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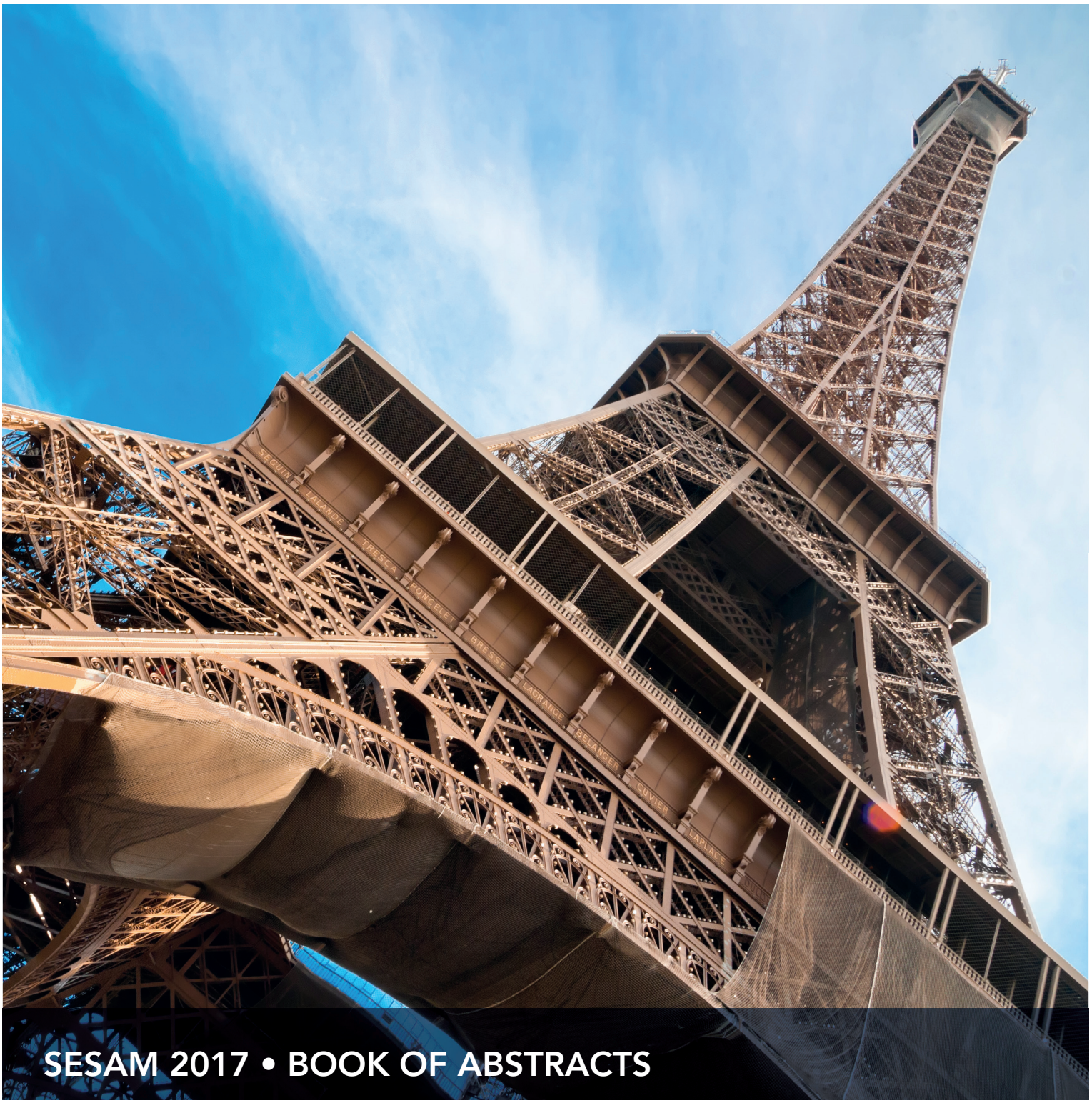

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A Mobile Audio-Visual Solution for In-situ Simulation

Format: Accepted for Oral Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

In-situ simulation (ISS) is an emerging area of technology-enhanced learning. Sorensen et al. define ISS as “a team based simulation strategy that occurs on actual patient care units involving actual healthcare team members within their own working environment”. In addition to educational benefit, ISS is a safety and quality improvement tool, with the capacity to identify latent failures in real clinical systems.
ISS is resource intensive in terms of both faculty input and equipment. Remote viewing of ISS requires portable audio-visual (AV) equipment, representing significant financial investment from educational budgets. Many departments without access to mobile AV equipment restrict participation to single clinical teams, or have additional participants viewing inside the scenario room. Neither of these situations is ideal. Direct observation by an audience can increase participant anxiety, and the presence of passive observers in the room may reduce fidelity. Additionally, significant space constraints in some clinical areas reduce the potential number of participants.

Description

We have developed a low-cost solution to facilitate remote-viewing of ISS. The system utilises smartphone technology (now almost ubiquitous among UK healthcare professionals) and free internet-based videoconferencing software (SkypeTM). Multiple videoconferencing tools were trialed. SkypeTM software was chosen for the quality of audio feed and security encryption.
Staff smartphones were used as cameras, and tablets or laptops were used for remote viewing. Additional equipment requirements were suction-cup smartphone holders, earphones, and computer speakers. For a four view AV set-up, total cost was £9 (€11).
We conducted a feasibility assessment of the AV set-up and evaluated participant acceptability. Test scenarios of 30 minutes duration were conducted with three participants. Learning objectives concentrated on non-technical skills.
Set-up time was minimal, with a four camera set-up established in an average of 11 minutes. There were no technical failures in the AV system, and formal participant evaluation reported that both the audio and visual feed quality was acceptable and neither intrusive nor distracting.

Discussion

We describe a novel low-cost AV solution for high-quality remote viewing of ISS that would allow greater participation in ISS activities. The solution avoids associated anxiety for participants of being directly observed by a large group, and significant financial investment for resource constrained simulation departments. Greater participation increases the educational return on the substantial faculty and equipment investment in ISS. We hope that this solution will allow more departments to introduce ISS, or increase participation in existing ISS programmes.

A novel approach to simulation training for foundation year doctors; embracing new technologies and applying learning theory

Format: Accepted for Oral Presentation
Subject: New Technologies and INNOVATION

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Introduction & Aims

The value of technology enhanced learning in post-graduate medical education is well recognised, with integration of simulation training alongside traditional learning modalities championed by Medical Royal Colleges, and included in curricula for post-graduate doctors. Simulation training is a mandatory requirement for the annual review of competence progression (ARCP) for most UK foundation year doctors (FYDrs).

Delivery of simulation activities is resource intensive. Historical data from our hospital suggested inefficiencies in booking and delivery models resulting in suboptimal attendance and lost training opportunities. We undertook a project to maximise educational return on organisational investment in simulation, by developing a novel medical simulation pathway for FYDrs.

Description

Background information on existing delivery models for FYDr simulation was gathered by approaching other regional simulation departments and reviewing the relevant literature. Simulation training for FYDrs at our hospital was then observed for two months, focusing on attendance, cancellation rates, and learner satisfaction.

Early engagement of key stakeholders including specialty leads and educational supervisors ensured organisational buy-in, and the new simulation programme was endorsed as protected teaching time. A novel simulation pathway was developed, incorporating electronic booking and ticketing system for trainees. Sessions are delivered and debriefed by senior clinical staff. Inter-session variation was reduced through introduction of a standardised educational video for simulation induction and development of multidisciplinary curriculum-mapped scenarios with learning objectives in both technical and non-technical domains.

The pathway continues beyond participants' direct exposure to the simulation environment. We reinforce experiential learning by sending electronic self-test questions relevant to session learning objectives to all candidates 6 weeks after each session. Participant feedback is collected and collated in real time using SurveyMonkey software, and the teaching team reflect on feedback at weekly steering-group meetings.

Discussion

More than 75 FYDrs have completed the simulation pathway. Anectdotal feedback from clinical supervisors is that skills and knowledge gained during sessions translates to both behavioural and cultural change in clinical environments. This feedback is supported by participant experience data (Kirkpatrik level one) which is consistently rated excellent. The spaced learning component of the pathway (post-session clinical questions) allows us to demonstrate effectiveness of the programme for individual learning (Kirkpatrick level two) and retention of that learning beyond the initial encounter.

This pathway increases efficiency in simulation resource utilisation, coupled with robust evidence of training effectiveness. Collectively, these factors illustrate the success of the novel pathway, and suggest implementation of the principles would support effective delivery of other simulation activities.

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An algorithm to automatically tune cardiovascular model parameters on patients-specific condition

Format: Accepted for Oral Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

Cardiovascular simulators are largely used for the representation of general pathophysiological conditions for educational applications and for the training of medical and paramedical staff. But so far the use of simulators in the clinical care is not consolidated yet. The lack of standardized procedures on how to simulate a patient-specific condition limits their applicability and impedes their integration in the standard care as clinical decision support systems. Aim of this work is to develop an algorithm that permits an automatic tuning of a cardiovascular simulator into a patient-specific condition.

Methods

We developed an algorithm in LabVIEW and integrated it into a cardiovascular simulator. The algorithm works as it follows:
- The clinician inserts patient-specific data as inputs into the algorithm. The translates these inputs into model parameters (i.e. peripheral resistance, ventricular contractility etc.) that are sent to the cardiovascular simulator,
- An automatic procedure refines some parameters, if needed, until the output of the simulator approaches patient-specific condition
We tested the algorithm on 6 end stage heart failure patients (3 ischemic and 3 dilated cardiomyopathies) whose data were collected retrospectively at the University Hospitals of Leuven. The input collected and provided to the algorithm were: systemic blood pressure (BP), pulmonary arterial pressure (PAP), capillary venous wedge pressure (Pwedge), central venous pressure (CVP), cardiac output (CO), end systolic/diastolic left ventricular volumes (ESV/EDV), left ventricular ejection fraction (EF%), heart rate (HR), body weight and height. All patients were affected by mitral valve regurgitation.

Results & Discussion

Average data among patients were: BP=65±4 mmHg, PAP=38±4 mmHg, Pwedge=33±3 mmHg, CVP=15±4 mmHg, HR=87±15 bpm, CO=3.4±0.7 l/min, EDV=247±35 cm3. The algorithm successfully tuned the simulator for each patient' condition, individually. The average error between patient-specific data and simulation outputs was of 6.5%, with a maximum error of 21.6%. Using a 4th generation IntelREG Core i7-4702HQ processor and a simulator execution time of 500 ms for a heartbeat, the time needed for the algorithm to tune the simulator was of ~ 1 minute.
The algorithm we propose permits to tune a cardiovascular simulator on patient-specific condition, with a good approximation between clinical data and simulation outputs. In the future, the algorithm will be tested on larger groups of

patients affected by multiple cardiovascular diseases. We believe this algorithms will encourage the use of cardiovascular modelling in the standard care.

This work was supported by Marie Curie Scholarship (PIEF-GA-2013-624296) and by “Le Fonds pour la Chirurgie Cardiaque” (Ref. 489 589).

An electronic cognitive aid improves the management of severe gynaecological TURP syndrome: A prospective, randomised simulation study

Format: Accepted for Oral Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Introduction & Aims: Lack of familiarity with the content of current guidelines is a major factor associated with non-compliance by clinicians. It is conceivable that cognitive aids with regularly updated medical content can guide clinicians' task performance by evidence-based practices, even if they are unfamiliar with the actual guideline. Acute hyponatraemia as a consequence of TURP syndrome is a rare intraoperative event, and current practice guidelines have changed from slow correction to rapid correction of serum sodium levels. The primary aim of this study was to compare the management of a simulated severe gynaecological transurethral resection of the prostate (TURP) syndrome under spinal anaesthesia with either: an electronic cognitive aid, or with management from memory alone. The secondary aim was to determine participant perception of the usefulness and clinical relevance of the cognitive aid.

Methods

Methods: Anaesthetic teams were allocated to control (no cognitive aid; n=10) or intervention (cognitive aid provided; n=10) groups. We identified eight evidence-based management tasks for severe TURP syndrome from current guidelines and subdivided them into acute heart failure (AHF)/pulmonary oedema tasks (5) and acute hyponatraemia tasks (3). Implementation of these steps was measured by scoring task items in a binary fashion (yes/no). To determine whether or not the cognitive aid had prompted an action, participants from the cognitive aid group were interviewed during debriefing on every single treatment step. At the end of the simulation, session participants were asked to complete a survey.

Results & Discussion

Results & Discussion: Teams in the cognitive aid group considered evidence-based treatment steps significantly more often than teams of the control group (96% vs. 50% for 'AHF/pulmonary oedema' $p<0.0001$; 79% vs. 12% for 'acute hyponatraemia' $p<0.0001$). Without the cognitive aid, performance from memory alone would have been comparable across both groups. Trainees, consultants, and nurses appeared to derive equal benefit from the cognitive aid. We conclude that the cognitive aid improved the implementation of evidence-based practices. Cognitive aids with current medical content could help to close the transitional gap between guideline publication and implementation in acute patient care. It is important that the cognitive aid should be familiar, in a format that has been used in practice and training

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An electronic cognitive aid improves the management of ST-elevation myocardial infarction during caesarean section: a prospective randomised simulation study

Format: Accepted for Oral Presentation
Subject: Assessment using Simulation

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Introduction & Aims

Introduction & Aims: Cognitive aids have come to be viewed as promising tools in the management of perioperative critical events. The majority of published simulation studies have focussed on perioperative crises that are characterised by time pressure, rare occurrence, or complex management steps (e.g., cardiac arrest emergencies, management of the difficult airway). At present, there is limited information on the usefulness of cognitive aids in critical situations with moderate time pressure and complexity. Intraoperative myocardial infarction may be an emergency to which these limitations apply. The primary aim of this study was to compare cognitive aid versus memory for intraoperative ST-elevation myocardial infarction (STEMI) management in a simulation of caesarean delivery under spinal anaesthesia. The secondary aim was to determine participant perception of the usefulness and clinical relevance of the cognitive aid.

Methods

Methods: Anaesthetic teams were allocated to control (no cognitive aid; n=10) or intervention (cognitive aid provided; n=10) groups. We identified nine evidence-based metrics of essential care from current guidelines and subdivided them into mandatory (high level of evidence; no interference with surgery) and optional (lower class of recommendation; possible impact on surgery) tasks. Six clinically relevant tasks were added by consensus. Implementation of these steps was measured by scoring task items in a binary fashion (yes/no). The interval between the diagnosis of STEMI and the first contact with the cardiac catheterisation lab was measured. To determine whether or not the cognitive aid had prompted an action, participants from the cognitive aid group were interviewed during debriefing on every single treatment step. At the end of the simulation, session participants were asked to complete a survey. Task performance data (yes/no) were compared with Fisher's exact tests.

Results & Discussion

Results & Discussion: The presence of the cognitive aid did not shorten the time interval until the cardiac catheterisation lab was contacted. The availability of the cognitive aid improved task performance in the tasks identified from the guidelines (93% vs. 69%; p<0.001) as well as overall task performance (87.5% vs. 59%; p<0.001. The observed difference in performance can be attributed to the use of the cognitive aid, as performance from memory alone would have been comparable across both groups. Trainees appeared to derive greater benefit from the cognitive aid than did consultants and nurses. We conclude that the management of intraoperative ST-elevation myocardial infarction can be improved if teams use a cognitive aid.

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Assessment of newborn resuscitation skills: a pilot study among paediatric residents using high fidelity simulation

Format: Accepted for Oral Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

A prompt beginning of an appropriate neonatal resuscitation is critical to reduce mortality and improve outcome in newborns. However, residents are rarely exposed to real emergency situations. Simulation-based training offers the opportunity to improve medical skills in a controlled setting. Aim of this study was to evaluate technical (TS) and non-technical (NTS) skills in a sample of Italian paediatric residents using a standard scenario and validated checklists.

Methods

35 Italian paediatric residents attended a simulation-based training developed by SIMNOVA (Novara) and SimMeyer (Florence) called “Paediatric Simulation Experience”. The high fidelity scenario consisted of a term newborn with severe asphyxia and pneumothorax. The recorded scenarios were revised by two blinded investigators; TS and NTS were scored using validated scales.

Results & Discussion

In our sample the scores for TS and NTS were 11.8±2.2 and 3.5±1.1, respectively. The mean adherence to 2015 ILCOR guidelines for each item was 59.1±34.2%. However, a compliance below the 30% was observed in several TS items: “checks chest movements” 14.3%, “provides oxygen according to saturation” 28.6%, “increases oxygen concentration to 100% during chest compressions” 0% and “asks to start chest compressions at proper time” 14.3%. A strong correlation between TS and NTS was observed: overall performance ($r=0.71$, $p<0.05$), situational awareness skills ($r=0.86$, $p<0.05$), resource utilisation skills ($r=0.85$, $p<0.05$) and communication skills ($r=0.79$, $p<0.05$). Our study highlights the importance of both TS and NTS for a successful neonatal resuscitation. We believe that high fidelity simulation provides a useful tool during medical training of young paediatric residents.

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Augmented and Virtual Reality in Neurosurgical Simulator Training

Format: Accepted for Oral Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

Over the past five years our lab has focused on the Design and Evaluation of systems and simulator-based educational modules simulators for neurosurgical training. We have developed mixed augmented reality and virtual reality systems to train neurosurgery residents on tasks such as tumour resection, Endoscopic Third Ventriculosomy (ETV), and the placement of external ventricular drains (EVDs). This latter procedure occurs with the highest frequency clinically, and furthermore is a procedure often performed by junior residents at the bedside, without neuronavigational guidance systems. Consequently, it is not uncommon for the trainee to make multiple attempts on the patient before hitting the targeted ventricle. For this reason, we believe that it is an exemplary candidate procedure for simulator-based task training, and this presentation provides an overview into the design and evaluation of our training system and modules.

Methods

Our augmented reality setup consists of a mannequin head on which the residents point a stylet to indicate the direction of the drain they would insert. Feedback showing their trajectory within the brain relative to the targeted ventricle was displayed after each trial.
The virtual reality setup consists of a virtual OR with a patient lying on a bed and the resident controls an avatar which allows them to visualize and control the placement of a virtual stylet on the patient's head indicating the position on the skull and the direction vector they would use to target the ventricle. Their performance is then assessed using Fitts' methodology which respects the trade-off between speed and accuracy that can be made across a range of trial conditions.

Results & Discussion

In our results, we observe a training effect as expected – a monotonic increase in performance across trials, which attains a plateau gradually, in accord with a power law. We also observe an effect of experience, with more advanced residents having a better initial performance than those with less experience. There is also a difference between AR and VR conditions, with a slight advantage apparent in the AR conditions.

AR and VR can be used to supplement training, not only as a training tool, but also as an evaluating tool. The cost of our system is low, and the system is easily replicable across institutions. This is especially important in an era where competency-based medicine and ongoing re-certification is being mandated.

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Awareness of Non-Technical Skills in Surgery (NOTSS): A national survey

Format: Accepted for Oral Presentation
Subject: Others

Authors

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Introduction & Aims

Failures in human factors (HF) and non-technical skills (NTS) have been recognised as important contributors to adverse events in surgery1,2. Non-Technical Skills for Surgeons (NOTSS) is a behavioural rating scale which promotes NTS in theatre through structured feedback3. NOTSS has since been incorporated into the Intercollegiate Surgical Curriculum Programme, but is not routinely used. This project aimed to survey trainees and trainers to find out why NOTSS has not been more widely adopted, despite evidence about the benefits.

Methods

An anonymised survey of 17 questions was distributed online between November 2016 and February 2017 amongst surgical trainers and trainees in the UK. Free text questions and five-point Likert rating scales were used. The questions were designed to elicit awareness of human factors, NOTSS, and barriers to using NOTSS.

Results & Discussion

Results
A total of 209 surgeons and trainees responded to the survey (Table 1). There is poor awareness of HF and NOTSS among junior surgeons (17% and 39% respectively) compared to registrars (35% and 88%) and consultants (41% and 72%). However, 74% of all respondents believed failures in NTS contribute most to adverse events in surgery. Ninety-four percent of respondents believed NTS is equally or more important as technical skills.

Forty-eight percent of all trainees rarely or very rarely received feedback on NTS in theatre, while 70% welcome standardised feedback on NTS using NOTSS. Of all respondents, 40% had used NOTSS and 73% of these reported positive or very positive experiences.

Qualitative data indicate that trainees were clear about the potential value of NOTSS, especially in the context of patient safety and improving their own practice. They also identified clear barriers to the use of NOTSS, including a training regime with little free time and space, and the perceived lack of experience of trainers with NOTSS. Trainers felt that they were not well equipped to use the system to support trainees, especially to give corrective feedback.

Discussions

Despite a good appreciation of the importance of NTS in surgical adverse events, HF as a concept is poorly understood. NOTSS is a welcome addition to current work-based assessments however there are barriers to its widespread implementation. Increased awareness and use of NOTSS at an earlier stage may help improve NTS amongst trainees and give trainers greater confidence in overseeing the development of NTS in trainees.

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Breaking bad news in the emergency department: A randomized controlled study of a short training course

Format: Accepted for Oral Presentation
Subject: Curriculum Development

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Introduction & Aims

For years, bad news delivery's impact on patients and relatives, as well as physicians' stress has been a major concern. Based on studies claiming the efficacy of training courses to help physicians delivering such news, several protocols, such as SPIKES have emerged worldwide. However, training to such protocol might be time-consuming and impede their use in acute care settings.
This is a randomized controlled study aiming to assess the impact of a breaking bad news training course using e-learning and role-playings. We hypothesize that such an alleviate course might ease the acknowledgement process.

Methods

Participation was proposed to medical trainees and residents from emergency, intensive care and anesthesia departments, on a voluntary basis. Participants were randomly assigned to the training course (TC) or a waiting list (WL). Both groups were assessed twice: before and after training for the TC group and at a two-week interval for the WL group. The course included e-learning (theoretical basis on SPIKES model) and a 2-hour role-playing session. Assessments included the analysis of video recordings of breaking bad news simulations with two actors playing the relatives 'role. Questionnaires collected socio-demographic, stress and self-efficacy data. Two blinded experts rated the videos with the Breaking bad news Assessment Schedule (Miller et al., 1999). Finally, the actors' experiences were also evaluated.
All data have been continuously collected since October 2016.

