

During this workshop, authors explain the framework by which the assessment blueprint was developed. While the traditional OSCE assesses the individual in a very standardized experience, we describe our attempts to assess in a context that more resembles the real life where the individual is part of a team. Our assessment day had a multi professional team that rotated through scenarios together and the individual physician is part of the team. We describe our assessment strategy of how an individual within a team can be assessed. We describe the validity of this type of assessment.

Authors concede with an evaluation strategy using a retrospective pre post.

### **Educational methods (e.g. group dynamics, interactive methods)**

Simulation blueprint for national assessment:

Guiding principles mini- lectures and small group exercises of building a blueprint for a simulation assessment

Assessment of individual within a team:

Mini lecture on validity of assessment tools for individuals and teams and large group discussion on different type of assessment tools to be able to judge the performance of individual and teams



Evaluation strategy:

Mini lecture on different evaluation frameworks and small group discussion of pro/ con of different assessment strategies.

**Expected impact**

Knowledge about innovative uses of simulation for high stake assessment

**Target audience**

simulator educators

**Maximum number of participants**

40

**Equipment requests**

none



SOCIETY FOR  
SIMULATION IN EUROPE

**One process of teaching ultrasound image evaluation by using image examples to guide assessment of non-experts including standardised patients (SP's)**

**Format:** Workshop

**Topic:** Assessment using Simulation

**Facilitators / Moderators**

Felicia M. Toreno and Lorraine Lyman

**Introduction & Aims**

At many institutions providing feedback to imaging of medical students who produce Ultrasound images is an uphill battle. Many institutions lack enough faculty to complete this task on a regular basis, but students regularly state that feedback is a necessary component to their improvement as they continue to learn scanning techniques. Using image examples which demonstrate best practices and common mistakes can help non-experts develop a greater comfort during image assessment.

**Learning objectives**

Objectives:

1. Demonstrate with workshop participants the process of presenting master images as a mechanism leading to good and consistent Ultrasound image evaluation.
2. Participants will step through image assessment using a mater guide of images as well as written standards.

**Session description (planned activities)**

The presenters will guide the process for participants as they assess Ultrasound images via comparison to master images. Master images will be provided and used as comparisons for student images as participants work through image assessment.

**Educational methods (e.g. group dynamics, interactive methods)**

Facilitators will provide participants with a random selection of medical student Ultrasound images and a panel of master Ultrasound images used in the comparison of images leading to assessment purposes.

All participants will be offered an introductory set of instructions associated with the comparison of master Ultrasound images used as benchmarks in image assessment.

Participants will then work through a bank of images and complete assessment of those images.

Responses will be compared and the thought process of assessment worked through with participants by an experienced Sonography expert.

**Expected impact**

Participants will become familiar with the process of evaluating Ultrasound images and making this process palatable for non-experts helping with image assessment. The presenters will guide the process for participants as they assess Ultrasound images via a comparison to master images. Master images will show best practices as well as common mistakes. Common mistakes will be accompanied by a description of image improvement.

**Target audience**

Any participant responsible for assessment of Ultrasound images will benefit from this workshop.

**Maximum number of participants**

30

**Equipment requests**

Projector



SOCIETY FOR  
SIMULATION IN EUROPE

## **Pearls for research: raising the bar for studies of simulation-based education**

**Format:** Workshop

**Topic:** Faculty Development

### **Facilitators / Moderators**

Ryan Brydges, Peter Dieckmann, David Cook

### **Introduction & Aims**

Research in simulation-based education (i.e., design of both training and assessment) is booming, with increased interest, increased investigators, and increased publications. Yet research methods and reporting quality remain highly variable. We will use the lessons learned from our previous systematic review of over 1200 studies of simulation-based training and assessment, and our own research programs, to discuss recurrent problems with the research questions, literature reviews, conceptual frameworks, research designs, and reporting quality of many published studies.

### **Learning objectives**

At the completion of this workshop, participants will be able to:

- 1) Describe the current state of evidence in simulation-based education, and outline directions for future research;
- 2) Create answerable research questions that test key theories or principles of instructional design or assessment in simulation-based education;
- 3) Describe three common pitfalls in simulation-based research (inadequate sample size, lack of assessment validation framework, and poor research reporting).

### **Session description (planned activities)**

We will create an active learning environment using a combination of personal reflection, large-group discussion, small group collaborative activities, didactics, and application of new knowledge to their own problem. Specifically, participants will begin by writing down their research problem – a topic that has piqued their interest or bothered them enough to want to study it further. We will prompt them to write down their thoughts in the form of a research question that they are studying or hope to study. Next, we will lead a discussion on how to differentiate scholarly innovation from scholarly research, a distinction that the simulation community continues to struggle with. From there, we will help participants understand current evidence in simulation-based education research, and identify critical areas requiring further research. Next, we will discuss the elements of answerable research questions and the importance of questions that build on existing conceptual frameworks and theories. With this in mind, participants will work in pairs to refine their research questions. Finally, we will review key issues of study design, outcome assessment and validation, and research reporting, and brainstorm together how these can be optimized. Participants will reflect on how these principles could improve their own study, and will revise their study design outline accordingly. The workshop will include a brief review of the 2016 reporting guidelines (CONSORT/STROBE extension) for simulation research. Participants will leave better prepared to make meaningful contributions to the science of simulation-based education.

### **Educational methods (e.g. group dynamics, interactive methods)**

1. Reflect on research experience, write down question of interest;
2. Key questions for SBME research (didactic, group brainstorm);
3. Creating good research questions (didactic, work in pairs);
4. Pitfalls in research (didactic, group

discussion)

**Expected impact**

To enhance the quality of the research conducted by participants, as both leads and collaborators on research teams.