Results & Discussion

Out of 40 participants included, data from 19 participants have been analysed to date: 11 trainees and 8 residents, with a mean age of 24.9. Compared to the WL group, participants of the TC group increased significantly their knowledge

level (p = 0.001) and self-efficacy (p = 0.038). The actors assessed that the announcement of the bad news was significantly more adequate in the TC group, as compared with the WL group (p=0.005). There was no difference between groups in terms of stress reduction overtime. All participants were very satisfied about the training (mean = 4.3/5). The analysis of the videos is currently under study.
In conclusion, the training course for bad news delivery using e-learning and role playing appears to offer interesting perspectives in the field, enabling a more feasible approach as regards the acute care settings and concerns.

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Building a bespoke part-task trainer for a spinal surgery simulation session

Format: Accepted for Oral Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

The following is a description of our experiences in making a part-task trainer from spare parts for the purpose of supporting a simulation session.
For the session, we needed a part-task trainer that could be used to demonstrate the standard operating procedure (SOP) for level identification during Lumbar laminectomy.

Description

When designing the session, it was important that the candidate was able to demonstrate the steps of the SOP faithfully. We performed a needs analysis and determined that we needed a model that was radiopaque and gave an accurate representation of a lumbar spine. The model would also need to be able to be incised and dissected and have a marker placed to confirm the correct level had been found.
There were no part task trainers on the market capable of fulfilling these needs and even if there had, we could not justify the expense of purchasing it for one simulation session. We resolved to build our own. We set about finding an underlying skeleton and luckily found a broken plastic anatomy demonstrator skeleton in our workshop. A trial series of images showed that the skeleton had a similar radiodensity to bone.
The next consideration was replicating the paraspinal muscles, subcutaneous fat and skin. After various experiments, we found that thin layers of latex dyed with fake blood power gave a realistic texture and appearance. We glued this to the laminae of the lumbar spine so the surgeon was able to blunt dissect it as he would during a real laminectomy. The subcutaneous fat was simulated by a thin layer of household sponge and the skin was taken from an old manikin. The ‘fat’ was glued to the ‘skin’ and the layers were all held together with nylon sutures above and below the level of interest.
The surgeon during the simulation was able to demonstrate all stages of the SOP using our model and feedback on the model and the session as a whole was excellent.
There has been interest in using our model to teach trainee neurosurgeons the SOP prior to learning on a real patient. Our radiology department have also used it to teach trainees level identification for nerve root blocks.

Discussion

Our experience demonstrates that it is possible to use spare parts found around a simulation centre to create a bespoke part-task trainer to support a simulation session. Use of the model allowed much higher fidelity in the simulation.

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Communication in a Trauma Team: Focus on Leadership in Practice

Format: Accepted for Oral Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

One of the cornerstones of treating emergency patients is the communication and leadership of a trauma team. This study investigated these two factors through in-situ simulation exercises that started with a trauma alert made by nurses of a first aid unit on their way to a central hospital from a road traffic accident and ended in a trauma room in an emergency clinic. The study focuses especially on the role of leadership in a trauma team during the medical treatment of a trauma patient. The aim was to reveal the nature of leadership as it occurs and evolves in action, as well as to use these findings to develop pedagogical practices for a trauma team's simulation-based training. This approach to researching leadership differs from more traditional, leader-centred views, as it recognises leadership as something that is constantly developing, flowing, produced and negotiated as a part of everyday interactions and practices (i.e. Crevani, Lindgren & Packendorff, 2010).

Methods

This study consisted of three subsequent trauma simulation exercises. In these exercises, the scenario, a road traffic accident, was the same every time, but the participants changed. Studying leadership as practice and interactions implies qualitative research methods, and therefore, the data was gathered in an ethnographical manner as the two authors observed the communication and leadership in the teams and made field notes. The notes were compared afterwards, and a common understanding of the perceptions and interpretations was constructed. With video recordings of the simulation exercises, we would have gained more detailed information about the team's operations, but the teams did not allow video or even audio recordings to be used. The content analysis method was employed to analyse the data.

Results & Discussion

Communication within a trauma team plays a crucial role when taking care of a trauma patient. Leadership seemed to shift between the members of the team – especially between a team leader, an anesthesiologist and a surgeon – and the leadership-related communication between these three had a significant impact on the success of the team. Our study confirms the idea of the transitive nature of leadership in the context of the medical treatment of trauma patients. However, this shifting nature of leadership seemed to be a challenge for some of the team members, especially the critical points of ceding leadership or stepping aside.

CPR Personal Trainer: A low-cost tool for CPR self-training

Format: Accepted for Oral Presentation
Subject: New Technologies and INNOVATION

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Introduction & Aims

High quality cardiopulmonary resuscitation remains essential to improve patient outcome. Several studies have shown that CPR is performed ineffectively, possibly due to irregular training and low skill retention. Feedback on performance is a crucial component of the learning processes associated with simulation and has been shown to improve CPR quality during simulated cardiac arrest on manikins. This study presents a new low-cost feedback device for CPR self-training and compares its efficacy to standard training method.

Methods

CPR Personal Trainer consists in a standard CPR training manikin instrumented with off-the-shelf sensors connected to a pre-processing unit and information system. The signal is analyzed by extracting relevant data of chest compressions performance and scoring them on three different factors associated with compression quality: hands position, compression rate, and chest recoil. The compressions depth and ventilation related parameters are still under development and will be included in a near future. The software is connected to a user-friendly online Graphical User Interface, which provides visual and audio feedback. CPR Personal Trainer software gathers trainees' performance metrics and provides a performance analysis with suggestions to improve the procedure. Fig. 1 presents CPR Personal Trainer interface representing a training session of a student.
To evaluate the efficiency of the prototype, thirty-nine pre-graduated students were recruited for a longitudinal double blinded randomized control study. A control group received traditional training using a standard task-trainer and received feedback from an instructor. The intervention group used the same standard task-trainer, instrumented with the CPR Personal Trainer that provided automated performance feedback (with no instructor) on compression related parameters. Students' knowledge and skills were assessed before and after training, through a theoretical knowledge test and 2-min of CPR practical performance.

Results & Discussion

The theoretical tests showed an improvement in the scores from the pre to the post-test, both in the intervention and in the control group. The practical tests showed, for each compressions related parameters (hands position, recoil, rate and depth), significant increase in scores, between the pre and the post-test, in both groups. The intervention and control groups presented similar mean differences for the total score (0.72 vs 0.72, p-value>0.05).
The proposed add-on costed around 150€ and proved to be effective in the acquisition of compressions related skills, with similar outcomes as the traditional instructor-based method, corroborating the hypothesis that a low-cost tool with feedback for CPR self-training can provide an alternative or a complementary extension to traditional training methods.

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Delivering Simulation to large groups

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Studies have shown medical students feel unprepared to deal with acute emergency situations. Simulation has been shown to be beneficial and superior to traditional learning for skill acquisition. Within the UK, simulation training is not universally available to all students.
To develop and deliver an acute care simulation programme to a large group of undergraduates at Manchester Medical School to improve their knowledge and confidence in emergency settings.

Description

We developed a simulation programme for undergraduates based on the undergraduate curriculum and common acute care scenarios that they would encounter in their foundation years. Simulation was provided in a purpose built Simulation laboratory using a Laerdal Sim-man.
Four simulation scenarios where developed:
• The hypoxic patient
• The bleeding patient
• The patient with chest pain
• The patient with reduced level of consciousness

We produced an iBook with four simulated patient's summaries in a standard inpatient notes format, with additional key resources such as national guidelines.
Average group sizes of 24 students, were larger than normal for simulation teaching so required an innovative approach from the tutors. We approached this by dividing the large group into for subgroups. Each subgroup had a different role in every simulated patient.
Group 1 provided a brief presentation of the case in a SBAR approach, thereby reiterating its use. Group 2 undertook the 15-minute simulation. Group 3 provided clinical feedback, whilst group 4 provided feedback on non-technical factors. The groups rotated so they all participated in each role.
A MDT approach to debriefing including medical and pharmacy staff was undertaken.

Student feedback was collected at the end of the session which was rated highly, particularly reporting improved confidence with emergency scenarios.

A 10 point multiple choice question test was performed by the students at the start of the course and then again at the end. Scores were collated and showed an average improvement of 57.5 to 84.8%

Discussion

Simulation is a highly proficient method for teaching acute care scenarios to medical students. With our technique of dividing group roles, we have shown it is feasible to deliver good quality simulation teaching to larger group numbers. Given the current pressures within healthcare settings, this approach could be utilised at any level where time or number of facilitator numbers are stretched.

Developing a consultation skills programme for junior doctors using simulated patients.

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Work in progress: experiences in creating an inter-specialty consultation skills course using simulated patients. Exposure to outpatient clinics at core trainee level in the UK is generally low and our local trainees identified a need for training to support the transition to registrar level. We aimed to develop training in the transferable, non-specialty specific aspects on consultation skills for all core trainees.

Description

We identified learning needs based on feedback from trainees and senior clinicians, who regularly supervise junior doctors in outpatient clinics. This included specific skills such as dictation and letter writing, and safety netting practices, in addition to the communication skills necessary for an effective consultation. The course development group included senior and junior doctors from several specialties, in addition to a general practitioner (GP). GP's have significant consultation skills training and high levels of experience. In addition they bring a useful perspective on the communication aspects on the primary/secondary care relationship. Scenario scripts were developed to
Simulated patients complete our standard training package and are briefed on the scenario scripts. Trainees complete consultations in a simulated clinic setting, whilst faculty and other delegates observe via video link. We are implementing a structured observation tool to support the objectivity of feedback. The trainee is debriefed after each scenario, with input from the simulated patient, patient observer, faculty and other delegates. We are planning to incorporate a review of the written clinic letter dictated during the scenario, into the debrief, once technical solution is implemented. We aim to evaluate the course effectiveness using a structured observation tool, completed by patient observers.

Discussion

When designing this course we were particularly aware of the pivotal role that the classical outpatient consultation has in a patient journey. These are often time-pressured situations, with high patient expectation and low information retention. Poor care at this point can have an impact both on the quality and safety of clinical management and the overall patient experience. With this course we aim to triangulate perspectives from the patient, general practitioner and hospital specialist, to equip trainees with the skills to perform safe and effective consultations.

Development and Implementation of Physical Exam Vest for Simulation-based Hybrids

Format: Accepted for Oral Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

The teaching and assessment of clinical skills using simulation has been evolving for decades and has become a major component in health care education. Simulation hybrids combine different simulation modalities such as simulated patients—SPs—and low and/or high fidelity task trainers to create potentially more credible and powerful educational and assessment tools. Challenges arise for health care educators to credibly reproduce objective physical examination findings on SPs. We describe the development and utilization of a physical examination simulation vest as an inexpensive and standardized teaching tool-SP hybrid that is useful in physical exam skills teaching and assessment.

Description

We created a physical exam simulation vest into which a set of microspeakers was placed in a manner that is anatomically correct for cardiopulmonary exam findings. After receiving informed consent, cardiac and pulmonary sounds are recorded using a recording stethoscope from specific patients with classic findings. The recorded sounds are played from a multitrack audio player into appropriate speakers in the vest. The vest is worn by the SP. The SP provides history, while the physical exam vest provides the objective palpable and auscultatory findings of the disease process. The learner or examinee uses one's own stethoscope to discover any physical exam findings.

Discussion

We developed several case scenarios specifically designed for this hybrid model including systolic heart failure from mitral regurgitation and angina from aortic stenosis. In the aortic stenosis hybrid case, an SP is trained to feign angina and give a history of near syncope; the physical exam vest that the SP wears allows the learner or examinee to palpate a thrill at base of heart, auscultate a 4/6 grade systolic murmur at the base, note the absence of an S2 cardiac sound and auscultate a soft S4 gallop at the apex. Other case scenarios are analogous in composition and detail. The cost of producing each device is less than 500 dollars/ physical exam vest. The vest has been used in teaching and OSCE formats and allows the wearer to "put on" the objective findings of disease.

Development of a trauma team performance score regarding the initial care of the polytrauma patient in healthcare simulation: The SIMUSHOCK-SCORE study

Format: Accepted for Oral Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Polytrauma remains a major provider of death and lifelong disability in the population under 45 years of age. Evitable deaths represent 5 to 15% of deaths, due to human factors in 30% of the cases. Developing innovative strategies and protocols to improve patient outcomes through performance optimization requires comprehensive team performance assessment, fitted for simulation-based pre-clinical research. This study aimed at developing a team performance score in the setting of polytrauma patient admission, integrating timing, technical and non-technical competencies of the different members of a trauma team.

Methods

After building an initial draft, a Delphi review round process has been used, based on a panel of 10 experts (medical and paramedical) selected for their competencies in simulation and polytrauma. Each round offered the experts the opportunity to score each item (Likert Scale, 1 to 9) and to suggest addition, removal or modification of any item. A strong agreement was obtained if ≥70% of the panel attributed the item a mark of ≥7 and ≤ 20% a mark ≤3. The validity of content was assessed by the Content Validity Ratio (CVR) defined by Lawshe (1972) and Wilson (1992). The score was updated after each round and the process was repeated until reaching consensus (strong agreement for all of the items of the score).

Results & Discussion

In the first round, 59/64 items have obtained a strong agreement. Eleven items have been deleted, 29 modified and 16 added. In the 2nd round, 68/69 items obtained a strong agreement. The item with low agreement was redundant with another and was removed. The mean CVR was higher in the second round (0,92 +/-0,16 vs. 0,69+/-0,37 in round 2 and 1, respectively, $p<0.05$). Finally, 137 and 68 comments were made in the rounds 1 and 2, respectively. Forty percent concerned role distribution among team members and 40% medical and technical concepts. The median mark of commented items and non-commented items did not differ in round 2 ($p=0,7$). Consensus was reached after 2 rounds. We described the first team performance score regarding initial care of polytrauma patient, integrating time, technical and non-technical competencies of the different members of trauma team. This score reflects the standard-of-care to be given to a polytrauma patient, based on a consensus among 10 national experts. Validation process is under way in our local Healthcare Simulation Institute (ITSimS, Toulouse, France).

EFFECT OF THE USE OF A VIDEO TUTORIAL IN ADDITION TO SIMULATION IN LEARNING THE MANEUVERS FOR SHOULDER DYSTOCIA.

Format: Accepted for Oral Presentation
Subject: Assessment using Simulation

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Introduction & Aims

Shoulder dystocia is a rare obstetric complication responsible for severe maternal and fetal morbidity. Simulation enables the improvement of both practice and of theoretical knowledge but its effect appears to be limited in time. The development of video tutorials is flourishing and may make it possible to maintain knowledge learned during instruction with simulation. The aim of this study was to assess the effect of adding a video tutorial to a lecture and simulation for learning the maneuvers and protocol for the management of shoulder dystocia.

Methods

This prospective randomized blinded study took place from March 20, 2015, to June 30, 2015 in a level-3 university hospital obstetrics department and included student midwives and medical students. They attended a lecture class including instruction about the McRoberts, reversed Wood, and Jacquemier maneuvers and a presentation of an algorithm for the management of shoulder dystocia. They were then assessed during a first session with a manikin and then randomized into two groups. The video group was reminded every two weeks to watch a short tutorial (< 3 minutes) reviewing this information. The control group was simultaneously reminded to consult the slide show from the lecture. At the end of two months, they were again assessed during simulation with the manikin, evaluated by graders blinded to study group. Practice and theory were compared for both groups.

Results & Discussion

The study included 26 medical students and 24 student midwives. The practice, theory, and global scores of the students in the video group were significantly higher than those of the students in the control group at the end of the study period (respectively, 14.8 vs 10.4; 5.6 vs 3.4; and 9.3 vs 7.0, $p < 0.001$). Moreover, the scores for the video group improved at the second simulation session, compared with the first (respectively 14.8 vs 9.9; 5.6 vs 2.9; and 9.3 vs 7, $p < 0.001$), while no significant change occurred between sessions in the control group (respectively 10.4 vs 10.1, $p = 0.87$; 3.9 vs 2.9, $p = 0.34$; 7 vs 7.2, $p = 0.62$).
The addition of a video tutorial improved learning compared to a standard lecture and simulation session alone, without the video. It enables students to maintain and even increase what they learned from the simulation.

SESAM
PROMOTING SIMULATION IN MEDICAL EDUCATION
SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

EFFECTIVENESS OF LEARNING CARDIOPULMONARY MURMURS USING HARVEY SIMULATOR

Format: Accepted for Oral Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

Medical simulation is an important technique to provide education as well as clinical evaluation with physical examination. Simulation is now regarded as a strategy to improve safety of learning (to patient and student) and quality in real medical practice.
The aim of this study was to evaluate student's confidence levels in detection of heart and respiratory murmurs with Harvey the Cardiopulmonary Patient Simulator compared to real patients with cardiopulmonary disorders.

Methods

380 third-year medical students underwent pre-study multiple-choice question test (MCQ) to assess their ability to perform cardiopulmonary examination and to detect cardiopulmonary murmurs and 311 students successfully passed (more then 51%). They were divided in two groups: G1 (n=155) firstly examine patients with cardiopulmonary disorders (pneumonia with crackles (CR), bronchial asthma with wheezes (WZ), typical mitral stenosis (MS) and aortic stenosis (AS)) and then participate in the Harvey simulation (the same scenarios), G2 (n=156) firstly participate in the Harvey simulation and then examine real patients. At the end, all the students completed the post-study MCQ to assess their confidence in detecting murmurs. Statistical analysis was performed using Statistica 10.0. Data was presented as M±SD. For comparison of frequency we used x2-criterion. Mann-Whitney and multiple logistic regression analysis were performed. P <0.05 was considered statistically significant.

Results & Discussion

311 students completed all surveys. There was no difference in mean pre-study score between groups (58% vs 63%, p>0.05). After completing the first activity there were no differences in detecting CR and WZ between groups (74% vs 72%, 80 vs 78%, p>0.05 respectively), but there was significantly higher confidence in detecting MS and AS in G2 (50 vs 72%, x2= 15,1, p<0.001 and 82% vs 94%, x2= 11,2, p<0.001). After completing second activity significant increase of confidence level in detection of MS, especially in G1 was observed (for detail information see tabl.1). The mean score of post-study MCQ increase in both groups, but was higher in G2 (82 vs 90%, x2= 3,9, p<0.05).
Concusions: both groups reported confidence in detecting abnormal heart and respiratory sounds after participation in Harvey simulation compared to baseline confidence level. Students who participated firstly in Harvey simulation demonstrated higher confidence level in detection of heart murmurs and higher post-study MCQ score. Our results confirmed that simulation-based training firstly and then implementation in real clinical practice is most effective method under certain educational conditions.

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Enhancing medical student experiential learning with an in-room facilitated introductory session.

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Ideally, simulation training would comprise an ongoing process of spiral learning, where facilitator and learner engage in a series of sessions over time. Unfortunately, medical student simulation is often delivered in isolated and infrequent doses, despite a paucity of evidence to support this approach.
Students who participate in our simulation programme have limited clinical experience. Without regular simulation teaching, these students may find immersion in simulation scenarios as the 'primary clinician' overwhelming, potentially contributing to simulation-related anxiety. Negative emotional responses in learners may reduce engagement and are associated with poor retention of learning.
We have developed a novel simulation session with the dual aims of introducing the assessment and stabilisation of the deteriorating patient, and increasing participant comfort during simulation scenarios.

Description

Participants are introduced to a simulated patient, with a facilitator present in the room. Learners approach the high-fidelity mannequin in groups of four, ensuring that individual students avoid the anxiety of 'being in the hot seat' and promoting peer-teaching and collaboration.
Students begin by establishing monitoring and examining observation charts. Using probing questions the facilitator leads students through the function and limitations of monitoring equipment. The role of observation charts, early warning scores, and thresholds and mechanisms for calling for help are explored.
Once students are comfortable with the monitoring and familiar with the mannequin, they begin a systems-based 'ABCDE' assessment, and the patient deteriorates. Participants perform basic interventions for each organ system; choosing appropriate oxygen delivery methods, basic airway adjuncts, IV access, and fluids.
Using a 'pause and discuss' model of facilitation, the patient assessment and the merits of different interventions are discussed. The session ends with a 30 minute scenario to allow deliberate practice of acquired skills. Students return at a later date for a traditional scenario based session where they assess and manage deteriorating patients in pairs without in-room facilitation.

Discussion

We have collected positive learner feedback from our sessions. The majority of participants (87%) ‘strongly agreed’ that the sessions were useful for learning. One participant commented that “having the chance to do the learning before the scenario bit was helpful, it made it less scary”.
As participants return to perform independent scenarios, we have also observed behaviour change through application of knowledge and skills acquired in the introductory session. We would promote the use of facilitated introductory simulation sessions as an effective means of increasing the safety and educational value of simulation for undergraduates.

Enhancing Perioperative care in Gynaecology through Simulation Training

Format: Accepted for Oral Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Simulation training has been a core component of UK obstetric training for many years, but there has been less focus on the management of emergencies and perioperative care in gynaecology. Our aim was to provide trainees with a simulation training intervention which would increase confidence in managing gynaecological emergencies and assessing complex perioperative patients.

Description

Gynaecology trainees in the South-west of England were invited to participate in a training day. A training programme including short lectures, workshops and simulation-based training was developed and delivered by a joint Anaesthetic and Gynaecological faculty at the Bristol Medical Simulation Centre. We also introduced a tool which could be used in the assessment of the deteriorating patient with a memorable SPACE abbreviation:
Surgical factors
Patient factors
ABCDE Assessment
Chart review
Evaluation

We focused on emergency management of sepsis and ovarian hyperstimulation syndrome, and common complications such as renal failure, confusion and arrhythmias.

We surveyed surgical attitudes to simulation training, exploring it's perceived limitations. We also looked at confidence levels in the management of several "emergency" conditions that a surgeon might encounter perioperatively.

To measure the impact of our simulation training, trainees documented their confidence in managing the various conditions pre and post course using a visual analogue scale. We compared these confidence scores using the Wilcoxon Signed Rank test.

Discussion

Over 30% of gynaecology trainees initially reported that they do not enjoy simulation training, citing embarrassment and peer pressure as impediments. However it is worth noting that all participants find simulation training helpful.

Scores for confidence in managing specified conditions all improved following the training and this was found to be a statistically significant ($p \leq 0.05$) improvement in all areas: sepsis, OHSS, AKI, haemorrhage, respiratory failure, tachyarrhythmias and a reduced GCS score.