**Target audience**

Health professions education researchers

**Maximum number of participants**

25

**Equipment requests**

Flip charts (or whiteboards) and markers, AV for powerpoint presentation (with VGA adaptor)



SOCIETY FOR  
SIMULATION IN EUROPE

## **Preparing health professionals for challenging conversations with simulated participants (SPs)**

**Format:** Workshop

**Topic:** Interprofessional / Team Education

### **Facilitators / Moderators**

Gerry Gormley MD , Val Fulmer BS, Paul Murphy PHD, Tonya Thompson MD

### **Introduction & Aims**

Modern healthcare provision is becoming increasingly challenging and complex to provide. With such intensifying demands, healthcare professionals have also come under unprecedented pressure with rising rates of stress, burnout and depression. Whilst the causes are multifactorial, challenging interactions with patients, careers and other healthcare professionals is an important stressor. As an educational community, we need to intensify our efforts to equip our healthcare professionals in meeting these demands.

In a recent national study in the UK, complex interpersonal interactions were identified as a gap in training for junior doctors - including situations such as ethical dilemmas, dealing with uncertainty, end of life care – to name but a few. There was a clear call for simulation based education to help to prepare healthcare professionals for such challenging situations. Given the nature of these complex clinic-socio interactions - SP based simulation training has much to offer in helping to best prepare our healthcare professionals to manage these challenges.

This workshop will provide perspectives, practices and strategies to aid in the design of training sessions that include Simulated Participants (SPs) to teach critical areas of communication for health care professionals.

### **Learning objectives**

1. Identify contextually appropriate ways to design a simulation whose objectives include challenging communications.
2. Visualize the components of scenario design through a demonstration.
3. Define strategies for implementation of simulation design to include safety considerations.

### **Session description (planned activities)**

After a brief overview and description of SP Methodology in the UK and the USA, we will demonstrate a typical “difficult conversation”. With an interactive time in and time out method of facilitation, we will unpack the process of the simulation and the development and perspectives of those involved in its creation. (Acute care physician perspective, family medicine perspective, patient and SP perspective, administration, psychological safety, drama perspective) and demonstrate how to build and design a simulation to fit the context of the participants.

### **Educational methods (e.g. group dynamics, interactive methods)**

1. Demonstration of a difficult communication will engage the attendees and set the ground work for further discussions.
2. Multifaceted perspectives will be unpacked as a large group; family medicine, emergency medicine, theatre methodology and administration considerations will be discussed.
3. Documentation of strategies identified together will be summarized and documented for the future use of all.

Format:

Overview: 20 min

Demonstration: 10 min

Discussion: 30 min

Debriefing discussion about design strategies: 20 min

Closing Q and A: 10 min

References:

Monrouxe LV, Bullock A, Gormley G, Kaufhold K, Kelly N, Roberts CE et al. New graduate doctors' preparedness for practice: a multistakeholder, multicentre narrative study. *BMJ Open*. 2018 Aug 29;8(8). e023146.

National training surveys ask doctors about burnout. General Medical Council, 2018

(<https://www.gmc-uk.org/news/news-archive/national-training-surveys-ask-doctors-about-burnout>)

### **Expected impact**

Provide to intermediate/ advanced learners the elements of developing an SP based simulation that includes difficult communication and discussion of key elements of training SPs with an eye on safety for all involved.

### **Target audience**

intermediate to advanced learners

### **Maximum number of participants**

30

### **Equipment requests**

Overhead projector and computer



SOCIETY FOR  
SIMULATION IN EUROPE

## **Reporting guidelines for simulation-based research in healthcare: How to write and report a simulation-based research study**

**Format:** Workshop

**Topic:** Faculty Development

### **Facilitators / Moderators**

Isabel T Gross, Travis Whitfill, Todd Chang, Ralph MacKinnon, Jennifer Arnold, David Grant

### **Introduction & Aims**

Over the past couple of decades, there has been a growing body of literature on simulation-based research (SBR). SBR can be broadly divided into 2 categories: (a) research addressing the efficacy of simulation as a training methodology (i.e. simulation-based education as the subject of research); and (b) research using simulation as an investigative methodology (i.e. simulation as the standardized environment for research)(1). Many features of robust SBR overlap with other clinical or educational research. However, the use of simulation in research introduces a unique group of features that should be considered when designing and publishing the study(). Failure to adequately describe the key elements of a research study impairs the efforts of editors, reviewers, and readers to critically appraise strengths and weaknesses of the study. As such, incomplete reporting represents a limiting factor in the advancement of the field of simulation in health care. In this workshop, we will discuss important components in addition to STROBE and CONSORT statement to report for simulation-based research (either as subject or methodology of research). In small groups, workshop attendees will work together to assess a simulation-based research study using the checklist and discuss key components when designing and reporting a simulation-based research project.

### **Learning objectives**

Learning Obj #1

Describe the extensions to the CONSORT and STROBE statement for simulation-based research

Learning Obj #2

Understand how to use the guidelines to draft and/or review a simulation-based research study

Learning Obj #3

Discuss the do's and don'ts when drafting a simulation-based research manuscript

### **Session description (planned activities)**

We will utilize a mix of didactic presentation, small group work and large group discussion in our workshop.

Timeline and faculty assignment (0-90 min)

00 - 05 min: Welcome and Introductions – 5 minutes (ALL faculty)

05 - 20 min: Short Presentation: Overview of extension of CONSORT and STROBE guideline for simulation research



20 – 35 min: Small Group Work: Evaluate a randomized controlled simulation-based study using the CONSORT checklist (Each faculty will facilitate one group)

Description: workshop attendees will work in-group to read a published simulation study and use the checklist to identify the missing/ incomplete components of the paper.