This gynaecology simulation training intervention has proved to be a successful programme, with positive feedback and a clear improvement in trainees' confidence following training. It's strength lies in having a mixed anaesthetic and gynaecological faculty providing extensive clinical and teaching experience. The mixture of workshops and simulation scenarios based on real clinical examples makes the training relevant and enjoyable. More importantly, interprofessional collaboration underpins safe, effective clinical care and this programme will become a core component of south-west O&G training, with a model that can be easily replicated in other regions and countries.

ERRORS OBSERVED DURING THE USE OF DEFIBRILLATOR IN SIMULATED PEDIATRIC PATIENTS

Format: Accepted for Oral Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Introduction: Medical mistakes under stress situations, such as cardiopulmonary resuscitation (CPR) are frequent. Medical mistakes during pediatric emergencies and pre-hospital care have been barely studied.

The main goal of this study was to determine the number of life-threatening mistakes incurred by physicians while using a manual external defibrillator (MED) as assessed during pediatric emergency simulations in our environment.

Methods

Prospective observational study carried out at the SIMMER medical simulation center, in Buenos Aires, Argentina. Digital-recordings of mistakes made during MED-training sessions, in cases where MED use was indicated (simulated ventricular fibrillation or pulseless ventricular tachycardia clinical cases), were collected. The studied population included all the participants in the pediatric urgency high fidelity clinical simulation training sessions held at the SIMMER center. The observation interval was 2 years (June 2014–May 2016). MED-use mistakes had to be visually and photographically evident in order to be recorded as such.

Results & Discussion

During the 2-year interval, 72 meetings were held, including 302 simulated cases and involving a total of 648 physicians. Of all the participants, 446 (68.8%) were resident physicians. The total of simulation sessions amounted to 72 (i.e., 72 groups of physicians), and 7.4% of the physicians (distributed among 8 groups) made evident mistakes.
Non-life-threatening mistakes retrieved during the debriefing sessions, regardless of the efficacy of the maneuver to recover the appropriate (sinus) heart rate or the proper care of the medical devices, are recorded below:
Dose (Joules/Kg): No dose mistakes related to the defibrillator charge or shock intensity were found in general.
Paddle–skin interface: Failure to use conductive gel was reported for a majority of situations.
In no case were the times-to-MED use optimum

Discussion: Although the study involved simulation situations, concern was raised among both trainees and trainers that the results might mirror those of real-life procedures, considering the high fidelity character of the simulations.

Conclusions: MED use mistakes during pediatric emergency simulations are not infrequent in our environment. This conclusion should lead healthcare institutions to periodically consider this issue and provide training possibilities, because the risk of serious injury may be important.

Evaluation of administration of injectable drugs and vaccines for pharmacists' course

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

All health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team. The use of simulation techniques protects patients from unnecessary risks and can be applied to many different medical areas.
The mission of pharmaceutical practice is changing to an expanded patient care responsibility, which requires improved problem-solving skills.
This study aims to assess the utility and clinical experience impact of administration of injectable drugs and vaccines for pharmacists' course performed by the Biomedical Simulation Center of Centro Hospitalar e Universitário de Coimbra (BSC).

Methods

Sample collected of 231 pharmacists who participated in the administration of injectable drugs and vaccines course of BSC from 2014 to 2016, corresponding to 20 sessions. Qualitative, quantitative, descriptive, observational study, based on the analysis of the questionnaire responses sent by e-mail.

Results & Discussion

Questionnaire was responded by 53 participants, aged between 18 and 55 years, 71,7% were pharmacists, 15,1% trainees and 13,2% students. 17 participants exercised their professional activity for <2 years, 27 between 2-5 years, 3 between 6-10 years and 5 for> 10 years.
Most of the responses to the questionnaire were fully agree and agree: “Do you think that the course applies to your professional practice?” 98.1%. “Do you feel that the course helped you to improve your professional practice?” 98.1%.

“Do you feel that the course helped you to develop/improve your work methods and techniques?” 98.2%. “Do you feel that the course helped you to visualize solutions to practical problems?” 84.9%. “Do you feel that the course helped you to remember/consolidate your knowledge?” 92.4%. “Did the course meet your expectations?” 90.6%. “Did the course respond to your training needs in this area?” 84.9%. Regarding the question “Did the course helped you to solve any complication?” 40% agreed and 30% were indifferent. The majority (84.9%) attributed a course importance higher than 7 (0-10). 58.5% answered that the course should be repeated 5/5 years.

Overall, the course matched participants' expectations, helped them to improve their clinical practice and to manage possible complications of the administration of injectable drugs and vaccines, giving a high importance to it. The main suggestion in the open-ended question was to increase the practical component and the duration of the course. We conclude that we should continue this type of training for pharmacists, thus improving patient care in ambulatory pharmacy.

FATIGUE DURING CHEST COMPRESSIONS ON A NEONATAL SIMULATOR

Format: Accepted for Oral Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

When resuscitation is needed, application of chest compressions (CC) to newborns, using the most appropriate technique, is critical for survival. Evidence from adult and pediatric simulation studies suggest the quality of CC decreases over time. Current guidelines, based on this research, provide recommendations about rotating the provider every two minutes when resuscitating children and adults. However, with regards to newborns, there is no specific recommendation at this time.

Objective: To evaluate CC quality and operator fatigue during CC, with coordinated ventilation, on a neonatal simulator. Secondarily to explore its association with provider routine exercise.

Methods

Design/Methods: Prospective, IRB approved, simulation study of physicians and nurses who frequently attend and assist with neonatal deliveries. After informed consent, providers performed continuous CC for 10 minutes, at a 3:1 ratio, while coordinating with another person providing ventilation. Laerdal Resusci Baby®QCPR® was used for simulation and the performance variables were obtained using the HeartStart MRx monitor. This device was specifically calibrated for neonates. Routine exercise was assessed by questionnaires. Descriptive statistics were used to assess endpoint measures. A student-T test was used for evaluating continuous measures (mean, median, range and SD when appropriate with their standard error), and Chi Square tests were performed on categorical variables. In either case, a $p<0.05$ was considered as significant.

Results & Discussion

Results: Thirty nine subjects (56% women) participated. Two suspended CC before 10 minutes and 18 (46%) showed evidence of fatigue having performed at least 4 consecutive CCs below the target depth (33mm) and continued with low quality CC performance. There was no gender difference on fatigue, however women performed CC at a lower mean depth than men (37.9 vs 40.1 mm). The relationship between performance and routine exercise is shown in the table. The average time to reach fatigue or CC termination was 8.2 minutes (range 6.5-9). The fatigue rate was significantly associated with the routine exercise ($p=0.034$).
Conclusion(s): CC performance quality decreases and fatigue were frequent before 10 minutes on a neonatal simulator. Fatigue was associated with the lack of provider aerobic activity. This supports the need for guidelines requiring frequent rotation of CC providers during prolonged neonatal resuscitation.

Focusing on an explicit debriefing in healthcare simulation

Format: Accepted for Oral Presentation
Subject: Debriefing

Authors

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Introduction & Aims

Debriefing is often presented as a key factor in the simulation learning process. However, to date, there has been a lack of evidence about the real impact of debriefing. What is its role in the learning process? Are all types of debriefing as effective for all learners? To answer these questions, we have undertaken three studies to assess the effectiveness of simulation debriefing in healthcare. The aim was to identify which features of debriefing may influence learning of a novice learner or an expert learner.

Methods

In study 1, we examined the impact of a training program based on high-fidelity simulation followed by post-simulation debriefing. 116 novice learners (student nurses) volunteered for this program. Each participant completed a knowledge questionnaire and a short French version of the self-efficacy scale before and after the program. Their behavioral efficiency during simulated emergency situations was also assessed before and after the progam. In studies 2 and 3, we tested the effectiveness of two types of debriefing: one based on a reflexive approach with weak guidance by the trainer (reflexive debriefing) and another based on a strong guidance and an explicit reminder of the procedure by the trainer (directive debriefing). 113 novice learners (student nurses) volunteered for study 2. 136 expert learners from emergency multi-professional teams volunteered for study 3. As in study 1, each participant completed a knowledge questionnaire and a short French version of the self-efficacy scale before and after the programs.

Results & Discussion

Results
The findings of study 1 indicated that a training program based on high-fidelity simulation followed by post-simulation debriefing may have positive effects: improvement of knowledge and self-efficacy. The findings of studies 2 and 3 specified the role of debriefing according to the type of learner. Study 2 showed that novice learners only benefit strongly from directive debriefing. Study 3 showed that expert learners benefit as much from both reflexive and directive debriefing.

Discussion
On balance, these findings support the idea that a program of simulation training followed by debriefing may be useful to increase the acquisition of theoretical and practical knowledge and learner self-efficacy. However, they also show its impact varies according to learner-type and debriefing style. In conclusion, they point to the benefits of using an explicit

procedure rather than an implicit procedure, especially for novice learners

High fidelity simulation in satellite haemodialysis units

Format: Accepted for Oral Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

High fidelity simulation is a well-established and proven teaching method, yet its use in renal education is not widely reported.
T-critical, renal-specific scenarios, such as cardiac arrest during dialysis or management of septic shock, need to be included into nursing training. The need becomes more apparent in satellite dialysis units where nurses are often faced with acutely unwell patients in the absence of a doctor on site.
Aim
To provide simulation training in renal emergencies to satellite unit dialysis nurses in their own work environment, using high-fidelity portable equipment, in order to develop their technical and non-technical skills in managing acutely unwell patients

Methods

In 2015, a pilot high-fidelity simulation programme for post-graduate renal nurses from a tertiary centre renal unit was established to develop competencies in managing renal emergencies. The new challenge was to expand to the satellite units and increase the fidelity of simulation by replicating emergency scenarios for dialysis nurses in their work environment.

We held twelve separate three-hour simulation sessions during the course of three days for dialysis nurses based at two different satellite dialysis units. Recent clinical emergencies and nursing curriculum mapping was used to create scenarios (cardiac arrest during dialysis, septic shock, fluid overload, intradialytic hypotension, hyperkalaemia, dealing with the angry patient). The facilitator faculty consisted of two nurse practice educators, two medical students and a renal registrar. The initiative had the support of the Clinical and Nursing Leads.

Results & Discussion

There were 38 participants. Ten (26.3%) had previously participated in simulation training. The mean educational value of the sessions as reported by all participants was 5.7 out of 6.

Figure 1. Change in confidence in competencies pre-and post-simulation training (mean confidence, Likert scale 1-6), n=38 ($p<0.001$)

Free text feedback included wishes for further inter-professional involvement. Debriefing was often used as a forum for reflective practice of clinical emergencies that had occurred recently at the unit or difficult communication encounters with aggressive patients.

Discussion
There was a significant improvement in the participant confidence across all competencies. There is a clear need for introduction of simulation in units providing patient care outside the hospital setting to provide further training and support.

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How Can Precision Teaching Contribute to Simulation-based Medical Education?

Format: Accepted for Oral Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

Precision Teaching (PT) is a novel approach to delivering Simulation-based Medical Education (SBME). PT is a system for defining target skills, assessing individual progress, and guiding instructional decisions, which is used to monitor learning within education programmes. A growing body of literature supports the application of PT in a variety of learning contexts and in the teaching of a myriad of different skills. PT allows for the ascertainment of individual differences in performance and for the development of behavioural fluency. Behavioural Fluency refers to responding that is both accurate and well-paced. Behaviour or knowledge that is learned to fluency is retained for longer periods of time, persists in the presence of distraction, and can be adapted into new, more complex responses. The aim of this presentation is to introduce the audience to PT and behaviour fluency. It will facilitate attendees' consideration of how PT could contribute to medical education.

Description

This presentation will discuss PT within the context of actual research examples of PT's application in SMBE. Research examples to be discussed include:

• The use of PT within a simulation-based intervention to teach venepuncture to final year medical students. Participants achieved behavioural fluency in the targeted skill and outperformed their peers and a cohort of hospital doctors post-intervention. Improvements persisted over time, did not deteriorate in the presence of distraction, transferred to performance with patients, and generalised to performance of an untargeted skill also improved.

• The use of PT within a simulation-based intervention to teach paediatric lumbar puncture to non-consultant hospital doctors. Participants in this ongoing study have achieved behavioural fluency and their performance will be assessed: in the presence of distraction; with patients, and; at follow-up.

Discussion

In other educational domains, the use of PT has resulted in higher student achievement as compared to traditional educational processes. Our work has demonstrated that PT can be readily incorporated within SMBE and that only a

short duration of training, and minimal staff input, is required to produce behavioural fluency. The use of SBME incorporating PT to establish behavioural fluency in procedural skills would minimise the potential risk to patients and ensure that learners receive training in an individualised yet systematic way to ensure all become fluent.

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HOW WE CREATE RRF-ECMO PROCEDURE

Format: Accepted for Oral Presentation
Subject: Patient Safety / Quality Improvement

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Introduction & Aims

We present the procedural preparation of using high-fidelity medical simulation for Poland's first unique regional program "ECMO for Greater Poland", that takes full advantage of the perfusion therapy (Extracorporeal Membrane Oxygenation - ECMO) covering a total population of 3.5 million inhabitants of the Greater Poland region (Wielkopolska). Despite advances in mechanical ventilation, severe acute respiratory distress syndrome (ARDS) is associated with high morbidity and mortality rates ranging from 30% to 60%. Fortunately ECMO oxygenation can be used as a 'bridge to recovery'.

Description

ECMO is a complex network that provides oxygenation and ventilation and allows the lungs to rest and recover from respiratory failure while minimizing iatrogenic ventilator-induced lung injury. In critical care settings, ECMO is proven to improve survival rates and outcomes in patients with severe ARDS. We present the procedural preparation for intoxication with cardiac arrest treatment using ECMO. Because this organizational model is complex and expensive, we used advanced high-fidelity medical simulation to prepare for the real-life implementation. In algorithm respiratory treatment is supported by VV (veno-venous) Extracorporeal Membrane Oxygenation (ECMO). The system uses silicone tubing forming a loop to simulate blood vessels, filled with pressurized red-dyed liquid, embedded into the groin and neck of a mannequin and covered with artificial skin. The real time scenario included all crucial steps: hospital identification (Regional Department of Intensive Care) - inclusion and exclusion criteria matching using authorship protocol; ECMO team transport (80 km); therapy confirmation; veno-venous cannulation of mannequin’s artificial vessels and implementation of perfusion therapy and transport (80 km) with ECMO to another hospital in a provincial city

(Clinical Department of Intensive Care), where the VV ECMO therapy was performed in the next 48 hours.

Discussion

The total time i.e. time from the first contact of mannequin to the cannulation of artificial vessels and starting VV perfusion on ECMO, did not exceed three hours – including 80 minutes of transport. The 48 hours next perfusion simulation created a specific learning platform for intensive care personnel. Soon after this simulation we performed, the first in region, ECMO use for adult reversible respiratory failure (ARDS) treatment. The success transport was safe and exceed 120 km. During debriefing, it was found that the previous simulation-based training allowed to build a successful procedural chain, to eliminate errors at the stage of identification, notification, ECMO perfusion, and transportation.

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Impact of repeated versus varied scenarios on learning outcomes in simulation trainings

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Repetitive practice is a key instructional feature in simulation-based training, but whether this repetitive practice should involve the repetition of the same scenario or the exposition to different scenarios is a question still unanswered. This study compared the use of repeated versus varied scenarios for teaching the management of pediatric asthma exacerbations (AE) to medical students.

Methods

Third-year medical students were randomized and individually trained in the management of a pediatric AE, with participants in the repetition group being trained three times on the same scenario, and participants in the variation group being trained on three different scenarios. One week later, all participants were evaluated on a scenario of AE new to both groups, a scenario of pneumoniae, and two scenarios used during the training. Participants were also assessed four months later. The main outcome was the performance score on the new scenario of AE at one week, assessed on a checklist custom-designed for the study.

Results & Discussion

Eighty-five students were assessed. Even though students in the variation group had a lower self-efficacy score when they attended the evaluation one week after the training, they performed equally well or better than students in the repetition group on all the scenarios tested. On the new scenario of AE, the two groups obtained similar performance scores, with a median score (IQR) of 8.3 (7.4-10.0) in the variation group versus 8.0 (6.0-10.0) in the repetition group (p=0.16)). Four months later, performance were similar between the two groups.

Conclusion: Despite there was no significant difference on the transfer scenario, our results favor the use of different scenarios over the repetition of the same scenario for short simulation-based training on diseases with various presentations.

In situ simulation to look for latent errors in a Paediatric HDU

Format: Accepted for Oral Presentation
Subject: Interprofessional / Team Education

Authors

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Dr Sanjay Gupta	Hull and East Yorkshire Hospitals NHS Trust

Introduction & Aims

The aim of this project was to look for latent errors within our Paediatric HDU which may cause problems in the management of rare and serious illness. We wanted to see if our existing departmental protocols were adequate to manage a patient with a duct-dependent cardiac lesion presenting with a closing duct.

Description

We approached one of our Paediatric Consultants with the project and developed the idea of using the case of a neonate with as yet undiagnosed Transposition of the Great Arteries (TGA). This case would allow us to examine our team's ability to recognise an unwell baby, the protocols for administration of prostaglandin and for transfer to a tertiary centre.

The simulation was set up in one of the bays on the Paediatric HDU. Consent from the parents of other children was obtained. We used our neonatal manikin controlled wirelessly from the next room and had sound and video recording for use in debriefing.

The session was timed to coincide with a training day on PHDU. The nursing staff participating in our scenario were on duty, but the doctors were attending the training day. We had 5 participants in the scenario and a further 11 observers.

The session ran for 40 minutes with a 40 minute debrief. The team correctly diagnosed the problem and set about managing it and arranging for transfer.

Latent errors identified centred around two themes; the administration of prostaglandin and the practicalities of transferring a child with a duct dependent circulation. Initially, staff did not know where to find the prostaglandin and there were process snags in the prescription and setting up of the infusion. The team also did not anticipate the need to have an anaesthetist present to intubate the child in the event of apnoeas caused by the high dose prostaglandins.

Debriefing focused on these two main points, as well as the more generalisable aspects of the case.

Discussion

The issues with the prostaglandin prescription raised a potential issue with the prescription of all infusions not routinely used in our HDU. There was a lack of knowledge of the standardised prescription chart published by our regional retrieval service. There was a lack of knowledge of where to find the prostaglandin vials which needed to be addressed. These points were addressed by the circulation of a report and the production of posters to signpost staff to these two items.

laryngoSim

Format: Accepted for Oral Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Introduction:
Young residents consider that pediatric anesthesia is very stressful. Indeed, it is a very specialized domain for which there is a lack of training during the traditional curriculum. The laryngospasm (closure of the larynx that blocks the passage of air to the lungs) is very frequent during pediatric anesthesia. It can be very impressive for residents because it requires immediate action to avoid severe complications. However, there are no validated recommendations and residents often learn the management of laryngospasm during their clinical practice. Simulation is a novel tool that allows the training and teaching of technical and non-technical skills during medical training without risks for the patients.
Objective:
The objective of the study was to evaluate the management of laryngospasm by young anesthetist and nurse anesthetists during a high-fidelity simulation session.

Methods

Material and Method:
Residents and nurse anesthetists from an internship in pediatric anesthesia were included to participate in a simulation session in pediatric anesthesia. . They were informed that it was a laryngospasm case just before the simulation. The students were randomized in two groups: group A was given a simple algorithm based on data from the literature to manage laryngospasm in four steps before the simulation and group C was invited to do exactly as usual to manage a laryngospasm. We analyzed the videos recording of their performances during the simulation session. Our primary endpoint was the evaluation of the management of laryngospasm using 10 technical items on the videos. We did statistical analysis on SPSS.

Results & Discussion

Results:
71 participants, 35 anesthetist residents and 36 nurse anesthetists in training were included in this study. There is a statistically significant difference between group A and C on the management of the laryngospasm (figure 1).
Discussion: Anesthetist residents and nurse anesthetist students in pediatric anesthesia are not efficient in the management of a laryngospasm. A simple algorithm improves significantly the quality of the management of acute laryngospasm.
Conclusion: the teaching and training of Pediatric anesthesia is insufficient before their residency and before they are exposed to real cases, However, our study shows that the implementation of a simple algorithm would improve the

management of laryngospasm and therefore patient's safety. Simple strategies of management of emergency situations can be taught and evaluated in simulation settings to avoid learning directly on the patient.

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Learning from both sides of the prescription: community orientated interprofessional simulation based learning

Format: Accepted for Oral Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

The prescribing of medicines is a complex yet commonly performed task. In the NHS the majority of prescribing occurs in the community. The supply of prescribed medicines to patients is a collaborative process shared most often between general practitioners and pharmacists. However there is an under-representation of interprofessional learning among undergraduate medical and pharmacy students. This is an important area of education to develop as prescribing errors are relatively common.

Interprofessional education (IPE), is a teaching method designed to develop a collaborative practice. Successful IPE can afford students a deeper understanding of the roles of their co-professionals, optimising the skills of their health teams and improving health outcomes. Simulation-based education (SBE) is a widely-used teaching method that provides learners with an opportunity to rehearse and advance their skills in a safe environment without compromising patient safety. At QUB we have developed an innovative IPE activity offered to medical and pharmacy undergraduate students. This learning activity, using a simulated dispensing pharmacy, aims to offer medical and pharmacy students a deeper understanding of each other's role in prescribing, dispensing and guiding patient education within the community. The aim of this study was to explore the impact of such a SBE activity on students' attitudes towards IPE and their professional development.

Methods

Interprofessional groups of Year 3 pharmacy and Year 4 medical students, took part in a SBE activity. This focused on the IPE activity was to clinically assess, diagnose, prescribe, dispense and counsel a simulated patient (in a simulated practice and pharmacy setting). Using a questioning guide, four focus groups of medical and pharmacy students were used to explore their attitudes towards the simulated IPE activity. Interviews were audio-recorded, transcribed, analysed thematically and iteratively - using template analysis.

Results & Discussion

Over 120 minutes of interview data was captured. Analysis yielded four main themes: 1) IPE simulation activity: unlocking new learning experiences; 2) patient centred practice: a shared understanding; 3) professional skills: explored and shared 4) professional roles: a journey of discovery, respect and stereotypes.

This study demonstrates that a simulation based IPE prescribing activity can provide a valuable learning experience. Such experiential learning not only helped students have a greater intellectually understanding of prescribing, but also

triggered a critical reflection on the attitudes and behaviours that best drives safe and effective collaborative patient care.

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Learning Theories and Pedagogical Grounding of Simulation-Based Healthcare Education

Format: Accepted for Oral Presentation
Subject: Faculty Development

Authors

Tuulikki Keskitalo — University of Lapland

Introduction & Aims

This thematic review examines the learning theories and pedagogical grounds of simulation-based healthcare education. At present, we do not know enough about when and how simulation-based education should be applied. The aim of this review is to understand the present issue from the perspective of simulation facilitators to provide the facilitators theoretical viewpoints and guidelines for organizing simulation-based healthcare and medical education in a pedagogically meaningful way. The specific research question in this study is: What educational theories and pedagogical principles are applied in simulation-based healthcare education?

Methods

We are currently reviewing 144 quantitative and qualitative studies in which underlying theories or pedagogical methods are explained or examined; the total number of articles will be finalized during the analysis. This thematic review is not intended to be exhaustive, since there has been extensive research about simulation in healthcare and medical education. For this review, we have conducted the literature search using the electronic search platform Luc-Finna. The initial search produced 7,623 articles. We selected the literature for this thematic analysis based on several inclusion criteria.

Results & Discussion

Simulation-based education is mainly grounded in theories of andragogy, experiential learning, sociocultural theory, and research on expertise and deliberate practice. In addition, there are two pedagogical models within simulation-based healthcare and medical education: Keskitalo's (2015) model and Dieckmann's (2009) model. Both models provide information on how to script the simulation-based training. In addition, Keskitalo's (2015) pedagogical model provides ideas on how to build more meaningful learning events with 14 characteristics of meaningful learning. This present study reveal also useful pedagogical practices for every phase of simulation-based education. Of these phases, the debriefing is the most studied; however, the other phases of simulation-based education also embody important pedagogical principles. Based on this review, we can state that simulation-based education requires a stronger theoretical basis. Theoretical or pedagogical grounds are rarely discussed, which complicates the comparison of the simulation-based education. For example, it is still unknown which pedagogical principles make the simulations so successful. In addition, we believe cognitive load theory and its implications for simulation-based healthcare education could contribute to the body of knowledge in the field of simulation-based education. For example, cognitive load theory can help us design education for both early learners and more experienced practitioners. However, the analysis is still in progress and the final results will be presented in the SESAM conference.

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Medical Emergencies and Basic Life Support course: 4-years utility and clinical experience impact in pharmacists

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Medical emergencies can occur at any time in an ambulatory pharmacy, so being prepared to properly manage the situation can be the difference between life and death. This study aims to assess the utility and clinical experience impact of the medical emergencies and basic life support course with simulation in pharmacists and pharmacy students.

Methods

A confidential survey was sent by email to all participants (286 participants) of the Medical Emergencies and Basic Life Support course performed by the Biomedical Simulation Center of Centro Hospitalar e Universitário de Coimbra (BSC), from 2013 to 2016, corresponding to 30 sessions. The questionnaire was focused on the utility of the course and perception of performance during emergency situations in clinical practice and was responded in a 5-point Likert scale (being 1 = strongly disagree and 5 = strongly agree) to all questions. An open-ended question was added for suggestions to course improvement.

Results & Discussion

The questionnaire was responded by 91 (32%)participants, aged from 18 to 55 years-old, 69.5% were pharmacists, 17.6% were trainees and 16.5% were students.
Most responders (>85%) strongly agreed or agreed that the course matched their clinical practice and helped improve it, helped to remember/consolidate knowledge, that fulfilled the training needs and met their expectations. 73.5% of responders had medical emergencies mentioned during the course and in 75.8% of cases helped to manage those situations. None of them had situations that needed to perform basic life support. 57.1% of responders say the course should be repeated 5/5 years and 31.9% in intervals of 2 years.
Overall, the course matched participants' expectations, helped them to improve their clinical practice and to manage medical emergencies, giving a high importance to it. The main suggestion in the open-ended question was to increase the practical component and the duration of the course.

Mednav improving teamwork in emergencies

Format: Accepted for Oral Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Globally confidential enquiries into maternal deaths identify substandard care in around 70% of cases. These enquiries further pinpoint failures of teamwork and communication with failures to recognize, act and refer unwell women appropriately. Post Partum Haemorrhage (PPH) is one of the main causes of maternal mortality globally. MedNav is a platform based software service that guides, scribes and prompts teams managing emergencies. In the way that Satellite navigation devices have replaced maps MedNav is replacing notes and protocols. It has been designed for use on a tablet or smart phone. Initially MedNav has been designed for maternity teams. We report our study using MedNav in simulated environment to manage post partum haemorrhage.

Methods

Multidisciplinary (MDT) maternity teams (Chelsea and Westminster Hospital, UK) were randomised from clusters of staff grade to using the decision support tool or control during post-partum haemorrhage full platform simulations. This was recorded and reviewed by assessors and teamwork scored.
Primary outcome measures were validated team work scores the Global Assessment of Obstetric Team Performance (GAOTP) and Clinical Teamwork Scale (CTS) secondary outcome measures were ‘friends and family’ test, technical skills achieved and System Usability Scale (SUS).

Results & Discussion

38 teams from August 2014 – February 2016 were recruited and randomised. Teamwork improved across all domains with the intervention. CTS improved between 6.7 - 16.8 % (average 14.2%) and GAOTP between 8.6 -17.1% (average 13.5%). Using the control group as baseline, the intervention improved teamwork by 25% and 22%.
Fewer technical skills were missed with the intervention ($p=0.003$). There was no statistical difference in the time that technical skills occurred.
More assessors would recommend intervention teams (78/91) than control teams (57/92) $p<0.01$ to their friends or family.
The SUS found the device as ‘Good’ (69) becoming excellently ‘Usable’ (81.6) in the study period.
We report a ‘usable’ decision support system, which rather than reporting failures in teamwork is improving it, as demonstrated by increases in teamwork assessment scores. This is using technology to assist and improve non-technical skills rather than reporting when they fail.

Mobile simulation-based communication training for a trauma team

Format: Accepted for Oral Presentation
Subject: Faculty Development

Authors

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Introduction & Aims

The medical treatment of a trauma patient is built on proficiency, teamwork and communication. The trauma team must be reached quickly, and information must be spread efficiently and accurately. We introduce a case study from a Finnish central hospital in which a trauma team was trained to use [TETRA] phones through simulation-based training with a mobile [TETRAsim One] simulator. [TETRA] is a special mobile phone used to receive and respond to trauma alarms and communicate within the team and with other officials. It operates even if GSM fails and electricity is interrupted. The [TETRAsim One] simulator teaches the basic functions of the phone and is designed to match the hospital's technical environment (e.g., phone numbers and talk groups are the same). It can be accessed through a basic Internet browser. Our aims were twofold: 1) to reveal hospital personnel's experiences with mobile simulation training with the simulator and 2) to discover how such mobile learning fits into everyday work at a hospital.

Methods

The personnel of four hospital units (emergency, surgical, intensive care and anaesthesia) trained with the simulator for one month through tablet computers. Next, a scenario-based in-situ simulation exercise of a trauma case was arranged. Real [TETRA] phones were used during the scenario to alarm the trauma team and provide firsthand information about an arriving trauma patient. The data consists of online user diaries collected during individual training and observations of the trauma-scenario exercise.

Results & Discussion

One of the key factors in developing decentralized simulation pedagogy for training professionals is providing flexible mobile-learning opportunities. The simulator itself seems to match everyday hospital practices closely. It was perceived as realistic and promoted learning how to use a [TETRA] phone. Participants trained flexibly during shifts in an office or coffee room or in a patient's room during quiet time. The phone's use was fluent during the trauma-scenario exercise; the entire trauma team was reached within seconds, and firsthand information of a patient was shared efficiently. However, the conformity of the communication protocol needs to be developed further. In this study, we used specific software and devices for simulation training. As the lifespans of mobile ICTs are short, we strive for transferable design and training principles that can be applied even when technologies change.

Patients as educators: using expert patients to improve the validity of simulation training

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Work in progress: experiences in integrating expert patients into consultation skills simulation for core trainees. Expert patients have a well established role in educational programmes, but this has largely been related to chronic conditions. We aimed to use expert patients to both enhance the debriefing process and evaluate the quality of consultation skills training.

Description

We designed a one day course for mulit-specialty core trainee level doctors, using our exisiting simulated patients programme. In addition, we recruited and trained expert patients to provide feedback to both the trainees on their performance and to the faculty on the validity of the educational experience.

We developed a structured tool with 2 sections. First; feedback for the trainee on their performance. Second; evaluation of quality of the simulated consultation. Expert patients are drawn from any specialty area and undertake standardised training in feedback, evaluation and how to use the structured tool. They observe the consultation skills simulation remotely via video link, to minimise any impact on both trainee and faculty. Their observations are utilised in the trainee debriefing, immediately post-simulation. Their evaluation of simulation quality is used to debrief both the faculty and simulated patients after all simulations are completed. Any changes required will then be implemented in a course development cycle.

Discussion

When designing this course, we were aware that we should select the most appropriate instrument for each aspect of simulation and course development. The qualities that make good simulated patients may differ from those required of an expert patient. The experts have significant experience of the healthcare system and we hope that their contribution will improve the validity of the the simulated consultations through an iterative process of course development cycles. The perceive the scenario from an omnipotent perspective, which combined with their training, allows for objective judgements of effectiveness. We are also tracking the experts global rating scores for the overall simulation fidelity, to assess whether this development cycle is effective.

Greater patient engagement in developing educational resources has the potential to both improve the validity of the educational experience and embrace the principles of patient-centred care. The visibility of this could have a positive impact on patients' confidence in the ability of healthcare and related educational institutions to listen to patients and learn from previous errors.

Perceived Errors in Physical Examination Resulting in Negative Impact on Quality of Care--Preliminary Results of a Survey of Matriculating Interns

Format: Accepted for Oral Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Errors in physical examination (PE) have been shown to cause patient harm, and data suggests that medical trainees are particularly vulnerable to making such errors. Despite this, many residents feel confident in their PE skills. To our knowledge, whether residents recognize inadequate PE as a cause of medical error has not been previously explored. We conducted a survey of matriculating interns at Thomas Jefferson University Hospital (TJUH) to assess whether they have witnessed adverse patient safety issues due to inadequate PE during their undergraduate medical education.

Methods

As part of a larger survey given to matriculating interns at intern orientation at TJUH from 2014-2016, the authors examined interns' perceptions of physical exam education and patient safety events. The instrument consisted of a 25-item survey developed a priori by the authors and was assessed for face validity by expert faculty.

Results & Discussion

Results: Ninety-nine percent (400/406) of all interns agreed with the statement that inadequate physical examination leads to adverse patient events. When asked perceived frequency, 71% (288/406) of interns reported that inadequate physical exams lead to 1% to 10% of all adverse events, and 28% (112/406) reported that inadequate physical exams lead to greater than 10% of adverse events. Over forty percent (41%; 170/411) of all interns had personally witnessed a patient safety issue as a result of an inadequate physical exam.

Ninety-percent of interns (370/409) reported feeling proficient in performing the physical exam. In 2015 and 2016, 79% (240/302) indicated that they received "just enough" physical exam education in medical school. There was no difference in self-reported proficiency of physical examination ($\chi 2 = .1.232$, $p = .267$) and perception of adequacy of training ($\chi 2 = .798$, $p = .372$) between interns who had witnessed a patient safety event versus those who had not.

Discussion: Nearly all matriculating interns surveyed at our institution believe that inadequate PE leads to adverse patient events and 40% have witnessed an adverse patient event due to inadequate physical exam. Despite this, we found that the vast majority of interns report proficiency in their own PE skills and view their previous PE education as sufficient. The literature suggests that a mismatch between competence and confidence in clinical skills is common, and

we hypothesize that this mismatch may be contributing to patient harm. Future research is needed to further elucidate how physical exam errors lead to patient harm and what curricular interventions best address this issue.

Performance art and simulation - a groundbreaking project

Format: Accepted for Oral Presentation
Subject: Others

Authors

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Michael Moneypenny	Scottish Centre for Simulation and Clinical Human Factors
Beverley Hood	Edinburgh College of Art

Introduction & Aims

Engagement between healthcare and the arts has positive health benefits. The Scottish Centre for Simulation and Clinical Human Factors (SCSCHF) is a state-of-the-art multi-professional training facility, visited exclusively by health professionals. We have a responsibility to break down barriers between healthcare establishments and the general public in order to positively benefit the community and justify costs. We have sought to engage the public by collaboration with local artists to create performance art involving our simulation centre in what we believe to be a unique and pioneering project.

Description

Led by artist Beverley Hood the project, “Eidolon”, was an immersive live performance developed in the simulation centre involving actors, dancers, medical staff, technicians and the public, as well as various mannequins. Funded by the Wellcome Trust, Creative Scotland and the University of Edinburgh, it sought to explore the relationship between the body and technology, as well as what it means to be human and alive. A year of preparation and research preceded several very well-received live performances at the simulation centre involving the general public. It then culminated in performances at the World Congress of Bioethics and the Edinburgh Art Festival, the United Kingdom’s largest annual visual arts festival, in June and August 2016 respectively.

Discussion

The National Institute for Health and Care Excellence (NICE) document “Community Engagement to Improve Health” recommends investment in a people-centred approach to health and wellbeing. This involves strengthening relationships with the local community and involving them in decisions about planning and delivery of healthcare.

Funding for healthcare in the UK has never been in such sharp focus in the media. Cuts to services, industrial action and high-profile institutional failings have dominated headlines and risked a failing of trust in doctors and the healthcare system.

We believe that projects such as “Eidolon” enhance our connection with the community, are thought-provoking and help to demystify the clinical environment. Following the success of this, we have participated in a community open day, where over fifty members of the public came to view and participate in simulation and try out some clinical skills.

By innovative approaches, we can find novel uses for our simulation centres and spaces. Given that such centres are publicly funded and generally expensive to construct and run, it seems appropriate that we take a broad outlook in order to consider the community and how we can benefit and involve them.

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Performance impact of serious game training: an example of 3D-SC1 for forward combat casualty care

Format: Accepted for Oral Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

In modern warfare, almost 25% of combat related deaths are considered preventable. Most of them include extremity hemorrhages that could have been stopped on the battlefield. Therefore, the Tactical Combat Casualty Care (TCCC) training of soldiers is a major challenge for armed forces. Serious games could represent an innovative and complementary tool to improve this training. In 2014, the French Military Health Service supported the development of 3D-SC1®, a serious game specially designed for the French soldiers' TCCC training program, entitled "Sauvetage au Combat de niveau 1" (SC1, Forward Combat Casualty Care). The objective of our study was to evaluate the performance impact of 3D-SC1®, as a complementary tool for SC1 training.

Methods

The study assessed the SC1 performance of soldiers divided into two randomized, parallel groups, before (measure 1) and after (measure 2) receiving additional SC1 training, either with 3D-SC1® (Group A intervention), or with DVD (Group B control). The primary endpoint was a 16 points- score for each participant during physical simulation sessions, assessed by 2 investigators. A Wicoxon-Mann-Witney test was used to compare the performance scores obtained in each group.

Results & Discussion

96 subjects were included: 50 in Group A, 39 in Group B while 7 lost to follow-up. Figure 1 shows the comparison of SC performance scores in both groups, at measure 1 and measure 2.
In both groups, performance was significantly improved at measure 2, compared to measure 1. At measure 2, the performance score obtained in Group A intervention was significantly higher than in Group B control (14.08 and 12.51, respectively, $p < 0.00001$).
Most importly, the study evaluated the performance of a serious game on changes in attitude and behavior, the third level of the Kirkpatrick's 4-Level Training Evaluation Model. Actually, others studies evaluated mainly levels 1 (reaction,

appraisal of training) or 2 (improvement of knowledge) of the Kirckpatrick's model. Our study showed that 3D-SC1® is a powerful and relevant tool for further training in SC1. Further development of 3D-SC1® should be considered, including new scenarios and regular updates.

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Proficiency assessment in endosurgery by computer analysis of the video of BESTA tasks.

Format: Accepted for Oral Presentation
Subject: Assessment using Simulation

Authors

Maxim Gorshkov — Sechenov First Moscow State Medical University

Introduction & Aims

The Russian Society for Simulation Education in Medicine, ROSOMED [rossomed] in cooperation with the Russian Society of Endosurgeons have created in 2015 the BESTA program (Basic Endosurgical Simulation Training and Assessment). Extensive participation educators is necessary for the feed-back. Our aim was to create a system for computer analysis of the video to provide automated real time evaluation of proficiency of the novice endosurgeons in a teacher-free environment.

Methods

BESTA consists of the 10 exercises, we developed 4 of them originally: Navigation of 300 Scope (original); Peg Transfer (FLS 1); Scope-Instrument Coordination (original); Precision Cutting (FLS 2 modified); Clip and Cut (original); Needle Guidance (E-BLUS 4 modified); Extracorporeal Suture (FLS 4); Endoloop (FLS 3); Intracorporeal Knot Suture (FLS 5); Continuous Suture (original).

The standard Laparoscopy training equipment was used: commercially available Lap trainer with HD-camera connected via USB to a notebook (as it is used for FLS-course). 10 mm 300 laparoscope with attached digital non-medical HD camera was used in the tasks 1 and 3. The standard laparoscopic instruments were used in all tasks without any modification. Standard and original training devices were used in the tasks. The original software was developed for tracking of the instruments movements, event's recognitions and accuracy determination.

Results & Discussion

The following events recognition and accuracy criteria can be automatically obtained: correct transfer of triangles at the task 2 (Peg transfer); correct and precise cutting alongside the marked circle in the task 4 (Precision Cutting); precise suture placement through the marks and number of throws in the tasks 7, 9 ■ 10 (Extracorporeal suture, Intracorporeal knot and continuous sutures); precise placement of the loop to the marking 8 (Endo-Loop). Detailed results can be reported at the SESAM conference.

CONCLUSION.
Automated computer analysis of the real time video of the tasks can be performed. Duration of the tasks, ambidexterity ratio, instruments path and velocity can be determined automatically without modifying the training equipment or endosurgical instruments. The proper or incorrect performance of the tasks and proficiency criteria can be determined as well. That allows to use the computer analysis of BESTA (Basic Endosurgical Simulation Training and Assessment) in a teacher-free environment as a part of endosurgical training for the proficiency assessment of the novice endosurgeons.

Psychological morbidity of women experiencing miscarriage : Impact of a specific counselling training for residents using simulation.

Format: Accepted for Oral Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Breaking the bad new of a miscarriage is a challenging situation for doctor. Indeed, an early miscarriage is usually associated with a psychological distress. Women can express different feelings such as grief, guilt, post-traumatic stress, anxiety or depression. The announcement of a pregnancy loss and the information given during the consultation may have a major role on the psychological outcomes of the patients. The majority of patients underscore the need for a more considerate care of the healthcare team in the management of early miscarriage.
The aim of this study was to attest that the simulation for residents in the announcement of a miscarriage improves the wellbeing and diminishes the psychological morbidity of patients after a pregnancy loss.

Methods

A « before and after » prospective study was conducted in a french teaching hospital. All women who experienced an announcement of an early pregnancy loss in our gynecological department emergencies from May 2014 to May 2015 were included. At all, 72 patients were included, 45 before and 27 after the training.
At half-time of the training course, all the six residents who were in charge of emergency cases over the study period attended the training which consisted in an "in situ" simulation of early miscarriage announcement. An auto-questionnaire was sent to all patients 8 weeks after the emergency consultation. This questionnaire included specific questions in order to assess the feelings at the end of the consultation and to assess the perinatal bereavement using a validated scale.

Results & Discussion

The feeling of the patients experiencing a miscarriage was improved after a specific specific counselling training using simulation.Thus, the lack of availability and the indifference of doctors regarding the pregnancy loss are significantly less experienced by patients after training (p=0.03 and p=0.04 respectively). The information given during the consultation also appear to be more complete, with significantly fewer patients consulting another doctor after the consultation for answering their questions (p=0.04).Concerning the perinatal grief scale, women before training experienced more intense grief scores after a miscarriage than in the post-training group (57.3 vs 39, p=0.02).

Further studies are needed to confirm our datas.
A training for the residents in the announcement of a miscarriage seems to be associated with a better psychological morbidity on women. All gynecologists (seniors and juniors) should be able to receive training in the announcement of bad news in order to reduce the psychological implications of a miscarriage.

Putting yourself in the patients shoes

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Active participation, simultaneously as a standardized patient and scenario facilitator, in simulation-based scenarios are an exceptional opportunity to present a broader perspective of particular health problems for undergraduate student during their medical training.
The aim of the research was to assess the influence of students' active involvement in small group teaching as a patient with different medical complaints/a facilitator for knowledge retain.

Description

The day before the classes students received a name of disease, which they were supposed to prepare on their own for the role play as a patient, including main complaints, medical history, as well as a scenario facilitator, in the same time, with knowledge about findings in physical examination, laboratory and diagnostic imaging results and expected response to proposed treatment. The second student involved in particular scenario was playing a role of a physician, without a possibility to prepare earlier, and his goal was to diagnose and appropriately treat the patient. After accomplishing the scenario the patient/facilitator was actively involved in the debriefing.

Discussion

The impact of this approach was assessed in the focus groups consisted of 75 students. They found that the emotional engagement in the scenario, while suffering from particular symptoms, enabled better understanding of the nature of the

disease and its influence on patient’s life. The preparation for the scenario, as well as immediate practical implementation of theoretical aspects of medical problems, gave them a sense of better knowledge retain. The lack of equipment requirements, costless and low-fidelity characteristic of this educational tool, useful for small group teaching, is an important benefit and can ease broader implementation of this method of education.

Resuscitation teamwork in a simulated environment

Format: Accepted for Oral Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

New vascular surgery techniques allow endovascular repair of a ruptured abdominal aortic aneurysm instead of an open surgical procedure. Patients are unstable and risk for resuscitation is high. The purpose of this qualitative study was to identify the disturbances and their solutions under the simulated exercise in order to enhance patient safety during real emergency operations.

Methods

After permission of the hospital ethics committee, nine multidisciplinary full-scale simulation sessions were arranged in a real operation room environment. The objective was to gain as fast as possible protocol to allow quickest possible aortic occlusion balloon insertion. There was a new team in every session and an informed consent was obtained from each participant.
Simulations started with a briefing session where ‘role cards’ were handled by instructing the participants to their specific tasks. In every scenario, there was a resuscitation period included after severe hypotension. The scenario ended when the surgeon succeeded in filling the supraceliac occlusion balloon. Simulations were video recorded and analyzed. The role cards were modified after each session to better serve the reality.