35 – 45 min: Large Group Discussion: Report out, Q & A (All Faculty)

45 – 70 min: Small Group Work: Evaluate an observational simulation-based study using the STROBE checklist (Each faculty will facilitate one group)

Description: workshop attendees will work in-group to read a published simulation study and use the checklist to identify the missing/ incomplete components of the paper.

70 – 85 min: Large Group Discussion: Report out, questions and answers (All faculty)

85 – 90 min: Summary and Take-Home Messages (All faculty)

### **Educational methods (e.g. group dynamics, interactive methods)**

In this workshop, we will discuss these important guidelines for simulation-based research reporting (2-5). In small groups, workshop attendees will work together to review a simulation-based research study using the checklist and discuss key components when designing and reporting a simulation-based research project.

### **Expected impact**

At the end of the workshop, the attendees will understand how to evaluate a study involving the use of simulation (either as subject or methodology of research) and identify key components of designing and reporting this sort of research.

### **Target audience**

Simulation-based researchers or anybody interested in publishing simulation-based research

### **Maximum number of participants**

30

### **Equipment requests**

Chairs and tables, space for small group discussions within the same room, ideally 4 tables for groups to gather around



SOCIETY FOR  
SIMULATION IN EUROPE

## **Setting up Simulations across the cancer pathway - from primary care to carers and end of life care**

**Format:** Workshop

**Topic:** New Technologies and INNOVATION

### **Facilitators / Moderators**

Dr A Fernando, Dr K Thillai, Dr T Benepal, Mr C Broom, Mr N Gosling, Dr J Kelly, Dr A Zoumprouli, Mr H Snelgrove

### **Introduction & Aims**

The workshop aims to explore the need to develop a joint up simulation strategy across the patient pathway for cancer, drawing on educational content from a series of cancer related courses.

### **Learning objectives**

How to set up a cancer related course across the treatment pathway

How to design and evaluate an intervention concerned with immunotherapy and chemotherapy using simulation

How to design and evaluate an intervention co-designed by carers of patients with cancer

### **Session description (planned activities)**

Group brainstorming

Interactive group exercise

Primary care based simulation

Debrief of a treatment related scenario

### **Educational methods (e.g. group dynamics, interactive methods)**

debriefing

small group work

in situ action research

thematic group work

### **Expected impact**

Equipping clinicians with the ability to develop a whole pathway approach to training clinicians across the cancer pathway and providing a sustainable way to collaborate and share/ disseminate resources

### **Target audience**

All healthcare professionals, nurses, Drs,(primary and secondary care) AHPS, carers, service commissioners

### **Maximum number of participants**

## **Equipment requests**

Video, AV, Sound, Flip charts, we aim to bring an actor if workshop request successful



SOCIETY FOR  
SIMULATION IN EUROPE

## **Simulation beyond education: highly realistic scenarios for the design and analysis of work spaces and procedures**

**Format:** Workshop

**Topic:** Patient Safety / Quality Improvement

### **Facilitators / Moderators**

José M Quintillá, Carmen de la Gala (Simulation Program - Sant Joan de Déu Barcelona Children's Hospital)

### **Introduction & Aims**

Where and how we work greatly influences the safety and experience of patients, families and professionals. The widely recognized gap between "work as imagined" and "work as done" is conditioned by the conscious and unconscious performance of individuals and teams. Simulation is an excellent tool to understand and test architectural and functional solutions before using them with real patients.

The overall aim of the workshop is to provide those responsible for simulation programmes with useful tools for planning simulation activities focused on the design and analysis of work spaces and procedures.

### **Learning objectives**

At the end of the workshop, participants will be able to:

1. Understand the scope of simulation as an analysis tool.
2. Describe the phases of the process of designing a simulation with a test objective.
3. Apply the systematic proposal for the planning of an activity.

### **Session description (planned activities)**

- Presentation (15 min)
- Explanation of the process (30 min)
- Exercise in groups to plan simulation activities for analysis of spaces and processes (30 min)
- Conclusions (15 min)

### **Educational methods (e.g. group dynamics, interactive methods)**

The workshop combines two teaching methodologies:

- Objectives 1 and 2 are worked on through an oral presentation with participatory discussion.
- Objective 3 is addressed by working in small groups guided by a facilitator and sharing the most relevant aspects.

### **Expected impact**

The expected impact is to bring about an innovative and practical change in the planning schemes of simulation activities, so that they are effectively used as an analysis tool.

### **Target audience**

Simulation facilitators, activity designers, planners, simulation center managers.

**Maximum number of participants**

30

**Equipment requests**

- Room with capacity for 50 people.
- Chairs
- Paper and pens
- Computer and projector
- Blackboard and markers



SOCIETY FOR  
SIMULATION IN EUROPE

## **Tele-simulation: How to facilitate a simulation when equipment and facilitator are apart.**

**Format:** Workshop

**Topic:** New Technologies and INNOVATION

### **Facilitators / Moderators**

Reinis Balmaks, Luize Bidina, Baiba Ziemele, Travis Whitfill, Isabel T Gross

### **Introduction & Aims**

In this workshop, we will discuss important components required to successfully conduct tele-simulations and conduct a live telesimulation with Riga Stradins University in Latvia. Participants will experience how to run this short telesimulation and work through technical requirements and challenges. Afterwards, workshop attendees will discuss key components when designing and incorporating technology assisting with remote facilitation reflecting on the live telesimulation.

### **Learning objectives**

1. Describe the key components of tele-simulation
2. Understand how to conduct a telesimulation
3. Discuss common pitfalls and how to address them

### **Session description (planned activities)**

00 - 05 min: Welcome and Introduction

05 - 20 min: Short Presentation: Overview of tele-simulations, when is it useful and what are challenges to overcome?