Results & Discussion

The new operation protocol is a challenge to a team and indecision slows the action down. There are psychological barriers such as aseptic working environment and physical barriers such as the wall built by the ventilator and anesthesia monitor. There is also an outsider to the OR staff, a radiology nurse, to assist the surgeon, which often confuses the division of labor. Disturbances concerning one’s own role were solved independently by the actor self, without consulting the others. Most frequently, the coordination problems were caused by poorly synchronized work within the team.

The resuscitation algorithm fits poorly to the reality in the OR. The operative team, for example, had to control bleeding instead of starting compressions. The aseptic working environment prevents the circulating nurse from starting compressions and there is seldom need for defibrillation. Slowly progressing, severe hypotension ending in PEA creates communication problems in a hectic situation.

High-fidelity simulations have been of great value in making visible both the disturbances and their possible solutions. Simulated exercises are recommended as a tool for implementation of new surgical techniques and for enhancing collaboration.

SCENARIO-BASED SIMULATION TO ENHANCE MANAGERIAL PROBLEM SOLVING AND DECISION MAKING SKILLS OF NURSES

Format: Accepted for Oral Presentation
Subject: Others

Authors

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Introduction & Aims

Providing safe, efficient, cost-effective, and quality services to patients are the primary aims of healthcare organisations. Nurses play a very significant role in achieving these aims. Nursing leaders are responsible to effectively manage their workforce to achieve the desired outcomes of their healthcare organisation. They need to have human resource management skills, motivate employees, and ensure positive patient care outcomes. Decision-making, problem solving skills and professionalism are fundamental to nursing management. These skills are also important for other nurses who need to demonstrate a degree of autonomy and gradually gain power in their profession. Such skills should be developed formally as part of nursing management educational programmes.
The present study aims to:
a. Interact with healthcare professionals and educators in Qatar to gain new experience and eventually improve simulation practices in Ankara, Turkey – with a focus on nursing management problem solving and decision making.
b. Develop and pilot simulation scenarios in nursing management education.

Description

The first author undertook a 3-week mentored placement at Hamad Medical Corporation (HMC), Doha, Qatar, in 2016 focusing on healthcare simulation in relation to nursing management. During that period, 4 scenarios were developed and piloted with volunteer senior nursing staff in a confederate or participant capacity in the Trauma Intensive Care Unit and Medical Unit. The scenarios included issues around patient safety, quality management, staff conflict, and malpractice. 18 head nurses, charge nurses, and nurse supervisors were involved as participants over the 4 scenarios, and the confederate and acting roles (nursing staff and patients' relatives) were acted by senior nurse educators.

Discussion

We should not only focus on developing students' nursing cognitive and psychomotor skills but also cover other cognitive, behavioural, and emotional components in relation to nursing management. Teaching managerial skills to nurses before graduation can be achieved using simulation followed by debriefing and discussion as we have recently experimented. Although not formally collected, verbal feedback from participants and nurse educators involved in piloting the scenarios was very positive. This innovative approach is considered for adoption as part of a nursing leadership development programme. The scenarios developed applied specifically to the units where they were being

piloted from a staffing and nursing management structure point of view and need to be recontextualised for use in other educational environments or clinical settings.

Acknowledgements: Special thanks to the HMC Nursing Education and Research Department and senior nurses at Hamad General Hospital for engaging this pilot educational activity.

Seeing Eye-to-Eye: The Use of BodyWorn Video Cameras for Debriefing.

Format: Accepted for Oral Presentation
Subject: Debriefing

Authors

Dr Natasha Taylor Coventry University

Introduction & Aims

Body-worn video (BWV) cameras are becoming embedded within contemporary law enforcement systems. Although they are mostly used as a transparency tool when dealing with the public, their use for police training has been identified and the initial exploration of their use shows some promise (White, 2014). However, scant evidence exists on the use of BWV cameras for simulation learning and/or assessment and this study was initiated to identify participants' feelings on their use.

Methods

A total of 64 (n = 64) trainee medical registrars participated in this research. In the case of the study presented here, participants were actively sought from a convenience sample based on those who attending learning days. Therefore, this study involved purposive sampling as participants were purposively selected from those who took part in a day of simulated medical registrar development. All participants gave their informed consent; institutional and British Educational Research Association guidelines (BERA, 2011) were adhered to.

Standardized patients wore a BWV camera. Audio visual recordings were then used in reflective, facilitated debriefing and a subsequent anonymous individual self-report instrument was used. Data from a standard Likert importance scale were analyzed, on a 0-4 ordinal variable stating the level of importance of the use of body-worn video cameras recordings to aid reflected debriefing. These data were reduced to the nominal level by combining all importance and not important responses into the categories of 'accept' and 'reject'. These transformed data were then analyzed using a Pearson chi square test of independence. An alpha level of .05 was used for the chi square analysis. As the group counts were larger than assumptions for chi square analysis, a Fisher's exact test was not necessary.

Results & Discussion

The relationship between these variables was significant ($X2(2) = 13.75$, $p = .001$). The variables being those who answered that the use of body-worn video cameras was important during the simulation event compared to those who answered that they were not important. This indicates a statistically significant relationship exists but does not reveal information about the strength of that relationship. However, the initial findings appear promising, showing in this study, participants felt the use of BWV cameras was important in the simulation experience. More research is needed to explore why this may be the case but this study goes some way to starting a dialogue about this potentially useful simulation tool.

Serious game versus online course for pretraining medical students before a simulation-based mastery learning course on cardiopulmonary resuscitation: a randomised controlled study

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

To compare an online course (OC) and a serious game (SG) for pre-training medical students before simulation-based mastery learning (SBML) on the management of sudden cardiac arrest (SCA).

Methods

A randomized controlled trial was conducted with 82 medical students from two French medical faculties. Participants were pre-trained using either an online course (OC group) under the form of a narrated presentation or the serious game Staying Alive (SG group) on days 1 and 7. On day 8, participants were evaluated individually and repeatedly on a scenario of sudden cardiac arrest until they reached a minimum passing score (MPS) on a custom-designed checklist. The main outcome was the median total training time needed for students to reach the MPS on day 8. Participants were trained again four months later.

Results & Discussion

The median training times necessary for students to reach the MPS was similar between the two groups: 20.5 min (IQR 15.8-30.3) in the SG group versus 23 min (15-32) in the OC group, p=0.51. Four months later, the median training times decreased significantly in both groups, but no correlation was found at an individual level with the training times observed on day 8.
The SG used in this study was not superior to an OC for pretraining medical students on cardiopulmonary resuscitation, with similar training times between the two groups. The homogeneity in students' performance obtained at the end of the first session of SBML did not persist four months later.

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Serious game vs brochure for initial nurse training about urinary tract infection prevention

Format: Accepted for Oral Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Healthcare associated urinary tract infections (UTI) are often preventable but remain frequent. Their prevention needs infection control measures by care givers for the installation and management of a urinary catheter and hygieno-dietary rules by the patient; their systematic application remains complex and requires the use of several information and awareness-raising tools by trainers and infection control teams. The aim of this study was to determine the impact of a serious game on the prevention of IUAS among 582 nursing students in terms of knowledge and declarations of practices.

Description

A 6-month exposed-unexposed study was carried out on seven classes from six nurse training institutes. Each class was separated into two groups: the first group played the game " Code-name U.T.I" in an amphitheater with remote control poll (n = 295, 15 minutes); the other group read a pedagogic brochure with identical educational content (n= 287, 15 minutes). A questionnaire was completed by each student before and after the game. A single and multivariate analysis was performed. Results showed 86% of the students in the game group and 90% in the brochure group acquired at least one teaching following the intervention: learning was more clinical for the students of the game group (41% draining technique) than students of the brochure group (39% epidemiology). Game group declared significantly to feel better prepared to take care of a catheterized patient after the game ($p < 0.001$). More than 95% of the game group said they changed their practices after this intervention, mainly about UTI diagnosis and surveillance (93% for the brochure group, mainly concerning therapeutic education).

Discussion

This study confirmed the interest of serious games (cost-effectiveness) in initial training and also suggested an interest as part of continuing education. The game is complementary to the diffusion of a brochure; It seemed to mobilize more practical knowledge with an ability to engage more the student. But further study remains to evaluate the impact on good practices compliance.

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Short clinical debriefings in the operating room

Format: Accepted for Oral Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Non-technical skills (NTS) are crucial in the operating room (OR) in order to perform safe and efficient patient treatment . Addressing these skills within the team is important. Feedback and debriefing are methods to enhance learning and reflections and are increasingly used to enhance clinical performance.
Demands of high productivity and efficiency in the OR make it difficult to free staff for training. Exploring inter-professional learning possibilities in the clinical context is therefore important.
The aim of this study was to explore the learning outcome after short clinical debriefings within the multi-professional team during skin closure/check out.

Methods

Inspired by the debriefing model by B. Steinwachs and the clinical debriefing model TALK©, trained debriefers facilitated short debriefings at two OR departments in the Capital Region of Denmark. The debriefings were conducted in connection with procedures performed on patients in general anaesthesia, on day shifts during a 5 week period. The debriefings were audio recorded and content analysed deductively using NTS tools and using Dieckmann& Funck's method for rating "take home messages" THM.

Results & Discussion

A total of 104 short clinical debriefings involving 477 team members were included in the study. Participants rated each debriefing for relevant (figure 1). Data analysis (in progress) will reveal any correlation between high and low rated THM by research group and factors like content, member constellation, and duration (to be presented at SESAM).
Participants reflected on both personal and team oriented practice. Participants found that debriefings connected to short procedures did not make sense. A tendency to talk to the facilitator and not to other team members during debriefing was noticed.
Further research could explore what teams need in order to conduct debriefings themselves and what situations should "trigger" short clinical debriefings in order to increase the relevance.

SimMat, simulation for obstetrical emergencies: evaluation of an interprofessional education program including all professionals in charge of pregnant women.

Format: Accepted for Oral Presentation
Subject: Interprofessional / Team Education

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Introduction & Aims

Healthcare providers in charge of pregnant women have to face emergency situations, which can lead to maternal and perinatal complications. It is estimated that over half of maternal and neonatal deaths are associated with suboptimal care and communication problems and may thus be preventable. Based on this information, several expert societies recommend team-training programs, including simulation. Therefore, we have implemented a simulation-based training for obstetrical emergencies in our clinic, intended for all healthcare providers in charge of pregnant women. Our SimMat program started in January 2016 and will continue until December 2017, with a total of about 320 participants. The aim of the present study is a mid-stage evaluation of the global benefit of this training on participants.

Methods

To assess the impact of the training programme we are using the Kirkpatrick's evaluation framework which includes participants' satisfaction, learning and change in behaviour. To evaluate these dimensions we are performing a before-after trial using questionnaires administered to participants before their participation to the course, just after and six months after completing the training. Moreover, we are randomizing participants in two groups to compare teamworking skills during simulation: one group is receiving a simulation session based on teamworking skills and the other group is not. To evaluate the impact of the program on patients, we are analyzing perinatal and obstetrical clinical outcomes, and childbirth experience through a questionnaire completed by the mothers. We will compare responses during the year, before and after implementation of our program.

Results & Discussion

In 2016, 177 participants were included in the training program. Amongst them, 59.9% completed the satisfaction survey (106/177). The vast majority of participants would recommend the program (97%). Their satisfaction level was high (88%) and 95% found it relevant. They estimated their knowledge on the topic taught had improved by 48%. The study is still in progress but our intermediate outcomes indicate an encouraging assessment of the training program by the participants. With additional results covering the period from January 2016 to May 2017, we hope to be able to provide more evidence of the global effectiveness of this program.

Simulation and competences developments to leadership in health

Format: Accepted for Oral Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Simulation is a pedagogical strategy, useful and attractive in different health settings.
The advantages have been demonstrated to skills development and, especially to the high fidelity simulation, to non-technical competences development, as teamwork, decision making, leadership and others (Martins et al, 2012).
The aim is to analyze the scientific evidence related to the contributions of the simulation, as a pedagogical strategy, to develop competences to leadership in health.

Methods

Scoping Review, following the proposed by the Joanna Brigs Institute (2014).
Research at the databases CINAHL, Medline, MedicLatina e Medicine Complete, in January 2017.
Mesh terms: “simulation” and “leadership”.
Included research papers who studied the relation between the simulation training and leadership skills development, published between 2010 and 2016, with free full text available.
18 papers have been included.

Results & Discussion

Most publications come after 2014 (67%). The majority (55%) are observational studies, with pre-post evaluation, followed by observational descriptive studies (22%) and RCT (11%). Two studies use qualitative methods (Grounded Theory and Case Study).
The studies (22%) involved different Health professionals, specially doctors and nurses. Four studies are with nursing and medicine students.
The sample size varied between 15 and 200 participants. All studies used the simulation was pedagogical strategy.
As results the studies show improvement of leadership competences, evaluated in domains as the efficacy and self-confidence to be a leader, adherence to the leader decisions, situation monitoring, team organization, team work, team communication, mutual aid, authenticity, self-control, moral judgement and the process and use of information.
The studies showed that simulation is effective to leadership competences development in health field, especially in the non-technical domains. This reinforces the utility potential to use in education, graduated, post-graduated and long-life.

More studies are necessary, with strong methodological designs, who evaluate the transferability to the clinical context, to prove that the developed competences with simulation are related with real positive outcomes of the citizen’s health.

Simulation as a necessary and suitable vehicle for maintaining confidence in pediatric anaesthesia following pediatric specialist training

Format: Accepted for Oral Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Mags Bourke	Beaumont Hospital
Crina Burlacu	College of Anaesthetists of Ireland
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Introduction & Aims

We hypothesize that confidence in treating sick children following dedicated pediatric anaesthesia may decline over time; additionally, we hypothesize that simulation may be an effective method for increasing and maintaining confidence in dealing with sick children. If both facets prove true, we aim to propose a convincing argument for on-going pediatric simulation following dedicated pediatric training.

Methods

This study was performed in two separate, simultaneously conducted arms.
Part A) A structured questionnaire was submitted to trainees upon completion of paediatric anaesthesia training in two dedicated paediatric hospitals and also to three adult anaesthesia departments in consecutive six-month blocks in 2015-2016. Respondents self-assessed their ability to manage specific aspects of five clinical scenarios on a scale from 1-5, 1 being “very unconfident” and 5 being “extremely confident.” Part B) All simulation participants in a nationally delivered trainee pediatric anaesthesia simulation programme from 2010 – 2016 completed a pre-course confidence questionnaire on clinical skill competencies (eg. managing a sick child, a child with breathing difficulty) that were matched to eight scenarios delivered. A post course confidence questionnaire for eight simulation scenarios was completed afterwards. For both arms, subgroup analysis based on duration of prior clinical experience with pediatric patients was performed.

Results & Discussion

Part A) 60 questionnaires were completed. The largest decline in confidence for case management was seen in the neonatal pyloromyotomy patient (0.42), and resuscitation and transfer of a toddler with meningoencephalitis (0.60). Of free text respondents, 53% volunteered that paediatric simulation would enhance their confidence in managing these scenarios.
Part B) 235 trainees completed the simulation programme. 52% had no previous pediatric experience, 15% had > 5 years experience, and 33% were currently managing pediatric patients. Baseline confidence across all skill sets was higher in those with > 5 years anaesthesia (3.1), currently treating children (2.7), compared to those never done pediatrics (1.5). Post course confidence scores were similar across all 4 subgroups (range 3.6-3.9).

Discussion-
There is a self-perceived decline in confidence dealing with pediatric patients following dedicated pediatric training. Additionally, our simulation programme considerably increases confidence in managing pediatric patients across all candidates, irrespective of previous pediatric anaesthesia exposure. These data support the role for ongoing pediatric simulation following dedicated training, and highlight a need in particular for scenarios that emphasize resuscitation of a neonate and a septic child.

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Simulation based learning, a pedagogical tool to change the qualtity of life at work among professionnals in anesthesia and intensive care unit.

Format: Accepted for Oral Presentation
Subject: Others

Authors

Couarraze	ITSIMS
Marhar	ITSIMS
Saint Jean	Jean Jaurès University of Toulouse
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Introduction & Aims

Some medical specialties are particularly exposed to stress and burnout including anesthesia and intensive care unit. Simulation based learning allows you to work on behavior, attitudes, non technical skills by confronting critical stress situations in a safe and secure manner. This training could contribute to the prevention of burnout for critical care teams. Our main objective will be to study the effects of full-scale simulation of critical situations on subjects identified as being at risk in terms of perceived stress, level of burnout and anxiety.

Methods

We will use three validated scales :
- Perceived Stress Score for work-related stress,
- Maslach Burnout Inventory for burnout,
- State Trait Anxiety Inventory for anxiety.

Individual interviews will lead to the emergence of stress sources, in the subjects of the experimental cohort, who will base the simulated scenarios.
The interviews will be done with the method of "instruction to the look-alike" (Oddone, 1981).

Results & Discussion

We hypothesize that teaching and training in the management of critical simulation situations for anesthesia and intensive care unit personnel would reduce stress at work and reduce psychosocial risks.
A version of prevention "in virtuo" would be possible, the virtual reality having proved itself in the desensitization of patients by confronting them with stressful situations in complete safety. It's possible to modulate the level of stress felt by playing on the complexity of the virtual situations.
Preventing psycho-social risks for health professionals could integrate simulation as a pedagogical tool. The simulation would then aim not only to improve the performance of the teams but also to allow a better adaptation to the environment of critical care.

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SESAM
PROMOTING SIMULATION IN MEDICAL EDUCATION
SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

Simulation-Based Longitudinal Musculoskeletal Physical Exam Curriculum

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

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Katherine Berg, MD	Rector Cllnical Skills and Simulation center of Thomas Jefferson University
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Introduction & Aims

As most patients first present with musculoskeletal problems to a primary care physician, a clinician must be proficient in the physical examination of the musculoskeletal system. Recent data demonstrate marked deficits in these skills. Freedman reported 82 % of interns failed a musculoskeletal OSCE and Fowler and Reagen reported only 3/47 (6%) of primary care physicians correctly diagnosed a patient with chronic ACL tear. We have developed and implemented a novel longitudinal curriculum to teach musculoskeletal skills to medical students using simulation modalities.

Description

The longitudinal curriculum provides for skills attainment, deliberate practice and subsequent assessment of musculoskeletal skills in a graduated manner. The first year students receive site-specific clinical skills sessions using standardized checklists to complement anatomy and dissection which are assessed using SP based OSCE. The second year students receive demonstration of basic physical examination skills using standardized checklist, hands-on skills attainment using SPs under direct supervision of faculty. These students subsequently receive a more advanced session on knee, elbow and shoulder. Senior students attain new skills and refine pre-existing skills through faculty directed skills attainment and deliberate practices session built into clinical years and, during the 1 month Advanced Physical Diagnosis course. Skills assessment includes musculoskeletal stations during our end-of-third year medical student OSCE. A course evaluation survey was given to students at the end of each component.

Discussion

All sessions were well received by students. Over 90% of M1 students (n =198 students) correctly identified surface anatomy sites of the MCL and the cubital tunnel of the elbow. One year retention rates for the anatomy sites was 98% (n = 135). In the M3 OSCE, 80% of students (n = 252) correctly diagnosed an MCL sprain in an OSCE.

We describe a step-wise, longitudinal and graduated approach to teaching musculoskeletal physical exam to medical students. This is a curriculum that uses standardized checklist and can easily be exported to other programs and expanded to include resident and faculty learners. We are developing a faculty development program to teach the teachers how to use this paradigm.

SESAM
PROMOTING SIMULATION IN MEDICAL EDUCATION
SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

Six month feedback for course evaluation

Format: Accepted for Oral Presentation
Subject: Center Administration and Program Evaluation

Authors

Michael J Stallard	Scottish Centre for Simulation and Clinical Human Factors
Michael Moneypenny	Scottish Centre for Simulation and Clinical Human Factors
Eve Buchanan	Scottish Centre for Simulation and Clinical Human Factors

Introduction & Aims

Feedback for simulation courses is an essential tool in assessing the quality of teaching that we deliver. As well as immediate feedback at the end of the day, we have commenced a project asking participants to give us feedback six months after their course. This has the potential to reveal changes in behaviour and demonstrate implementation of learning in real clinical situations.

Description

Since August 2016 we have sent all course participants an e-mail six months post-course asking them if they have had an opportunity to put into practice any of the knowledge or skills (technical or non-technical) they learnt on their course. Specific examples of how the course has aided them in their role are welcomed.
We have had twenty-seven responses thus far and performed a six phase thematic analysis on these. We identified three main themes from the analysis: (1) Improvements to clinical Practice; (2) Personal and professional development; (3) Improvements in delivery of simulation. For the latter, this is in relation to the faculty development simulation courses we run, for “training the trainers”.

Discussion

Kirkpatrick’s Four Levels of Learning Evaluation are a well-recognised tool for assessing the effectiveness of training programmes. The four levels are (1) reaction (2) learning (3) behaviour and (4) results, with training being most effective when it results in changes to the latter categories. Immediate feedback may enable us to assess whether levels 1 or 2 have been achieved. However, in order to assess levels 3 or 4, we require delayed feedback such as this, in order to ascertain the effect the training has had in clinical practice.

We received feedback to suggest that participants had acquired new skills, technical and non-technical, and were able to put these into practice in clinical situations. They reported finding these most useful in emergency situations and felt that it contributed to improved patient safety. Many people reported increased confidence in their clinical role and felt they had gained insight into their own performance, an important developmental skill.

This simple but important feedback tool should be an ongoing, frequently reviewed process. It is important when advertising courses and applying for funding to be able to show tangible benefits of the training we are delivering. We have a responsibility to ensure that the training and teaching we deliver is high quality and is of value to participants and organisations alike.

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SESAM
PROMOTING SIMULATION IN MEDICAL EDUCATION
SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

Teaching hemodynamic modelling to medical students: can engineering promote a better understanding of physiology?

Format: Accepted for Oral Presentation
Subject: Curriculum Development

Authors

Carla Sa-Couto — Biomedical Simulation Center, Faculty of Medicine of University of Porto; Center for Health Technology and Services Research (CINTESIS)

Introduction & Aims

Models of human physiology are widely used in full-mission simulators to provide real-time, automatic, responses. Commonly, the study and development of such models is reserved for engineers and mathematicians, being widely integrated in their curricula. In medical curriculum is uncommon but applied to an adequate context may be beneficial. At the Faculty of Medicine of University of Porto, a new optional curricular unit was implemented to provide medical students (2nd and 3rd year) basic skills on modelling and simulation, and offer a new insight on how changes in hemodynamic parameters impact patient condition.