20 – 40 min: Live telesimulation with Riga Stradins University, Latvia (back-up: recorded simulations in case there are technical difficulties)

40 – 55 min: Large Group Discussion: Reflections on live telesimulation

55 – 70 min: Small Group Work: Each small group will be facilitated by an instructor with experience in telesimulation. Groups will share experiences with telesimulation

70 – 85 min: Large Group Discussion: Report out, questions and answers

85 – 90 min: Summary and Take-Home Messages

### **Educational methods (e.g. group dynamics, interactive methods)**

We will utilize a mix of didactic presentation, small group work and large group discussion in our workshop.

### **Expected impact**

In remote areas, access to simulation equipment can be easier than access to a well-trained simulation specialist who can effectively facilitate a simulation. In the absence of an in-person simulation instructor, tele-simulation can be used to provide real-time facilitation and remote access to a simulation specialist. Providing tele-simulation helps in increasing the use of simulation equipment and provide high quality facilitation while the time commitment for the consulting simulation specialist is relatively low. This workshop will be valuable for an audience working with remote communities and locations where equipment can be easily shipped but a simulation instructor is not available. Attendees will experience a live telesimulation with Latvia preparing them to perform telesimulations at their home institutions in the

future.

**Target audience**

Physicians, nurses, technicians, scientists, trainees

**Maximum number of participants**

30

**Equipment requests**

Projector, 30 chairs for participants



SOCIETY FOR  
SIMULATION IN EUROPE

## **The development of Virtual Reality Tools for urgent medical care.**

**Format:** Workshop

**Topic:** New Technologies and INNOVATION

### **Facilitators / Moderators**

Stéphane Grade; Xavier Losfeld; Michel Vergnion

### **Introduction & Aims**

Being able to simulate emergency situations in virtual reality (VR) offers great opportunities for the education of medical professionals. Indeed, Computer-based applications are increasingly used to support the training of medical professionals. Several elements (virtual environments; avatars), once put together can provide a training ground that is safe and easily set up. As a result, trainees benefiting from VR simulation reinforce their decision-making skills in a setting closely mimicking relevant realistic situations. Relevant scenarios can thus be practiced and debriefed afterwards. These VR applications have shown to improve learning outcomes for different training procedures in various medical domains. The present workshop will focus on how to use VR to train procedures on the outside field, targeting skills like medical triage, damage control, safety measures and interdisciplinary interactions.

### **Learning objectives**

The goal of the workshop will be to present a state of the art on VR tools for emergency simulations. To expose the possibilities for one willing to create its own virtual experiences. And finally to give the opportunity to attenders to test a VR headset and experience a virtual scenario.

### **Session description (planned activities)**

The workshop will first present some of the existing virtual reality tools dedicated to emergency simulations. We will mainly review applications focusing on triage and damage control training, moreover the difference between set ups using desktop and head mounted displays (e.g., oculus rift) will be discussed. Indeed, a wide range of scientific studies use the terms "VR" but do not necessarily use immersive 3D solutions. Still, research also suggests that VR simulations bring similar learning outcomes in comparison to more classical simulations and those can be used for both the training and the evaluation of learners (Luigi Ingrassia et al. 2014). One of the great advantages for VR scenarios, is that once they are created they can be used an almost infinite number of time (McGrath et al., 2017).

Following this we will orient the workshop toward a presentation of the different steps and challenges making possible the creation of homemade virtual reality tools and scenarios. Different software, including unity (3D engine), DAZ3D, makehuman (virtual avatars creators software) will be introduced in the context of medical emergency simulation experiences development. This will allow the audience to acknowledge the different possibilities if ones want to create virtual experiences for training learners to better react to emergencies.

Finally, we will present some of the scenarios that we are developing for our school and the different functions our VR application can offer. During this final part of the workshop, attendees will be able to try our VR set up (demo with an oculus rift) and experience the implemented procedures like medical triage, damage control and safety measures training.



**Educational methods (e.g. group dynamics, interactive methods)**

Classic power point presentation - dynamic videos presenting the aimed content.

interactive discussions.

Virtual reality demonstration followed by debriefing/feedback/open commentary session.

**Expected impact**

Provide to the attenders an overview of the possibilities offered by VR technologies for simulation and teaching.

Provide a description of the required tools and methodologies for VR development in emergency simulation.

Give the opportunity to the audience to test VR headset and make their opinion on the technology potential.

**Target audience**

Any participants interested in simulation and emergency care who want to learn more about VR solutions and see the possibilities in implementing these cost effective method of simulation.

**Maximum number of participants**

30 - 40

**Equipment requests**

We will need a table with an electric plug nearby to set up the VR demo.

Also, the room should be equipped with a video projector for the introductory presentation.

## **The liquid facilitator in the simulation training**

**Format:** Workshop

**Topic:** Debriefing

### **Facilitators / Moderators**

Santiago Gonzalez, Nuria Serrat Antolí y Aida Camps Gomez

### **Introduction & Aims**

In the simulation, it is essential that the simulation facilitator has competencies that distance him from the traditional facilitator to approach a liquid facilitator. A traditional facilitator was a trainer who rigidly followed the profile of his session, functioning as the group would function. To be a liquid facilitator, one needs to be an expert in the learning process, one must understand the psychological processes involved in learning and apply them in the design of their sessions. That is why it is essential for the liquid facilitator to know the personal style or characteristics of the student in terms of personality, learning style, etc. This point allows the facilitator to enter a field of knowledge of psychology very relevant to prepare motivating sessions for any type of student. We recommend the facilitator to acquire a deep knowledge of the basic dimensions of the personality. We will work with the tradition model that comes from Carl Gustav Jung and his psychological types. Each "type" of person has preferences regarding very important aspects in facilitation: the relationship with others, the use of reason and feeling or intuition and sensitivity. As a general rule: we will prepare sessions that do not hinder the motivation of any of the different styles and leave room to favor the styles that are finally found in the session. Being attentive to student behavior will allow us to make precise adjustments in the classroom.

The objective of the session is to identify the relational style of the facilitator as well as the participants of the simulation and establish meaningful and impactful conversations for the learning process of these.

### **Learning objectives**

-Know how to interpret and express without judgments emotional states of their own and of the students taking into account their own relational style and the participants, when exploring their mental schemas.

-Acquire techniques to adapt to others for better group management while maintaining the climate and positive attitude for learning.

### **Session description (planned activities)**

1. Presentations and security environment
2. Analysis in small groups on the typology of personalities.
3. Construction of a manual to have tools in the exploration of typology of personalities
3. Microsimulations to establish constructive conversations from the identified relational style.

The workshop will have a theoretical part to help empower the participants of the necessary resources.

Later through small simulated conversations the participant will have to identify personality styles and acquire different

skills for the interaction with them in the debriefing

### **Educational methods (e.g. group dynamics, interactive methods)**

The workshop will have a theoretical part to help empower the participants of the necessary resources. Later through small simulated conversations the participant will have to identify personality styles and acquire different skills for the interaction with them in the debriefing

### **Expected impact**

- Provide tools for better understanding of people and their potential.
- Knowing how to explore the mental outline of a person from a perspective that facilitates and helps to restructure the information.
- Know how to motivate and assess aspects that may be divergent with the facilitator.
- Help to appreciate and make people shine in simulation, by the fact of better understanding their relational style

### **Target audience**

Medical or educational professionals who work with the simulation and management of people

### **Maximum number of participants**

15

### **Equipment requests**

tables  
chairs  
screen  
computer

We will contribute the rest of the material



SOCIETY FOR  
SIMULATION IN EUROPE

## **The Medi-StuNTS system: A behavioural marker system for Medical Students Non-Technical Skills within immersive simulation**

**Format:** Workshop

**Topic:** Debriefing

### **Facilitators / Moderators**

J Kerins, A Hamilton, V Tallentire, J More, E Phillips, B Clarke

### **Introduction & Aims**

Good non-technical skills (NTS) are critical to the delivery of high quality, safe patient care. It is increasingly recognised that training in such skills should be incorporated into undergraduate medical training. The Medi-StuNTS (Medical Students Non-Technical Skills) system is a behavioural marker system (BMS) developed for observing the NTS of final year medical students in order to provide meaningful and individualised feedback in debriefing. This interactive workshop will detail the evidence-based development, piloting and utility evaluation of this formative assessment tool, as well as provide participants with hands on experience of using the BMS.

### **Learning objectives**

By the end of this session participants will:

- Be familiar with the concepts of non-technical skills (NTS) and behavioural marker systems (BMS);
- Understand how BMS have been developed, in particular the Medi-StuNTS system, within medicine and other health professional groups;
- Have experience of using the BMS to formatively assess medical students in the context of acute care simulation;
- Have had the opportunity to compare their ratings to those of other participants, and discuss their reasoning;
- Understand how the BMS can facilitate the provision of individualised, specific and meaningful feedback to assist in the development of NTS.

### **Session description (planned activities)**

Participants will be introduced to NTS and BMS, specifically the Medi-StuNTS system. They will watch video footage of final year medical students within immersive simulation and use the Medi-StuNTS system to rate performance. Following this they will compare ratings and observations within small groups to prompt discussion around the use of the tool.

### **Educational methods (e.g. group dynamics, interactive methods)**

A brief didactic introduction will be followed by multiple short video clips and subsequent small group discussions based on observations and ratings using the BMS. Facilitated larger group discussions will also be integrated.

### **Expected impact**

The session will prompt discussion and reflection on this particular method of NTS training and participants will be familiarised with this new tool. They will be equipped with an understanding of using this BMS in debriefing as a way of providing feedback for medical students.

**Target audience**

The workshop is aimed at anyone involved in undergraduate medical training with an interest in the development of non-technical skills, particularly with experience of immersive simulation and an understanding of the basic clinical assessment of deteriorating patients.

**Maximum number of participants**

50

**Equipment requests**

Tables to facilitate small groups with AV equipment suitable for playing video embedded in PowerPoint.



SOCIETY FOR  
SIMULATION IN EUROPE

## **Traumatic cardiac arrest simulation**

**Format:** Workshop

**Topic:** New Technologies and INNOVATION

### **Facilitators / Moderators**

Daniel McRae, James Back, Juan Parra

### **Introduction & Aims**

We wish to introduce what we believe from literature and internet searches to be a worlds first clamshell thoracotomy simulator for traumatic cardiac arrest scenarios. The unique design of this simulator allows the operators to mimic the procedure of the clamshell thoracotomy in multiple scenarios with a very short reload time between cases. It also combines the practical skills with the normal physiological responses of all reversible causes of traumatic cardiac arrest.

### **Learning objectives**

The users will learn to make a rapid assessment of trauma patients together with the rapid early management required. They will then proceed to learning the procedure of a clamshell thoracotomy and the life saving manoeuvres that this allows the clinicians to perform. Simultaneously the requirement for normal physiology to be restored teaches command and control of the multidisciplinary team involved in such a scenario. This includes the anaesthetics for intubation, a nursing team to maintain on-going rapid volume resuscitation and all the other allied support of a complex resuscitation.