Description

Each year, 80 students choose this class. Students receive basic knowledge on simulation and model development in the first 2 weeks of the semester. In the remaining 10 weeks, using a well-documented, previously presented hemodynamic model, groups of 4-5 students are challenged to develop a (new) model for a chosen condition/patient by adapting the structure and parameters. The hydraulic representation of the model structure allows the students to create a simple mental model and easily “visualize” and interpret pathological conditions.
A simulation software (HemoSim, Fig.1) was developed to allow easy implementation and simulation of the models developed by the students. HemoSim has 4 baseline (healthy) patients: term-fetus, 1-week old neonate, 6-months old infant, and adult. Over than 35 parameters for each patient are presented and can be manipulated to create new patients. Several monitored variables are represented numerically and graphically (such as pressures and flow rates in several parts of the circulation, and ventricular P-V loops). Any changes in parameters will produce concomitant and appropriate changes in monitored variables.
Students chose freely the patients/conditions to model and simulate (examples: pregnant woman with eclampsia, fetus with tetralogy of Fallot, pulmonary thromboembolism). The model development implies autonomous research on the condition. The simulation results are interpreted and validated with (published) clinical data, stimulating clinical reasoning. At the end of the semester students share the project development and discuss the simulation results with their colleagues in an oral presentation session.

Discussion

Students consider this curricular unit difficult (5.5/7) but useful with an impact in their curricula (4.64/7). The long term impact can only be measured in the coming years, but is expected that this curricular unit promotes: a) a new insight of the hemodynamic system, through the understanding of the different interactions between parameters and monitored signals, and b) mental model development, allowing the comprehension of complex pathological condition.

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Teamwork training for eclampsia management

Format: Accepted for Oral Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Eclampsia is an uncommon obstetric emergency in developed countries associated with high rates of maternal and perinatal morbidity and mortality. Effective management demands immediate life-support and magnesium sulfate for control and prevention. Multi-professional skills training for eclampsia management is potentially important because of the infrequent occurrence, unpredictability and rapid onset of the eclampsia. Simulation is a useful tool in the acquisition of technical and non-technical skills in the training in obstetrics and gynecology. It reduces errors, increasing the learning and reinforcing communication skills and teamwork.
The aim of this study is to discover the pitfalls in the management of eclampsia including the evaluation of the teamwork communication.

Description

High-fidelity simulation sessions were scheduled at the simulation center of the Sant Joan de Déu Hospital in Barcelona. 8 multidisciplinary teams were included in the study. Each team had 2 obstetricians, 2 anesthesiologists, 1 midwife and 1 nurse (48 participants).
A standardized scenario of eclampsia was proposed using an advanced human patient simulator (SimMom-Leardal). All eclampsia drills were recorded for posterior evaluation.
A checklist of key actions, based on preeclampsia protocols (derived from evidence-based sources) was used to evaluate the management of the eclampsia scenarios. The checklist includes the following actions: emergency call for help, adoption of left-lateral position, administration of magnesium sulfate and registration of activities.
A checklist of human factors was assessed using a Likert scale from 1 to 5: communication clear between the team members, role and responsibilities assignment, awareness situation, prioritization of actions and correct execution of required actions.
The evaluation concluded that all groups call for help with the onset of seizure. The administration of bolus magnesium sulphate was correctly performed in 6 of the 8 teams. The 75% of the groups not place the patient in the lateral safety position and 88% not registered the activities.

In the evaluation of human factors we obtained: 2.75 in clear communication between the team members, 3.31 in role assignment, 3.25 in awareness situation, 3.31 in action prioritization and 3.31 in correct execution of required actions.

Discussion

Eclamptic convulsion is associated with a high rate of serious maternal and perinatal complications. Eclampsia demands a rapid mobilization and effective coordination of the emergency maternity team.

The use of simulation of infrequent cases as eclampsia facilitates the training of the multidisciplinary team, the identification of critical points with the improvement of the management protocol as well as the detection of deficiencies in teamwork communication.

There is a need to update performance assessment in high-fidelity simulation

Format: Accepted for Oral Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Postpartum hemorrhage (PPH) represents a dynamic environment model that anesthetist must cope with.
The ability to manage this situation depends on classical medical knowledge but also on cognitive processes such as situation awareness (SA) or workload (WL).
High-fidelity simulation (HFS) allows anesthetists to be faced with standardized environment to measure performance and human factors.
The aim of this study is to evaluate anesthetist performance through a multidimensional approach including management performance, expertise and human factors (SA and WL) in simulated PPH.

Methods

This study took place at the Indian Ocean Health Simulation Center from January to April 2016 (Reunion Island University Hospital, a third level maternity with over 4,500 annual deliveries).
2 groups of anesthetists (Novices and Experts) were asked to manage a severe PPH in a high-fidelity simulation session. The patient suffered from a complicated refractory PPH with a hemorrhagic shock.
Participants were required to prepare and provide all necessary treatments (i.e. drug reconstitution, infusion device installation, blood transfusion management).
The decision of emergency surgery and transfer to the operating room ended the scenario.
The anesthetists performance was assessed by the analysis of the simulation duration and by a checklist of expected actions supplemented by a bad execution percentage (i.e. drug mistake, bad dilution).
Situation Awareness Global Assessment Technique (SAGAT) tool and NASA Task Load Index were used to measure SA and WL.
Each anesthetist also had to self-assess its management performance, the overall situation understanding and stress with numerical scales.

ANOVAs and T-tests were carried out to test the effect of expertise on measured or perceived performances, SA or WL levels.

Results & Discussion

15 Experts anesthetists (MD) and 15 Novices anesthetists (Resident) were included.
PPH management analysis did not reveal any significant difference between Experts and Novices (76.9 ± 13.9% of expected therapeutic actions with 13.4 ± 10.5% of bad execution in 18min 43sec ± 03min 52sec).
SA and WL levels were not significantly different between the groups (66.5 ± 7.1% and 74.4 ± 11.3% respectively).
However, perceived PPH management performance or situation understanding was significantly higher among the Experts than Novices (70.0 ± 14.4% compared to 51.0 ± 23.1% for the perceived performance and 80.0 ± 7.3 % compared to 62.4 ± 22.3 % for situations understanding).
Checklists used to measure performance are not enough discriminant and do not meet the modern expectations of expertise assessment. New assessment tools based on observable behaviors are needed in HFS.

SESAM
PROMOTING SIMULATION IN MEDICAL EDUCATION
SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

TracheoSimApp enhancing part-task simulation

Format: Accepted for Oral Presentation
Subject: Others

Authors

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Introduction & Aims

The training of medical skills is often performed in low-fidelity part-task simulators, that have, by nature, limitations in realism and teaching of theoretical instructions. The TracheoSim simulator, developed by the authors, is an example of model from that category, dedicated to the teaching and training of tracheostomy. Seeking to overcome those obstacles and facing the increasing use of smartphones in the academic environment, the aim of this project was to develop and test a mobile app able to enhance the learning of the user of a low-fidelity simulator, using the TracheoSim as a pilot project.

Methods

The TracheoSimApp was programmed in HTLM/CSS/JavaScript and made available to Android. The app contains images and texts that guide the user during the execution of the proposed procedure. The images were produced in an operation room scenario, using the TracheoSim simulator. The texts were based on a literature review of the subject. The final product was submitted to testing with a sample of 10 professors – experts in simulation and tracheostomy – of medicine from the Universidade Federal do Paraná, Curitiba, Paraná, Brazil.

Results & Discussion

The developed app can guide the procedure step by step, from surgical paramentation and positioning of the patient to the removal of the tracheal cannula and skin suture. During the execution of the procedure, the app allows photographing of the stage and registers the period of time used in each step. At the end, the app also offers the function of report generation, that can be sent to any registered email address. The main advantages in comparison to the isolated use of the simulator are: enhancement in realism and the possibility of theoretical teaching. This occurs through the provocation of the user's imagination and the written comments about indications, complications and other informations. The tests signalized satisfactory results related to the app's features (average of 9,3 ± 0,823 on a zero to 10 scale). Also, the participants stated that they would like to use other apps with the same concept (average of 10 ± 0,0). The developed app can be used in any part-task simulator, being only necessary to adapt the images and instructions regarding the new subject. This project reached its goal of developing a teaching tool to assist the already existing models in medical simulation.

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USE OF THE RELAXATION EXERCISES FOR STANDARDIZED PATIENTS AFTER PORTRAYING IN BREAKING BAD NEWS SCENARIOS

Format: Accepted for Oral Presentation
Subject: Others

Authors

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Introduction & Aims

It is known that scenarios with emotional heaviness, such as bad news, have negative impact on standardized patients. This study was conducted to determine the anxiety levels of standardized patients participating in ‘breaking bad news’ sessions, and the impact of relaxation exercises on their anxiety levels.

Methods

A single group pre-post test pattern was used in this quantitative study. Nineteen standardized patients who enrolled in Hacettepe University, Faculty of Medicine Standardized Patient Program participated in the study. Data were collected with Speilberger's State-Trait Anxiety Scale and Vital Signs Form. Totally, three measurements were performed; before and after portraying in ‘breaking bad news’ scenarios, and after participating in relaxation exercises program.

Results & Discussion

The mean score of standardized patients for the Trait Anxiety Scale was 45.11 and their scores ranged from 36 to 55. The mean score of standardized patients for the State Anxiety Scale was 38.16 in the 1st measurement; and 47.89 in the 2nd measurement. The mean score of standardized patients for the State Anxiety Scale was 25.63 after participating in relaxation exercises. The differences were statistically significant ($p \leq 0.05$).

Portraying in difficult scenarios may have negative impact on standardized patients’ physical and psychological health. Our study revealed that relaxation exercises caused a significant reduction in the standardized patients' anxiety levels. The use of relaxation exercises was practical and effective. We suggest that relaxation exercises can, and in some cases should be used for improving SPs’ mental health in the educational institutions.

Using just in time in situ simulation to embed knowledge of a modified surgical safety checklist

Format: Accepted for Oral Presentation
Subject: Interprofessional / Team Education

Authors

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Dr Makani Purva	Hull Institute for Learning and Simulation
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Introduction & Aims

Our institution found issues with compliance with the WHO surgical safety checklist and resolved to streamline the paperwork and re-train the staff in it's use. As part of the wider project, we instituted a teaching package in the areas where the new version of the checklist was being piloted. This involved using low fidelity 'just in time' simulation with immediate feedback on performance.

Description

The introduction of the new checklist included re-stating of the sequence of the checks. This differed from what had been used before. We produced posters to go in each of the operating theatres in our trial area with descriptions of each of the stages. We then had observers in theatres when the new documentation was introduced, observing these checks. We used 'just in time' in situ simulation at the beginning of each list to simulate the three stage in-theatre process, followed by immediate feedback. The observer then remained in theatre throughout the half day list and noted compliance with the new checks, giving feedback after each real case.
The simulation itself was low fidelity and involved a mock wristband with the details of the first patient on the list, with the observer acting as a simulated patient for the purposes of confirming identity and consent. Simulation and feedback took less than 5 minutes. It was important to not cause a significant delay in order to maintain staff buy-in to the project.
In lists where there was no simulation and staff only had the posters and feedback between cases to guide them, there was poorer compliance and more resistance to change from staff.
Where the just in time simulation was used, compliance with the checks on the first case was good. The compliance improved through subsequent cases in line with feedback received. Participants agreed that the simulation was useful to practice the steps of the safety check before implementing it. They were also satisfied that the simulation did not significantly delay the list.

Discussion

This pilot demonstrates that it is feasible to use just in time simulation as an adjunct to prepare staff for a change in the surgical safety checklist. It aids smooth implementation and does not cause significant delay. We hope to use a similar method in other theatres as we roll out the changes and will need to train the local staff to deliver the simulation and deliver feedback.

Walking in patients shoes: simulation methods to enhance students learning from the experiences of melanoma patients

Format: Accepted for Oral Presentation
Subject: Others

Authors

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Nigel King	School of Human and Health Sciences, University of Huddersfield, England

Introduction & Aims

Despite the rising incidence of melanoma, medical students have progressively fewer opportunities to learn from such patients. Lectures and online learning materials teach facts about it, but students may never encounter patients with melanoma during their training. Medicine is challenged to improve methods of teaching empathy. Simulating illness can provide healthy learners experiences of patienthood - for example, wearing body suits to simulate physical disability. However opportunities to learn about cancer experientially are limited. Temporary transfer tattoos can simulate melanoma. We are aware that doctors who experience ill health are more empathic towards their patients. We reasoned therefore, that by temporarily ‘having’ a melanoma might have a similar effect. This study aimed to explore the impact of wearing a melanoma tattoo on medical students’ understanding of patienthood and attitudes towards patients with melanoma.

Methods

A phenomenological approach, drawing upon Merleau-Ponty’s concept of embodiment, was used to explore students’ lived experiences in this study. Using convenience sampling, senior year medical students at QUB were invited to participate in the study. As typical in phenomenological studies, we aimed to recruit up to 10 subjects. Participants had a melanoma transfer tattoo applied to their forearm and listened to an audio narrative of a patient who had been diagnosed with melanoma.

Participants were then asked to go about their typical day and make 4 audio-diary recordings about their experiences. Following this they were interviewed face-to-face and asked to provide a follow-up audio-diary about 3 months later. Audio-diaries/interviews were transcribed verbatim. Template Analysis was used to qualitatively analyse the data. Regular reflexivity checks took place and we sent our interpretation to participants and invited comments as a further validation step.

Results & Discussion

Ten participants took part in the study, providing over 500 mins of audio-data. Analysis yielded 4 main themes: 1) Melanoma simulation: opening up new experiences; 2) Drawing upon past experiences; 3) A transformative introduction to patienthood; 4) Doctors in the making: seeing cancer patients in a new light.

The findings of this study indicate that by means of a novel simulation-based learning activity, it is possible to afford medical students an important introduction to some of the lived experiences of a patient with a melanoma. Such an experience stimulated a critical reflection on their holistic approach to patients as future doctors. This study suggests potential pedagogical opportunities for providing medical students with insights to aspects of cancer-patients' lifeworlds.

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Why Healthcare Needs Aviation's Black Box Technology

Format: Accepted for Oral Presentation
Subject: New Technologies and Innovation (Supported by SimGHOSTS)

Authors

Lance Baily SimGHOSTS

Introduction & Aims

In his best selling book Outliers, Malcolm Gladwell examines the factors that contribute to high levels of success. Gladwell considers why the majority of Canadian ice hockey players are born in the first few months of the year, how Microsoft co-founder Bill Gates achieved his extreme wealth, and why the Beatles became one of the most successful musical acts in human history. Throughout his book, Gladwell theorizes how historical and cultural circumstances can pave the way for such phenomenal success.

Description

What can the healthcare simulation industry learn from a similar of exploration of its own past, present, and future? Simulation Evangelist Lance Baily has applied Gladwell's theories to our industry and will explain why his projects, including HealthySimulation.com and SimGHOSTS.org, have made such huge global impacts in just five short years. By understanding the core truths behind the success of these projects, participants will take away valuable arguments they can use to advocate for the expanded use of simulation in their own home institutions.

Finally, Lance will explore how the historical and cultural forces that are now in motion will transform healthcare simulation as we know it from a small community of early-adopters to a universal standard embraced by all.

Discussion

Share legal cases from the use of recording technologies in healthcare programs around the world.

A 2-Element Windkessel Model

Format: Accepted for Poster Presentation
Subject: Others

Authors

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Introduction & Aims

Blood flow,resistance and compliance are important for cardiovascular system regulation.To analyze the relationship between arterial compliance and total peripheral resistance and blood flow during a cardiac cycle,a 2-element Windkessel model was used.

Methods

In the model,arterial compliance is represented as a capacitor.Peripheral resistance of the arterial system is represented as a resistor.First order differential equation of the model is seen below:
I(t)=(P(t))/R+(C*dP(t))/(d(t))
R is systemic peripheral resistance as 0.95 mmHg*s/cm3 ;C ia systemic arterial compliance as 1.066 cm3/mmHg; P(t) is blood pressure in the aorta;I(t) is blood flow from the heart.The model was implemented by using Matlab/Simulink.The Runge-Kutta numerical method with fixed step size of 0.01 seconds was used to solve the differential equation in this model.

Results & Discussion

Arterial pressure changes during cardiac cycle is seen in the Figure. It is similar to real data.

Figure. Blood pressure changes during systole and distole.

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A Conceptual Framework for Simulation in Healthcare Education

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

Irwyn Shepherd	Monash University
Dr. Trish Burton	Victoria
Dr. Marg Malloch	Victoria University

Introduction & Aims

This presentation reports the outcome of a Doctor of Education research project.

The purpose of the study, generated from recommendations in the simulation literature for further research in this domain, was to inform the development of a Conceptual Framework for Simulation in Healthcare Education. A social constructivist perspective and evaluation paradigm guided this study.

The underpinning tenet to the study was that conceptual frameworks are an essential tool for the conceptualising, designing, developing and delivery of simulation-based activities.

Methods

The research entailed the identification of the current number of conceptual frameworks and theoretical models cited in the literature which inform and guide simulation interventions; identifying and analysing whether those conceptual frameworks and theoretical models actually informed and guided the design, delivery and evaluation of simulation interventions; and by evaluation research using questionnaires and a modified Delphi technique, the development of a conceptual framework that will contribute to simulation-based education by informing and guiding, the design, delivery and evaluation of future simulation interventions.

Results & Discussion

The combined data from the literature, the questionnaire and the modified Delphi technique demonstrated the need for such a conceptual framework and informed its design. These data will be presented. The model which emerged as a distillation of the findings of the study is the “Conceptual Framework for Simulation in Healthcare Education”. The conceptual framework model which will be demonstrated, is web-based and can be accessed via PC, Laptop or Tablet. It encourages the user to consider and apply a number and mix of education theories and models when designing, delivering and evaluating a simulation activity. Activity templates will be also presented. Research around its application is recommended.

A low-cost artificial skin for replacement in medical simulators

Format: Accepted for Poster Presentation
Subject: Others

Authors

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Kassio Silva Temperly	Universidade Federal do Paraná
Eduardo Murilo Novak	Universidade Federal do Paraná

Introduction & Aims

Most of the simulators in medical education, especially those for surgical training, demand a constant replacement of its consumable parts. Some Brazilian universities face difficulties to acquire those pieces due to the high cost. As the coverage skin is a common part to most of those simulators, the aim of this project is to develop a low-cost and easy manufacturing artificial skin for replacement in medical simulators.

Methods

The materials involved in the manufacture of the artificial skin are: silicone rubber with catalyst (proportion 10:1), acrylic ink, non-woven fabric and leather-like fabric. Four types of anchorage were developed: buttonholes, Velcro®, simple bar and buckle. The format, size, color and texture of the artificial skin vary per necessity of the user.

Results & Discussion

The skin developed here allows the execution of incision, puncture and suture and can be adapted for several medical simulators. The manufacture cost for a 45x15 cm artificial skin, with buttonholes as anchorage, is € 1.59. The type of anchorage must be chosen accordingly to the structure of the simulator and the procedure to be performed. When the occasion demands higher traction, the suggestion is to use the simple bar or the buckle, otherwise, the Velcro® or the buttonholes are enough. Incisions and sutures should be done on an artificial skin made with silicone associated with non-woven fabric, while punctures can be performed in isolated silicone. The artificial skin reaches the proposed aim, being a low-cost and easy manufacturing alternative, expanding the use of simulators in medical training centers.

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A Model of Respiratory System

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

Burce İrem Kahraman 1634444964

Introduction & Aims

Mechanical ventilation is usually used in intensive case units for any patient who lost his/her own automatic breathing control.

The aim of the study was to analyze alveolar pressure response to ventilator pressures at different frequencies by using the mathematical model.

Methods

It was considered a simplified linear lung model in this study. This model includes only one resistance (R) -combination of air ways, lung tissue and chest wall - and one compliance (C) -combination air ways,lung tissue and chest wall - which represent respectively the overall mechanical resistive and storage characteristics of the respiratory system.

Governing equation of this model is;

$P_{(ao)}=RC\ dPa/dt+P_a$

Pa is alveolar pressure and Pao is ventilator output pressure. The values of the parameters in the above equation are R = 0.3 cmH2OL-1 and C= 0.1 LcmH2O-1.

This model was borrowed from the reference (1) with some modification. It was implemented in Matlab Simulink R2011b. The model was run Runge Kutta Numerical Method with fixed step size as 0.001 seconds.

Results & Discussion

When ventilator output pressures were set to 1 Hz, 3 Hz, and 8 Hz, the following results were obtained as seen in Figure 1.

This mathematical lung model can be used to analyze the respiratory mechanics. In addition to this, it can be useful for medical education by adding an interface software.

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A preliminary result of mobile technology assisted CPR training for secondary vocational school.

Format: Accepted for Poster Presentation
Subject: New Technologies and INNOVATION

Authors

Sevgi Turan — Hacettepe University Faculty of Medicine

Introduction & Aims

Implementation of resuscitation training in school programs is a promising approach to improve rates of CPR by trained bystander. Implementation of standard certification into large-scale BLS training is not sustainable for some programs because of the financial difficulties and time constraints. Besides, theoretical CPR instruction is not sufficiently effective in developing practical skills. In this research, we focused the effective use of alternative instructional methods in CPR training for secondary school students. We aimed to investigate the effectiveness of ongoing BLS training and alternative video-based instructional method to achieve the cognitive, psychomotor and affective learning objectives of BLS education.

Methods

We conducted this quasi-experimental study in a secondary school in Ankara. For the comparison of the instructional methods, three voluntary classes were determined. Each class was assigned to one of the three groups randomly as; Group A: Theoretical instruction (28 students), Group B: Video based instruction and practice on the manikin (29 students), and Group C: Video based instruction, practice on manikin and mobile assisted feedback (26 students).
Instruments: BLS knowledge test, BLS checklist, BLS manikin skill report, Visual analog scale (VAS) and Thematic list of confidence statements.
Statistical methods: Parametric and non-parametric test statistics were used for evaluating the data gathered from instruments. Open-ended statements were summarized under the pre-determined thematic list.