### **Session description (planned activities)**

Stab victim arrives in A+E after standby call with low output state that is promptly lost.  
rapid volume resuscitation is unsuccessful.

Clamshell thoracotomy in this case will reveal tense pericardium caused by tamponade.

Opening pericardium and scooping out clot reveals beating heart but under filled due to leaking ventricle laceration.

Control of haemorrhage by clamp, foley catheter or finger as operator sees fit then proceed to arrange theatre transfer for definitive care (scenario ends there)

### **Educational methods (e.g. group dynamics, interactive methods)**

Will require team leader

Doctor 1 to insert lines

Doctor 2 for intubation

Nurse for monitoring, drugs

2 staff for continued rapid transfusion

runner for blood, theatre calls etc

1 or preferably 2 further doctors for clamshell thoracotomy procedure

### **Expected impact**

better understanding and familiarity with basic thoracotomy procedure  
better team command and control of organised complex multidisciplinary resuscitation

**Target audience**

Surgical, A+E and Anaesthetic doctors, supporting nursing staff and pre-hospital first responders

**Maximum number of participants**

10

**Equipment requests**

rapid blood transfuser, resus area with trolley

all other equipment will be supplied by presenting team



SOCIETY FOR  
SIMULATION IN EUROPE

## **Using communities of practice to assist faculty to implement simulation-based education in the workplace**

**Format:** Workshop

**Topic:** Faculty Development

### **Facilitators / Moderators**

Amanda Wilford

### **Introduction & Aims**

Faculty development programmes have traditionally been seen as being key to implementing simulation-based education (SBE) in primary and acute care settings. These programmes focus on the pedagogy of simulation-based education and only address part of the picture. There appears to be a belief that once the faculty have been trained then staff across the organisation will be ready for the implementation of this education approach. These settings are made up of a multiple of non-healthcare and healthcare professions and the settings they work in are diverse for example a rural clinic, a hospice and a busy inner-city emergency department. Lave and Wenger in 1991 suggested that groups of people who have a passion for something should come together and learn together 'a community of practice'. This workshop will suggest how using this model can aid faculty development in clinical settings.

Lave, J. and Wenger, E. (1991): Situated learning: legitimate peripheral participation, Cambridge, Cambridge University Press

Wenger, E. (1998): Communities of Practice: learning, meaning and identity, Cambridge, Cambridge University Press

### **Learning objectives**

By the end of the workshop all participants will

- 1) Describe the 'Community of Practice Model' and its' core elements
- 2) Consider who their community should be when creating their simulation centre and the faculty development
- 3) Design possible education strategies based on their community of practice

### **Session description (planned activities)**

Methodology linked to learning outcomes

- 1) Brief overview using Power Point and examples of each of the elements
- 2) Case study from facilitator and feedback to the group
- 3) Ask each group to nominate one of their settings to create the strategies

### **Educational methods (e.g. group dynamics, interactive methods)**

Educational Methods linked to learning outcomes



- 1) Plenary
- 2) Case studies, 3 different ones based on real examples where simulation-based education has been found challenging due to the healthcare environment, staffing, culture etc - this will provide examples and suggestions for the third element
- 3) Each group to think about one of their potential communities and how the learning methods chosen to need to be individualised to those that they work with. Each group will have the opportunity to feedback.

In essence we are one such community

### **Expected impact**

By the end of the session, all participants will reflect back to their own settings and may understand that to be successful in implementing SBE it needs to be collaborative across the whole organisation including patients / clients and their families .

### **Target audience**

Clinical and non - clinical educators who have been asked to implement simulation based education in their area e.g. new centre, point of care etc.

Colleagues who are interested in another way of perceiving faculty development in practice .

### **Maximum number of participants**

24

### **Equipment requests**

LCD Projector

3 -5 Tables in a cafe setting

flip chart paper and pens



SOCIETY FOR  
SIMULATION IN EUROPE

## **Virtual reality for dementia awareness**

**Format:** Workshop

**Topic:** New Technologies and INNOVATION

### **Facilitators / Moderators**

Michelle O'Reilly, Alison Smart

### **Introduction & Aims**

Globally, an ageing population has contributed to the prevalence of dementia, which is rapidly increasing. There are over 93,000 people living with dementia in Scotland (Alzheimer Scotland, 2017). People with dementia can present in varying ways and can have a complex set of symptoms including memory loss, language difficulties, failure to recognise people, places and objects and disorientation. Acute ward areas can be disorientating and frightening for someone with dementia. Sensory overload is a common complaint and a stressful experience for the person with Dementia in these environments.

The aim is use virtual reality technology to allow participants to experience similar symptoms to that, a person with dementia might experience in an acute ward environment.

### **Learning objectives**

1. Identify best practice approaches with a person who has dementia in an acute care environment
2. To understand the importance of communication strategies when caring for people with dementia
3. To demonstrate an insight into some of the symptoms persons with dementia can encounter
4. To develop and apply practical solutions for working with persons with Dementia.

### **Session description (planned activities)**

Virtual reality technology will be used to facilitate the workshop. A pre-brief to set the stage and an overview of the session will be provided including outlining learning outcomes and the role of the candidates during the session ( 15 minutes) A 360 virtual reality experience will last 5 minutes. At the end, when all participants have experienced the virtual reality session, a facilitated de-brief (30 minutes) will take place which will explore the groups experience and thoughts on the scenario and how their approach may change for their future practice.

### **Educational methods (e.g. group dynamics, interactive methods)**

In this interactive workshop, virtual reality technology will be utilised to immerse the learner into a virtual 360 world.

### **Expected impact**

Impact: It is anticipated that the participant's knowledge and understanding will improve in relation to this patient group and result in improved attitudes and patient centred care.

### **Target audience**

All Health care professionals

**Maximum number of participants**

10

**Equipment requests**

Equipment

X 10 virtual reality headsets and phones- will be provided by the team on the day to all participants

Room layout - Tables and chairs, flip board and pens

Timing of session- 45 minutes



SOCIETY FOR  
SIMULATION IN EUROPE

## **Virtual reality simulation- why and how**

**Format:** Workshop

**Topic:** New Technologies and INNOVATION

### **Facilitators / Moderators**

Jack Pottle, Jenny Zhou, Rebecca Robertson

### **Introduction & Aims**

As simulation has gained widespread acceptance as a learning methodology and teaching technique, the challenge has shifted towards increasing access and improving quality to impact performance. As this shift has occurred, the increasing commercial availability of Virtual Reality (VR) and Augmented Reality (AR) provides the opportunity to deliver immersive, interactive simulation scenarios at scale and reduced cost.

However, questions remain about which technologies are most appropriate to deliver simulation-based education. How can VR and AR increase learner throughput, how accessible is it, and does it improve performance? This workshop aims to explore the differences between VR and AR, what they can offer, the evidence behind them, and translate this research into practical considerations for learners and instructors.

### **Learning objectives**

Increased awareness of innovative learning methods and appropriateness of VR/AR for learning objectives.

Opportunities to experience VR simulation and brainstorm new ways VR/AR may be relevant to learning and teaching.

Forum to discuss advantages, disadvantages as well as practical considerations of curriculum integration, while appraising the evidence around VR for learning.

Increased ability to evaluate technologies in order to inform research, design, and purchasing decisions.

### **Session description (planned activities)**

#### Introduction

- Introduction, background and aims
- \*Whole group exercise\*: Identifying current challenges in simulation-based medical education

#### What is VR/AR?

- \*Small group exercise\*: Define VR and AR
- Overview of 360, GCI, AR, MR, the curve of acceptance and state of the art
- Immersion, fidelity and presence in VR simulation

#### Why VR/AR?

- Examples of how can VR be used in healthcare training

- \*Chance to try VR sim\*: demos
- Peer sharing of experiences
- Discussion on implementation
- \*Whole group exercise\* questions and debate on utility, design and technology
- Drawing together benefits and potential drawbacks of VR simulation

What's the evidence?

- Discussion of the state of VR/AR simulation research
- \*Whole group debate\*: Should we gamify simulation? [if time]

### **Educational methods (e.g. group dynamics, interactive methods)**

Workshop style with multiple tables. Some didactic work but always interspersed with audience participatio.

Breakout exercises.

Demos to everyone allowing attendees to experience VR and a forum to discuss questions around it.

Open debate throughout.

### **Expected impact**

- Increased awareness of innovative learning methods and appropriateness of VR/AR for learning objectives.
- Opportunities to experience VR simulation and brainstorm new ways VR/AR may be relevant to learning and teaching.
- Forum to discuss advantages, disadvantages and and appraise evidence around VR for learning.
- Increased ability to evaluate technologies in order to inform research, design, and purchasing decisions.

### **Target audience**

Introductory/Intermediate (no previous experience needed)

### **Maximum number of participants**

50

### **Equipment requests**

Plug sockets

Projector

I will bring up to 3 sets of VR kit to ensure everyone gets an opportunity to try examples of VR sim



SOCIETY FOR  
SIMULATION IN EUROPE

## **When is this true? Exploring when and where non-technical skills work in which way**

**Format:** Workshop

**Topic:** Interprofessional / Team Education

### **Facilitators / Moderators**

Dieckmann, Bruun, Grundtvig Jensen, Cedergreen, Prydz, Nyström, Brendel, Lorentzen, Krage

### **Introduction & Aims**

Non-technical skills (NTS) are recognized as essential part of healthcare abilities. Teaching them is difficult for many educators. One reason for those difficulties can be a lack of deep understanding of the underlying NTS concepts on the side of the educators. Therefore, this workshop will explore prerequisites, scope of application, conditional factors, need to balance one element against one or more others, and alternative views on the NTS elements.

The element of “collecting information” in Situation Awareness, for example needs to be seen in the context of the time available; “supporting others” might take very different forms in different settings and might have to be limited, if the support does not help; the teamwork elements are based on the assumption that there are actually teams, where in practice, a lot of work is done in groups of people that hardly know each other.

### **Learning objectives**

- Describe why it is important to consider the scope of application and other relevant conditions for NTS elements.
- Discuss key limitations of selected elements
- Describe ways on how to improve one’s own understanding of NTS concepts.

### **Session description (planned activities)**

We assume the duration is 90 min, but could also work with 60 minutes

10 min Active introduction of the faculty and the participants

50 min Demonstration of phenomena that question the universal formulation of NTS elements (e.g. an exercise that it is virtually impossible to collect “all” information; a decision exercise that shows the impact of routines and biases; a teamwork exercise – all of them very short to demonstrate the issue)

20 min Small group discussion of how the understanding of individual elements need to be adjusted to reflect the actual conditions of healthcare better

10 min Concluding discussion in plenum including ways to improve further

### **Educational methods (e.g. group dynamics, interactive methods)**

Demonstrations

Lectures

Small group discussions  
Plenum discussion

**Expected impact**

Improved understanding of the concepts in the educators  
Improved scenario design  
Improved debriefing discussions  
All leading to better patient care and better work conditions

**Target audience**

Facilitators, who work with NTS and simulation

**Maximum number of participants**

50

**Equipment requests**

Projector  
Loudspeaker  
Flipchart(s) and pens  
Ideally tables in islands



SOCIETY FOR  
SIMULATION IN EUROPE

## **When the emotional responses of trainees should be debriefed (and when they shouldn't...)**

**Format:** Workshop

**Topic:** Debriefing

### **Facilitators / Moderators**

Louis P. Halamek, M.D.