Results & Discussion

Simplified BLS training lead to increase the BLS knowledge score but the development of psychomotor and affective skills of the groups was varied. Comparing the instructions, mobile assisted program significantly increased the knowledge scores of the students. Theoretical BLS training did not result as mastery for basic psychomotor skill without hands-on practice. Self-instruction and guidance and feedback of smartphone application improved students' compression quality and their confidence score.
Discussion
Our findings showed that all instruction methods led to increasing the BLS knowledge scores. The result of this study confirmed that BLS training increases laypersons' confidence. Results showed that Group C students expressed higher confidence in his/ her ability to act if an emergency with witnessed victim collapse in.
Dissemination of BLS education using standard lower fidelity manikins and the use of smartphones as prompt devices are appropriate for BLS courses. Although simplify BLS training with hands-on practice and self-learning methods are considered to be useful, researchers should be aware of the importance of the instructor's feedback, motivating attitude and expertise for answering student questions related to the emergency conditions.

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Acceptability of the Fundamentals of Laparoscopic Surgery (FLS) programme tasks for Urology trainees

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

Jane Hendry	FVRH
Lynne Kerr	FVRH
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Introduction & Aims

The Fundamentals of Laparoscopic Surgery (FLS) is a well validated training and assessment programme for laparoscopic skills. Although widely recognised, especially in general surgical training in the USA, FLS has no established role in urology training. We sought to assess the utility and acceptability of FLS tasks for urology trainees. In addition, we used a validated FLS task (peg transfer) to assess baseline laparoscopic proficiency levels in urology trainees and to determine if improvements were related to training stage, previous simulation training or operative experience.

Methods

Twelve urology trainees (ST3- ST6) undertook FLS skills tasks of peg transfer, pattern cutting and intracorporeal suturing with repetitions throughout a training day. Pre-test questionnaires focussed on laparoscopic assistant operative numbers and previous laparoscopic simulation experience. Post task questionnaires assessed usefulness of FLS tasks, acceptability of proficiency levels and potential future role for FLS in training and assessment. A minimum of 10 repetitions of the peg transfer task was undertaken and completion times recorded.

Results & Discussion

All trainees felt the FLS tasks improved their laparoscopic surgical skills with 11 rating this as transferable to theatre. Trainees found the proficiency levels of all tasks acceptable and would recommend FLS task training to others. Eleven trainees would wish regular FLS training incorporated into the training programme although only four would wish FLS assessment included in their ARCP. There were seven ST3 – ST4 and five ST5-ST7 trainees with increasing years of training having no benefit to baseline simulation times (103.7s vs. 117.1s , ttest 0.11). When split by previous laparoscopic simulation training those trainees with less than three hours exposure had poorer trending times compared to those with greater than three hours simulation training (156.7s vs. 143.3s , ttest 0.51.) This was reflected in final repetition timings where those with previous simulation training showed greater improvements (113.5s vs 84.2s, ttest 0.002).

The FLS tasks trialled here are acceptable to urology trainees and exposure to tasks improves self-rated ability with laparoscopic skills. With simulation and performance assessment an increasing focus in surgical education, further use of the FLS programme in urology is warranted and would be welcomed by trainees. Improvements in laparoscopic skills tasks relates to previous simulation exposure rather than stage of training, emphasising the importance of integrating simulation into urology training programmes

SESAM
PROMOTING SIMULATION IN MEDICAL EDUCATION
SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

Assessment of technical and non-technical skills in a high-fidelity scenario: agreement between raters

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

High-fidelity scenarios offer a unique opportunity to train medical students on their technical skills and attitudes. In the undergraduate training, at UNICID, simulation sessions are integrated into the curriculum before students start their clinical rotation. To ensure a fair grade in which reflects students' performance without bias, it is recommended that two or more raters assess the students' performance. In this study, we investigate the influence of training two raters on their agreement on evaluating students' technical and non-technical skills in a high-fidelity scenario.

Methods

From 2012 to 2013, we followed 45 medical students during their clerkship and two raters, who were instructed before the session regarding the content of the checklist. There were four-simulation sessions about the treatment in cardiac-arrest situations with six months apart from each other. In all sessions, students were divided into smaller groups (maximum of 12). The raters assessed students that had participated in the session regarding students' technical and non-technical skills by filling in a checklist during the training. To compare the raters' assessment, we calculated the interclass correlation coefficients.

Results & Discussion

Overall, the agreement between both raters was high, except for the first session in which the interclass correlation was low for the technical and non-technical skills (Table 1). In the subsequent sessions, the interclass correlation ranged from moderate to high. Although both raters had been previously trained, we noticed that the interclass correlation increased after the first session. Usually, non-technical skills are harder to achieve a reasonable agreement between raters than technical skills. However, this was not the case in this study. One explanation might be that both raters have experience with this methodology and with cardiac-arrest situations. The previous training helped the raters to understand each of the items, instead of assuming that they would have the same concept. It seems, however, that the inter-rater agreement improves after the first session. One explanation may be that they compared each other scores and had learned from that. Alternatively, the raters may have adapted their scores based on the first session. One of the limitations was that we only followed two raters. Further research should investigate whether this finding is applicable for more raters. Also, further research is necessary to investigate whether the good agreement between raters influences the quality of the debriefing session. In conclusion, training for raters may lead to a good agreement between them, especially when associated with the practice.

Barriers to multi- disciplinary team ward- based training and how to overcome them.

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

Dr Sarah Cassie — Royal Cornwall Hospitals Trust, Truro, Cornwall

Introduction & Aims

There have been barriers in our local Trust in delivering what used to be consistent and well- subscribed point of care simulations. Training was regularly being cancelled, commonly due to lack of staff numbers to then provide patient care or lack of bed space, or insufficient area to facilitate training session. Multi- disciplinary training, MDT is proven to have a positive effect on patient care and staff relations (Keenbone et al., 2005). We devised a novel way of delivering a regular point of care training session whereby MDT clinical staff could come to 'drop in' sessions of an hour. Staff would be released by charge nurses so that patient care was not compromised and the hour time slot meant there was minimal disruption to remaining ward staff. Simulation can be a barrier to staff training for a wealth of reasons, largely fear of missing diagnosis/ treatments or reluctance to perform in front of colleagues (Nancy, 2014). We wanted to make the training as informative, yet non- threatening as possible and so termed them 'Simulation Training Sessions'.

Description

To establish demand for in house staff training during work hours, we issued an online survey to clinical staff. This established validation for our desire to change the way we delivered point of care simulation sessions. We found a dedicated point of care ward area and booked regular sessions. We ran a Trust- wide recruitment and advertising campaign to highlight the start of the sessions by contacting nurse link educators/ ward matrons across the Trust. A pilot programme was created covering A-E assessments, sepsis, hypoglycaemia, anaphylaxis and cardiac arrest. These were decided by the simulation team as 'core topics' for clinical staff, based on Care Quality Commission, CQC, visits and previous simulation feedback.

Discussion

Unanimously, one hundred and nine respondents stated they would like regular 'in house' training. It was important to locate a ward space in the hospital, rather than using the simulation suite so that staff felt more comfortable in the training and that it provided added realism and hence 'buy- in' to the training. Although in the early stages of the programme, we have received some very positive feedback. Over the next few months, we aim to present our evidence of the programmes' success to the Trust Board which would allow us to run the simulation sessions weekly, which we feel is important to keep up interest.

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SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

Basic surgical skills teaching in a simulation center

Format: Accepted for Poster Presentation
Subject: Faculty Development

Authors

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Introduction & Aims

Residents spend less time in operating rooms and training on patients is less and less acceptable. Studies showed that patients are uncomfortable that resident performed a procedure on them mainly if it is the first time. Thus, It is necessary to reconsider surgical education to have better trained surgeons in less time with full safety for the patients. Mentoring will always be necessary and fruitful in surgery but it cannot be enough. Numerous surgeries from basis to high-level procedures could be simulated. By opening a simulation center in 2012, PRESAGE (Plateforme de Recherche et d'Enseignement par la Simulation pour l'apprentissage des Attitudes et des Gestes), Lille University decided to respond to this objective. Since then several courses using simulation are made. In United Kingdom foundation-year is the first postgraduate medical education that junior residents must complete before applying to specialty core training. There is currently not such an evaluation in France but a same observation is applied to a lack of emphasis on basic surgical skills. This is true for young resident in surgery that need to be quickly autonomous for vaginal suturing or cesarean section suturing, but competencies in these basic techniques may be necessary in several specialties. The aim of this study was to determine whether a simulation training program on basic surgical skills is effective for residents.

Description

The course was held in the University of Lille medical simulation center (PRESAGE). Three hours teaching sessions for each junior residents groups consisted of modeling and guiding practice on knot tying and suturing. All participants were then evaluated on basic knot tying and suturing skills using a standardized grid. All residents were also surveyed on self-confidence before and after training and on whole course organization and content. Fifty-nine residents started surgical residency (residents Ob/Gyn) at our university hospital during the four yours of this study. Statistically significant improvement (self evaluation) in performance was seen for hand ties ($p<0,001$) and instrumental knot tying ($p<0,001$) and in all type of sutures evaluated. Concerning supervisor's evaluation, all points evaluated were significantly ($p<0,001$) improved after simulation (Strength, wound edges apposition, sutures position, gesture, needle positioning). The course evaluations showed a similar positive effect on perceived proficiency for knot tying and suturing

Discussion

In a simulation center, teaching basic surgical skills by surgical residents and faculty members improve significantly resident's skills. Further development on advanced surgical acts is to be continued

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Can Non Technical Skills survive to Disaster Medicine ?

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Since 2008, a center of Disaster and emergency medicine created in Beijing, China, allowed to train about 10 000 healthcare professionals (doctors, nurses...), using mainly medical simulation... Does a three days train the trainer course applied to Disaster Medicine (DM) allows the learning of non technical skills (CRM - crisis resource management) as leadership, decision-making, communication or management ?

Description

A short training of 3 days including a lecture on medical simulation (workshops of scenarios adapted to learning objectives), a lecture on DM and simulations sessions. These simulation used simulated patients, human patient simulators and a full scale simulation in the simulation center for the technical management of patients and providers involved in a simulated disaster. Every simulation session was secondarly debriefed. The evaluation used the Ottawa simplified scale (from 1 to 7) before and after the training (Kirkpatrick 2 = evaluation of skills).

Discussion

12 emergency physicians were trained. The Ottawa simplified scale showed an average of 4.14/7 (ECM 4.14) before simulation, vs 5.81/7 (ECM 0.49) after simulation (table 1). There was a significant improvement of the CRM ($\alpha<0.01$) and a satisfaction rate of a 100%.
Trainers' training in the medical simulation applied to the field of Disaster Medicine allows to improve significantly CRM for emergency physicians.

CANCELLED: The Effect Of Simulation-Based Education Upon Students Knowledge And Skills In Diabetic Foot Examination

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

BAHAR INKAYA	No
Hilal Tuzer	No
Melİh Elci	No

Introduction & Aims

The current study was planned so that nursing professional - handling with diabetes –a disease with such a high frequency- and requiring a continuous communication with the diabetic patients- could be more equipped with in this regard, the effect of high-fidelity simulator and standardized patient upon nursing students' ability to do diabetic foot examination could be explored and high-fidelity simulator and standardized patient could be used in the next academic year if they turned out to be effective. The purpose of the current study was to explore the effect of education provided with standardized patient and high-fidelity simulator upon nursing students' knowledge and skills in diabetic foot examination and to obtain their views about simulation-based education.

Methods

The study was designed in semi-experimental and qualitative model. The study was done in the Simulation Laboratory of Nursing School of a university and Yenimahalle Training and Research Hospital. The sample of the study was consisted of 42 students who did internship and were randomly recruited. To assess students' knowledge level, a test was given to the students before and after the implementation of the study. Then for the preliminary skill assessment, diabetic foot examination was done on a real patient with foot wounds caused by phase 1 diabetes under the supervision of the researcher. For the same examination; 21 of the students used high-fidelity simulator (HFS) while other 21 students used standardized patients (SP). In the final phase of the skill assessment; all the students again did diabetic foot examination on a real patient. For the assessment of the data; Shapiro Wilk test, paired t test, Mann-Whitney U test and Wilcoxon test were employed.

Results & Discussion

Among the students who were trained with HFS; there were no statistically significant differences in terms of knowledge scores while among the students who were trained with SP; a significant increase was found in their knowledge scores ($p<0.05$). Change in knowledge scores among the groups was found to be similar before and after simulation education. Both groups demonstrated statistically higher mean skill scores in the second examination on real patient following the simulation education (HFS:85.29 SP: 85,29) as compared to scores achieved in the first examination on real patient and simulation training- ($p<0.05$). It was seen that change in skill scores of both groups was similar.
In line with these results; it is recommended that high-fidelity simulator and standardized patient should be used in different courses of nursing curriculum.

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SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

Classical approach to ALS algorithm teaching versus custom-designed ALS- serious game for first year nursing students

Format: Accepted for Poster Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

ALS is put into university curricula at final years. The aim of that study was to compare classical approach to ALS algorithm and custom-designed ALS- serious game for first year nursing students who were not familiar with ALS so far.

Methods

The study tested 1st year nursing students with only BLS skills. No theoretical introduction was provided. They comprised 29 “classical” teams (C) and 30 “serious game” teams (SG). During 3h workshop the last scenario for each group was recorded for further analysis. C teams worked on low- fidelity Laerdal adult manikin and performance was recorded on camera. SG teams worked on custom designed medical virtual simulator. The following time parameters were recorded: reaction- to - cardiac arrest recognition, compression rates in 1,3,5 minutes, 1st epinephrine and amiodarone administration, reaction- to-defibrillation, reaction- to-definite airways, interruptions of chest compressions in the 1,3,5 minutes of cardiac arrest.

Results & Discussion

Mean reaction –to- cardiac arrest recognition was 17 s for the SG and 30 s for the C teams (SG 6-35 s, C 12-36 s). Mean chest compression rates for SG group for 1,3,5 minutes were 88 ; 75; and 84, respectively, while for C group were 86; 97; and 81, respectively. Mean reaction-to-1st epinephrine were 301 s for the SG group (66-542 s), and 256 s for the C group (75-521 s). Mean reaction –to-1st amiodarone were 394 s (205-653 s) for the SG group, and 302 s (179-560 s) for the C group. Mean reaction-to-1st shock was 66 s for the SG group (38-196 s), and 68 s for the C group (50-109 s). Mean reaction-to –definitive airways was 113 s for the SG group (22-454 s), and 145 s for the C group (48-374 s). Mean length of interruptions of chest compression were for the SG group: in 1st minute- 6 s (0-39 s), 3rd minute- 16 s (0-54 s), 5th minute- 10 s (0-29 s); and for the C group- 1st minute- 6 s (0-14 s), 3rd minute- 9 s (0-18 s), 5th minute- 8 s (0-24 s). 3hour workshop proved to be effective tool for teaching the algorith. SG teams did better in recognition of cardiac arrest, while C teams did better in avoiding gaps in chest compressions. Both groups failed to administer 1st amiodarone on time. Universal ALS algorithm should be in the nursing undergraduate curriculum as early as possible in order to provide enough time to master ALS skills.

Clinical Simulation - experience of an island

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Clinical simulation has emerged in recent years as a way of health innovation, revolutionizing medical teaching and training of teams and health professionals. It is currently the gold standard in training, combining the best robotic and information technologies with the biomedical and educational area, through simulators with reliable clinical and pathophysiological responses, in real time, to the trainee's performance. This training in a simulation environment is extremely important for the improvement of teamwork, thus constituting a promising educational methodology for the enhancement of technical and non-technical skills.

Description

The authors describe the implementation of 9 Internal Medicine Clinical Simulation courses in a Simulation Center of an insular region, directed to 58 health professionals over a year. The courses comprise an initial theoretical part followed by the practical part, with training in simulation scenarios. Each scenario lasts 60 minutes, divided into the practical case approach and the final debriefing. The courses were evaluated by the trainees in terms of: content of the program, technical and pedagogical means used, trainers, duration of the activity and contribution to their personal development. About 95% of the trainees evaluated the course as "Very Good" and about 90% considered having a "Very Good" contribution to their personal development.
Regarding the evaluation of the programmatic content, the trainees were generally very satisfied with the adequacy of the subjects (91%), compliance with the program (93%) and acquisition of new knowledge (86%). These results point out the importance of Simulation not only in competence training but also in the acquisition of new knowledge.

Discussion

Clinical simulation emerges as an innovative response to sensitive and difficult issues of medical error and training in critical, complex or rare environments. It is a powerful tool of continuous medical education and experiential learning, using strategies of debriefing as a way of improvement through reflexive practice and with the guidance of the trainer. These 9 courses, with the training of 58 professionals, came to prove the commitment of the Internal Medicine service in this aspect of training, which translated into a maximum global satisfaction between 90 and 95%, with a potential improvement of health services provided and patient's outcome.
This high satisfaction also highlights the importance of training strategies in simulation and the effectiveness of communication, along with the dedication of all professionals involved, with the common goal of personal and collective

enrichment.

COMPETENCY EDUCATION AND SIMULATION: THE MEHODOLOGY OF THE OBJECTIVE STRUCTURED CLINICAL EXAMINATION IN MEDICINE

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Nowadays the interaction between education, medicine and technology has taken an inevitable overturn: we are working with human body simulators. Although this has been done since the last century, current devices are more complex and expensive. However, the most important argument in this regard is: how to educate the medical student from the competency approach and, specially, how to evaluate it objectively. The general objective of this research is to identify the simutalative teaching methodology by stations and the evaluation of clinical competences through the ECOE in students of the sixth semester of medicine in the Latin American Center of Medical Education by Simulation (CLEMPS).

Description

At the moment the curriculum of Medicine has turned to the proficiency profile, where the student learn how to develope himself in a work team and experiences leadership, creativity and the use of ICT as a capital part of their professional training. To achieve this study, a self-created rubric (RU1-ECOE) was applied with 64 items to two groups of sixth semester students in two different cycles and the answers were classified as a dichotomous variable (Yes-No) to obtain a sum which in its 70% represents the participant as COMPETENT in practical clinical skills and NOT COMPETENT when the score is less than 70%. The total population of both stages (1 and 2) participated during January-December of 2016, and an average of 63% of students approved ECOE.

Discussion

Educational activities that include simulation are relevant both in Hidalgo and in Mexico City; Since there are students of Medical Specialties who just begin with the ECOE practices, while in Hidalgo (UAEH) since the sixth semester of the Degree students has been performing this type of clinical practices by simulation. Is important to mention that all Medical students who receive classes at the CLEMPS are able to develop skills in clinical practice; In some cases it is possible that its level of ability is COMPETENT under the rubric RU1-ECOE, however, there are still cases in which it is necessary to reinforce the practice to improve the students ability.

Continuing Education for Technicians in Rapid On-Site Evaluation Cytology. Simulation Pilot Experience.

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Rapid On-Site Evaluation (ROSE) cytology of the samples obtained using the Fine Needle Aspiration (FNA) cytology technique, by direct palpation or guided via ultrasound, tomography or endoscopic techniques, is considered crucial for appropriate management of patients who undergo such procedure. Traditionally, it is recommended that the pathologist or cytotechnician carry out this assessment. The utility of FNA cytology simulators for this type of training was evaluated.

Description

FNA cytology sessions were conducted in our center, in a simulated environment, using the patented simulators ES1140059 and ES1149563, with loads of plant material (plantain pulp). The characteristics of this material, after being spread on slides and undergoing dyeing techniques (hematoxylin-eosin, Diff-Quick and Giemsa) make it suitable for a microscopic evaluation.
A total of 20 FNA's were performed by one pathologist and 5 cytotechnicians, in a randomized and rotational manner, carrying out the processing of the material, its staining and microscopic visualization. In all cases, evaluable cellularity was observed and, therefore, was considered a sufficient sampling. The mean time from the start of the processing of the sample until its visualization under the microscope was 4′01″ (range 3′42″- 4′26″).

Discussion

- The mannequin simulators are adaptable to scenarios to train cytotechnicians for in situ evaluation of samples obtained by puncture.
- This allows the cytologist to certify the quality of the sample obtained, optimizing resources and avoiding additional unnecessary procedures or FNA's.
- The adequate training of cytotechnicians assures the patient a shorter time of exposure to the diagnostic procedure and its possible complications.

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Curricular Integration in a Medical School Simulation Center lessons learned

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

There are many financial and organizational difficulties in developing a simulation center, and the people in charge need to address them quickly and efficiently in order to have a successful simulation activity. One of the most important issues is researching information about curricular needs and identifying simulation session target groups. Another issue is finding and training the instructors who will lead simulation activities.

Description

A possible pathway for development is the association with a medical school. This was achieved in the case of the Simulation and Medical Skills Center of the University of Medicine and Pharmacy of Tirgu Mures, Romania, which opened in the autumn of 2013. The pre-existing Medical School's curriculum was analyzed and a series of procedures that could have benefitted from the existence of a simulation center were identified. The targeted departments were presented with the identified subjects and their teaching staff was invited to deliver simulation sessions in the center, under the supervision of the center's team. The teachers were trained and were handed very strict protocols containing all the steps needed to successfully deliver a good simulation session. Thus, 10 curricular subjects and departments were involved in simulations, namely Surgical Semiology, Surgery, Medical Semiology, Internal Medicine, Pediatrics, Cardiology, AIC, Urology, Gynecology and Psychiatry, with a total of 30 teachers. Since 2013, approximately 480 simulation sessions were held yearly, with 3642 students (years 3 to 6) attending in 2014, 3723 in 2015 and 4397 in 2016. The categories of simulation procedures are diverse, ranging from basic skills training (peripheral venous catheterization, naso-gastric tube insertion, urethral catheter insertion) to human patient simulation and various high fidelity virtual simulations (endoscopy, ultrasonography).

Discussion

This approach to simulation center management seems to be efficient. On one hand, it covers most of the expenses, and on the other it provides a large number of potential learners. By taking over a part of the academic curriculum, the use of existing teaching staff within the medical school ensures that the human resource is sufficient. Since the practice hours are included in the curriculum, they do not take extra time from the schedule of the students and teachers, and also reduce staff expenses. Student satisfaction guarantees the sustainability of this model. This model is not perfect, of course, since it requires constant instructor training and maintaining a high level of teaching, among other issues.

CytoSimu: a high-fidelity simulated cytotoxic drug preparation unit (CDPU) for pharmaceutical staff education

Format: Accepted for Poster Presentation
Subject: Others

Authors

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Introduction & Aims

Depending on CPDU activities, in situ simulation requires a rigorous organization to anticipate suspension of routine activities before sessions. Therefore, it is not suitable for education on a regular-basis.
To overcome these issues, creation of a high-fidelity dedicated area may be an interesting solution. The aim of this project is to describe the “CytoSimu” created in our hospital's simulation department.