### **Introduction & Aims**

The majority of debriefing methods used in healthcare describe a need to include a reaction phase. Despite the fact that there is little or no objective evidence for this, healthcare debriefings are typified by a question such as “How did you feel about that?” at the start of every debriefing. In other industries where the risk to human life is high, the emphasis of debriefing is on facts, not feelings, and objective outcomes, not subjective interpretations. Through the use of clinical vignettes and short videos, this presentation will critically examine current debriefing dogma and describe the circumstances in which the emotional responses of trainees should be debriefed and when they should not.

### **Learning objectives**

At the conclusion of this session attendees will be able to:

- List the three general phases of current debriefing dogma and assess the quality of the scientific basis underlying them.
- Describe three ways in which debriefing in other high-risk industries differs from how debriefing is typically conducted within healthcare.
- Explain the difference between a technical performance debriefing and a critical incident stress debriefing.
- State the circumstances indicating that the emotional responses of trainees should be debriefed.

### **Session description (planned activities)**

Much of the healthcare literature has been devoted to the theoretical underpinnings of debriefing, rather than actual practical strategies and techniques, and focused on debriefing relatively inexperienced trainees rather than experienced healthcare professionals. Most of the models described in that literature use a very similar approach consisting of three primary phases:

- 1) an individual trained in debriefing who is not a member of the team leads the discussion
- 2) the discussion typically includes reaction, description, analysis and summary phases
- 3) patient outcome is not routinely emphasized (and may actually be avoided if felt to potentially produce negative reactions in team members).

The majority of the published literature on debriefing in healthcare consists of theory, rational conjecture, and opinion. In fact, the only evidence published to date regarding debriefing after simulated clinical events indicates that significant emotional responses are quite rare, raising serious questions about the near universality of the need for a reaction phase and an emphasis on the emotional responses of those being debriefed. In other industries where the risk to human life is high, the emphasis of debriefing is on facts, not feelings, and objective outcomes, not subjective interpretations. Because the generic model of debriefing in healthcare stands in contrast to how debriefing is conducted in other industries where the risk to human life is high, it is time to critically examine current debriefing dogma.



This heavy emphasis on debriefing the emotional responses of trainees to some extent results from confusion between technical performance debriefing (the type of debriefing that is typically conducted in other high-risk industries) and critical incident stress debriefing. A critical incident is defined as an event that has the potential for people to experience significant physical, cognitive, emotional and behavioral reactions immediately after the incident or days, weeks, months and even sometimes years later. If simulated clinical scenarios are well designed and the associated debriefings are conducted in an appropriate manner, a critical incident stress debriefing should very rarely be required. If such a therapeutic approach is indicated, appropriate professional counseling should be undertaken rather than a debriefing led by an individual who is not trained to handle such situations. It is therefore critically important to understand the difference between a technical performance debriefing (used to assess human and system performance) and a critical incident stress debriefing (conducted to provide emotional/psychological support).

This presentation will introduce a method of debriefing that aligns closely with the technical performance debriefings utilized in high-risk industries such as commercial aviation, aerospace and the military. This debriefing model is different in approach from current healthcare debriefing dogma in that it does not necessarily require the presence of a highly trained individual to lead the debriefing, does not focus on learner emotion unless it affects performance, is applicable to learners at all levels of experience whether novice or expert, and is useful for both simulated and real clinical scenarios. The specific strategies of this model assist learners in identifying how their individual and collective strengths and weaknesses contributed to the clinical outcome of the simulated (or real) patient. This debriefing model has been embraced by the Neonatal Resuscitation Program of the American Academy of Pediatrics for use after simulated neonatal resuscitation scenarios, having been adopted by more than 20,000 instructors in the U.S. alone.

Attendees will learn when the emotional responses of trainees should be debriefed and when they should not by practicing using specific debriefing strategies that address the following aspects:

- initiating, sequencing, pacing and terminating debriefings
- facilitating active discussion
- encouraging self-assessment
- asking good questions
- maintaining focus.

#### References

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### **Educational methods (e.g. group dynamics, interactive methods)**

Short videos of specific debriefing situations involving trainees who exhibit emotional responses to the scenario or the debriefing will be shown to those in the audience. Attendees will be divided into small groups and will be asked to describe how they currently approach debriefing those situations. This will then be followed by a report out to the entire group of attendees. The groups will then be led in a discussion that compares and contrasts their responses with how those same situations can be debriefed using specific strategies that focus on 1) the actions of individual trainees, the effect of those actions on the performance of the team, and how that performance influenced the care of the patient and 2) whether or not those emotional responses should be debriefed and, if so, how.

### **Expected impact**

Attendees will come away from this workshop with an in-depth understanding of:

- the difference between a technical performance debriefing and a critical incident stress debriefing
- the limitations of current debriefing healthcare methods
- how those methods differ from debriefing methods used in other high-risk non-healthcare industries
- the circumstances indicating that the emotional responses of trainees should be debriefed
- and a set of strategies that they can use to conduct effective debriefings even in the face of emotional reactions from trainees.

### **Target audience**

This workshop is appropriate for any level of healthcare professional who will be conducting technical performance debriefings or training others to do so. It will appeal to any conference attendee who is interested in 1) questioning current debriefing dogma, 2) learning how debriefings in non-healthcare, high-consequence industries are conducted, and 3) determining when the emotional responses of trainees should be debriefed and when they should not.

### **Maximum number of participants**

80-100

### **Equipment requests**

Digital projector with HDMI AV interface

Microphones to facilitate audience participation