Description

This area was designed on the same model as a real CPDU for maximum realism, and included different rooms (storage, cloakroom and preparation zone). Preparation zone was fitted with an isolator and separated from an observation room by a one way glass. All rooms and the isolator were equipped with cameras: storage room and cloakroom with fixed dome cameras; preparation zone and isolator with fisheye cameras. Fixed dome cameras were relevant for the small room without any blind spots. Fisheye cameras allowed to split general view into four specific views, to overcome blind spots due to the isolator in the preparation zone. Moreover, fisheye cameras allowed the trainer to visualize independently both workstations. During the exercise, each learner was equipped with a lapel microphone. An intercom linking observation room, preparation and storage zones allowed communication between learners/trainer; and learners/learners. The area was not equipped with an ambient microphone to avoid background noise due to the isolator. Thus, trainer could assess all exercise processing without disturbing learners or interfering with simulation session realism. Finally, storage cabinets for expendables and benches were added to increase realism. The debriefing room was equipped with a broadcasting system to reach a greater number of learners.

Discussion

Cameras’ types and their positions in the simulation area must be performed in accordance with educational objectives. Isolator and cloakroom cameras are mostly used for technical skills assessment (handling, hygiene and protective measures). Storage and preparation zone cameras and audio material are mostly used for non technical skills (communication, tasks' distribution and team performance). This simulation area is used for pharmaceutical technicians initial education (procedural simulation) and continuing education especially for continuing professional development (CPD). As creation of a dedicated simulation area requires significant financial resources, hospital directory and agencies support is required. Registering of the training course as a CPD program is necessary to motivate hospital

administrations.

Debriefing Assessment for Simulation in Healthcare In Fine Needle Aspiration Cytology. Single Centre Experience

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

On the basis of avoiding medical students practice on the patient for their first time, training methodology has been developed in recent years, including the assessment of clinical competence using the Objective Structured Clinical Examination (OSCE) formats. The recent introduction of phantoms in Fine Needle Aspiration Cytology (FNAC) procedure has posed the reevaluation and feedback of the overall and debriefing methodologies used from the medical students and the instructors in order to be suitable.

Description

Students from different international universities participated in a 3 hour FNAC workshop followed by completing the Debriefing Assessment for Simulation in Healthcare (DASH©, Harvard) form, designed to assist in evaluating and developing debriefing skills. The session included a presentation, introduction to FNAC, methodology and practical cases with patented phantoms (head & neck and trunk, ES1140059, and ES1149563, respectively) used in our centre for 3 years, and further cytological whole slide images correlation, concluding with the debriefing.
5 students (1 male, 4 female, 22 year-old) from the International Federation of Medical Students Associations (IFMSA) (Egypt, Morocco, Spain, Poland, and Greece) completed the DASH© questionnaire. The long form was performed, with a total of 23 Behaviours grouped in the following 6 Elements (range 1-7): for setting an engaging learning experience (6.05), for maintaining an engaging context for learning (6.33), for the debriefing organization (5.95), for provoking deep discussions (6.43), for assessing students performances (6), and for helping to improve or sustain good performance (6.07). The mean total score was 36.83 (out of 42).

Discussion

- Fine Needle Aspiration Cytology sessions are considered appropriate enough for teaching purposes.
- The debriefing is used as a guided reflection after a simulation, and aims to analyze, make sense and learn from the simulated experience, being an essential step in the learning process.
- Facilitators reported that the debriefing experience and the students rating improved their medical knowledge and comfort with teaching.

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Dementia Awareness-Getting into the shoes of the individual

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Globally, an ageing population has contributed to the prevalence of dementia which is rapidly increasing. 93,000 people are living with dementia in Scotland (Alzheimer Scotland, 2017). The school of Health & Social care at Edinburgh Napier University is the largest provider of nursing education in Scotland. This has implications for the preparation & support of nursing students on clinical placements as people with dementia represent a key focus of their nursing activities.
The literature suggest students have often felt unsupported and ill prepared in dealing with dementia despite a theoretical understanding of the disease process (Robinson & Cubit, 2007). People with dementia can present in varying ways and can have a complex set of symptoms including memory loss, language difficulties, failure to recognize people, places & objects, disorientation & inability to perform activities.

“Getting into the shoes of the individual” is an immersive simulation session for students to experience aspects of dementia.

1. The aim of the simulation session was to improve nursing students knowledge of caring for people who have dementia.
2. To understand the importance and implications of the environment when caring for people with dementia
3. Gain an insight into some of the symptoms persons with dementia can encounter
4. To develop practical solutions for working with persons with dementia.

Methods

Method: We combined simple effective strategies during simulation in our specially designed simulated home 'SHELTeR' in an attempt to increase students awareness and knowledge.An ageing suit was worn to illustrate the difficulties in mobility, slippers used to simulate a reduced sensation . Headphones and VINE glasses used to simulate tinnitus and different visual impairments.
A small pilot study was conducted on n=30 students 3rd year students to compare their level of understanding pre and post the session. Questionnaire were distributed prior to the session to obtain a baseline in knowledge and understanding. A further set of questionnaires were completed immediately post the session followed by the simulation debrief.

Results & Discussion

Results revealed students were unaware of their lack of understanding and knowledge prior to the session. However, post the session n=30 -100% reported deeper understanding of dementia and the impact this can have on the individuals daily activities. n=30 stated their practice and approach in clinical practice would change due to this new found in-depth knowledge and 'empathy'.

Conclusion:Incorporating simple effective strategies within SHELTeR made the simulation more immersive having a greater impact on the students understanding

Design of a consensus based scenario template for use in full-scale simulation-based education in healthcare

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

A number of tools currently exist to facilitate the creation of clinical scenarios, but some elements are often missing from current templates which can hinder the learning process. Scenario design is a key simulation-based education (SBE) element to ensure a meaningful and contextualised learning experience for participants, addressing predetermined learning objectives. The use of a template is meant to serve as a guide in scenario planning, setup, and facilitation that addresses a varied group of individuals, all with interelated needs but a varying focus of attention. Depending on who writes a scenario may influence the elements that get reported within it, allowing more or less easily reproducibility or standardisation. Variations will emerge as soon as assumptions are allowed to take place.

Methods

To offer an objective scenario guide, we used the "Nominal Group Technique" involving a panel 7 international instructors in clinical simulation in healthcare with expertise in SBE and healthcare, and a mixture of clinical, technical, and academic backgrounds. The panel members individually reviewed the literature to draw the essential elements in writing a good scenario and shared their findings to determine the key factors.

Results & Discussion

The panel developed new scenario design guidelines in the form of a template called the "SIM" (Simulation manuscript). It includes 11 elements which are:
- Scenario identification
- Summary
- Prebriefing checklist
- Targeted learners

- Learning objectives
- Level of realism
- References
- Screenplay
- Setting
- Actors' additional information
- Simulation assessment

In addition to being a permanent record of preparing and running a learning activity, scenario documentation should be considered as a crucial communication tool between the key players of most SBE activities such as the; clinical educator, simulator operator, simulation technician, and simulated or standardized patients, as it promotes the success of any simulation-based learning activity. Although simulation design standards have been published by the International Nursing Association for Clinical Simulation and Learning (INACSL), and various scenario templates are accessibles online, they are still open to misinterpretation and may not cover some aspects such as data about patient physiological changes, pictures of moulage requirements, and precise room and equipment configuration. Many elements provide important cues to scenario participants and exaggeration or lack of could misguide them. SIM remains to be tested and evaluated by other SBE stakeholders so the authors can receive constructive feedback. An electronic copy of the template can be obtained by emailing one of the co-authors.

Designing a new In Situ Train the Trainers course

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

In situ simulation allows teams to train in their own clinical environment and systems to be tested. It presents different challenges for the facilitator and the technical team. We designed a train the trainers programme specifically for in situ simulation.

Description

We already run an established “Train the Trainers in Simulation” (TTT) course at our institution. We identified a need for an in situ specific train the trainers course, to meet both educational and quality improvement demands.
Our first consideration was whether the course should be a discrete comprehensive training package, or function as a top-up to our standard TTT. There was concern that repetition of the simulation based education pedagogy would be unnecessary for the majority of the target audience (who would have done our TTT course). We settled on a refresher at the start to cover core material for novices and included the educational theory in pre-course material.
The programme includes interactive presentations and small group work in the morning; focusing on technical considerations, safety issues affecting in situ simulation and the identification and management of latent threats. The candidates then divide into two groups to each design an in situ simulation. The brief is to devise a scenario suitable for the other group. There is flexibility of learning outcomes, simulation modality and debriefing techniques.
In the afternoon the candidates run their scenarios in our emergency department. Each group is responsible for prebriefing, running their scenario and debriefing their candidates.
As an alternative to the afternoon session, we considered delivering a half day course, with the candidates setting up individual in situ sessions in their usual clinical environment, at a later date. These would then be observed by an experienced member of our faculty, who would provide feedback, in order to complete the course. We decided to keep the course as a complete one day package, as feedback suggested that the observed session may have lower uptake than a full day self-contained course.

Discussion

In designing the new in situ train the trainers course, we considered what it was that made in situ simulation different and made that the focus of our course. The sessions on technical considerations, safety issues and latent threats prepare candidates for these key differences. Running an in situ simulation as part of the course allows the candidates to apply the knowledge gained throughout the day.

Designing a Paediatric Sepsis 6 Simulation Course to improve acute care management of the critically unwell child

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

The management of severe sepsis and septic shock in children is complex and time critical and requires prompt recognition and secondly early administration of antibiotics and fluid resuscitation.
We aimed to design a training course to:
Improve the management of sepsis in children.
Reduce door-to-antibiotic and door-to-fluid times.

Description

We designed a multi disciplinary simulation course to address this need. Focusing on both raising clinical knowledge and awareness but also on how our multi disciplinary teams function during these stressful situations.
The first half of the course consists of discussions and case based workshops in blended groups while the second half consists high fidelity / observed simulated scenarios and clinical skills training (IO needle insertion / External Jugular cannulation)

Discussion

Through Multi disciplinary team training, awareness of how teams need to manage septic shock in children has been raised. This noted through post course feedback where delegates find both the mixed groups and practical simulations most beneficial. We anticipate this to be also demonstrated in a reduction of both our door-to-antibiotic and door-to-fluid times. Follow-on awareness training will be conducted as in-situ mobile simulation events to avoid degradation of knowledge

Develop and validate an assessment tool for tracheal intubation checklist or global rating scale?

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Introduction:
Tracheal intubation is considered a critical skill for all novice anaesthesiology residents at the begin of their training. Validated checklists are very useful for teaching, training and assessing technical competences and may improve the quality of the clinical work. (1) Global rating scale is mainly an assessment tool for performance evaluation and has been recommended for simulation-based assessment. (2)

Aim:
The objective of the study is to compare a checklist with global rating scale as an in-training assessment tool for tracheal intubation competency in novice anaesthesiology residents.

Methods

Material and Methods:
During 6 years (2011-2016) we organize a one week course for the novice anaesthesiology residents. The course has lectures and practice of anaesthesiology-related technical skills. Tracheal intubation was taught and trained using a local checklist with 11 items. At the end of the week, an in-training formative assessment was done using the same checklist and a global rating scale (10 points) for the tracheal intubation skill.

Results & Discussion

Results:
197 residents were assessed with both checklist and global rating scale. Statistical analysis is in progress. Informal feed-back by assessors' report easiness of use of both tools.

Conclusions:
We need to go further to understand if the results from the simulation-based assessment correlates with clinical performance

Developing Concept on Neuroresuscitation Simulation Trainings for the era of Integrated Community Care System in Japan

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Japanese Government has decide a new healthcare system termed Integrated Community Care System. Concept of the system is based on the socio-economical consideration with increased number of elder people and decreased number of population of the country. We should develop the new neuroresuscitation simulation training for community care.

Description

Our current neuroresuscitation simulation trainings (NRSTs), ISLS (Immediate Stroke Life Support), PSLS (Prehospital Stroke Life Support), ACEC (Advenced Coma Evaluation and Care), PCEC (Prehospital Coma Evaluation and Care) and PNLS (Primary Neurosurgical Life Support), was developed for each unique purpose with different medical societies. Target of current NRSTs consists of medical doctor, nurses, comedical staffs and each students.
For Integrated Community Care System (ICCS), the target should cover not only the medical staff but also community care staff including volunteers and patient family.
Therefore, minimal essential required in ICCS should be studied and included in curriculum of NRST-ICCS.

Discussion

As minimal essential requirement of NRST-ICCS, simple evaluation of consciousness disturbance level and simple assessment of neurological deficits is indispensable. Both simulation training module of consciousness level and neurological deficits has been established in prehospital NRTSs such as PSLS and PCEC. Achievement of each module could be modified due to the knowledge, cognitive and behavior ability. We are developing simple text and self-examination using e-learning and simple simulation. Early results of developing concept will be presented.

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Developing low-threshold introduction course to simulation for medical teachers and peer-tutors

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Medical students at the University of Helsinki have constantly requested more simulation-based teaching. Simulation training enables safe and ethical environment for learning. Growing number of students, limited teaching resources and yearly rotating teachers in some specialities are challenging. Our aim is to develop low-threshold introduction course to simulation for medical teachers and peer-tutors to increase hands-on training possibilities. The pilot started in November 2016.

Description

Simulation teaching introduction course consist of two half day group training sessions with flipped classroom elements e.g. pre-reading materials and patient safety videos. Course starts with hands-on technical training with patient simulators. Second part deals with developing and practising scripted simulation patient cases using both a patient simulator and standardized patients.

Six peer-tutors and 20 medical teachers from different specialities have participated the course so far. Feedback has been positive, both from the teachers and peer-tutor students. With the hands-on training, the threshold on using patient simulators is already lower. More courses will be arranged and feedback is collected constantly during the project.

Discussion

Patient simulator systems can be perceived too complex and even frightening. Therefore, we have already simplified AV-systems and provided step by step instructions. Simulators are also being operated by beginners in the same room where simulation scenario is running with limited AV-system in use.

However, hands-on training is required and low-threshold courses can engage teachers to use patient simulators in teaching. It is also important to realize that technology is not always essential for using simulation-based teaching methods. Instead, main thing is to construct positive and engaging environment with well-structured patient cases.

This introduction course also offers a good forum to practise safety communications (ISBAR), group interaction and teamwork skills and awake medical students' awareness of patent safety issues. The aim is to enhance safety culture and professional development as future medical doctors and teachers. Next step is to start peer-tutor controlled simulation exercises in April.

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Dr

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Polytrauma remains a major provider of death and lifelong disability in the population under 45 years of age. Evitable deaths represent 5 to 15% of deaths, due to human factors in 30% of the cases. Developing innovative strategies and protocols to improve patient outcomes through performance optimization requires comprehensive team performance assessment, fitted for simulation-based pre-clinical research. This study aimed at developing a team performance score in the setting of polytrauma patient admission, integrating timing, technical and non-technical competencies of the different members of a trauma team.

Methods

After building an initial draft, a Delphi review round process has been used, based on a panel of 10 experts (medical and paramedical) selected for their competencies in simulation and polytrauma. Each round offered the experts the opportunity to score each item (Likert Scale, 1 to 9) and to suggest addition, removal or modification of any item. A strong agreement was obtained if ≥70% of the panel attributed the item a mark of ≥7 and ≤ 20% a mark ≤3. The validity of content was assessed by the Content Validity Ratio (CVR) defined by Lawshe (1972) and Wilson (1992). The score was updated after each round and the process was repeated until reaching consensus (strong agreement for all of the items of the score).

Results & Discussion

In the first round, 59/64 items have obtained a strong agreement. Eleven items have been deleted, 29 modified and 16 added. In the 2nd round, 68/69 items obtained a strong agreement. The item with low agreement was redundant with another and was removed. The mean CVR was higher in the second round (0,92 +/-0,16 vs. 0,69+/-0,37 in round 2 and 1, respectively, $p<0.05$). Finally, 137 and 68 comments were made in the rounds 1 and 2, respectively. Forty percent concerned role distribution among team members and 40% medical and technical concepts. The median mark of commented items and non-commented items did not differ in round 2 ($p=0,7$). Consensus was reached after 2 rounds. We described the first team performance score regarding initial care of polytrauma patient, integrating time, technical and non-technical competencies of the different members of trauma team. This score reflects the standard-of-care to be given to a polytrauma patient, based on a consensus among 10 national experts. Validation process is under way in our local Healthcare Simulation Institute (ITSimS®, Toulouse, France).

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EFFECTS OF THE STRATEGY ADVANCED CLINICAL SIMULATION IN THE STRUCTURING OF PROFESSIONAL COMPETENCE NURSING COMMUNICATION

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Studies show that simulation laboratory training is an effective way to develop professional nursing skills. However, there is still insufficient evidence to demonstrate that the level of clinical simulation can favor the development of professional nursing communication skills. To evaluate the effects of the advanced clinical simulation strategy on the structuring of the professional competence of communication in nursing students.

Methods

Descriptive study with a view to measuring the professional competence communication through a measuring instrument. The sample consisted of 24 students of the last year of the nursing course, 21 (87.5%) female and 22.9 (± 1.3) years old. The study was conducted at the Laboratory of Simulation of Clinical Practice in Nursing and Health of the Federal University of Piauí, city of Teresina, northeast region of Brazil. Data collection took place between January and February 2016. The measurement instrument has 46 items, 18 assessment evaluation points, 12 skills and 16 professional nursing communication attitude. The responses are of the Likert five-point type, ranging from one (five). The students were evaluated in three moments: before the simulation strategy (pre-test), after a scenario execution (intrateste) and after the interrogation. Student's t-test was used, with a 95% confidence interval and a significance level of 5%.

Results & Discussion

The students presented improvement without the instrument's overall score compared to the pre-test and post-test, which as averages for student competence ranged from 163.7 (± 20.6) to 169 (± 26.6) Representing 5.3 (2.3%) points ($p < 0.05$). The "attitude" component contributed the highest value to the overall performance of the nursing communication competence, in order to increase the frequencies to maximum total scores between the pre-test (72.7%) and the post-test (75 , 7%) ($p < 0.05$).
The results indicate that there is no evidence that the clinical simulation scenario can be promising for improving confidence levels and self-esteem for effective communication. These gains can be explained to the effects provided by the debriefing, they are not qualified to exercise reflective thinking before their individual and group behaviors, providing increased self-confidence the ability to take more successful behaviors in complex situations.

EMOTIONAL BURNING SYNDROME SIGNS IDENTIFICATION DURING MEDICAL SIMULATION

Format: Accepted for Poster Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

The syndrome of emotional burnout formed gradually over a period of work. It is a consequence of psychological protection of the individual in response to stressful situations. Objective: To study the frequency of occurrence of the syndrome of emotional burnout during simulation training health professionals and students.

Methods

Research was carried out during psychological training with complete anonymity and voluntariness. The training was attended by 235 people, including 210 people (89%) were the emotional burnout syndrome diagnosis. Diagnosis was conducted using developed at our university questionnaire «Evaluation of emotional burnout syndrome». As a result of processing the responses determined by the level of syndrome. His absence levels were low, medium, high. Questionnaires conducted in three groups. The first group of students is the sixth year medical university (sixty persons). The second group of physicians of different specialties interns (one hundred people). The third group - doctors of various specialties (50 persons).

Results & Discussion

There is a lack of emotional burnout syndrome in 70% in the first group surveyed. Low levels observed in 25% of surveyed first group. The average level of 5% of surveyed first group. Lack of emotional burnout observed in the second group only 19%. The low level was 78%. The average level detected in 3% of interns. The data obtained in this group have no significant difference from that of the first group. The highest level of emotional burnout was the group of medical students of which were significant differences when comparing the first and second groups. In this group, 62% surveyed was average. 10% of respondents had a high level, 28% - low. Experience shows that improving the efficiency of health care workers is possible due to the introduction of modern training technologies. They are an effective way of professionally important qualities of a future professional. Our experience of psychological training in simulation study shows that it is an effective means of help medical workers who are at risk of emotional burnout syndrome. Questioning during the simulation training is an effective method of detection of emotional burnout syndrome and its level. The syndrome of emotional burnout often occurs in practical physicians and is associated with a variety of internal and external factors that require further detailed study.

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Evaluation of an interprofessional team training program from a surgical ward in Norway

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Despite a growing awareness of the importance of interprofessional teamwork and collaboration, many hospital wards lack effective teamwork, with negative consequences for patient safety. Team training has been identified as a key strategy for enhancing the quality of teamwork in healthcare, and is associated with improved team competencies, patient safety culture and decreased adverse events. Most of the current research on team training has exclusively focused on teamwork in the dynamic domains of healthcare such as operating rooms, intensive care, emergency medicine, or trauma and resuscitation teams, and less in the context of hospital wards.

The aim was to implement a one-day interprofessional TeamSTEPPS® training program for healthcare personnel from a surgical ward and to investigate their evaluation of the training.

Methods

The study was based on a questionnaire evaluation design. All healthcare personnel (n=45) (nurses, surgeons, and assistant nurses) from a urological/gastroenterological surgery ward, attended a one-day (6 hours) TeamSTEPPS training program, with high-fidelity simulation in combination with lectures, videos, role-plays and discussions. The training took place at the “Center of simulation and patient safety” at the university campus. After completing the training, which focused on team structure and team competences (communication, leadership, situation monitoring and mutual support), the healthcare personnel responded to a modified TeamSTEPPS Course Evaluation Questionnaire.

Results & Discussion

A total of 39 healthcare personnel (87%) completed the questionnaire (24 nurses, 10 physicians, 4 assistant nurses). The results showed high learning scores in teamwork competencies, with the highest score on the mutual support tool “two-challenge-rule” (89%). The majority of healthcare personnel (68%) scored positively according to use the team program in their daily practice. Most of the physicians (80%) and the nurses (92%) were satisfied with the simulation sessions.

The inter-professional team training was positively evaluated, with high learning scores in most of the teamwork competencies, tools and strategies. The different healthcare professions’ daily work takes place in teams, with shared resources, and where they communicate in order to coordinate care for their patients. Interprofessional team training for all healthcare personnel should be mandatory.

The study indicates positive reception of an interprofessional team-training program in a surgical ward. The findings may motivate and facilitate utilization of team training, with the use of simulation, in combination with lectures, videos, role-plays and discussion, to promote patient safety in surgical wards.

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SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

Evaluation of Non-technical skills for doctors during internship An ongoing project

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Studies have shown that structured feedback for participants during simulation enhances learning 1,2. Studies have showed that participants transfer learning from simulation to their workplace.2
We evaluate the possibility of introducing Non-technical skills evaluation for young doctors, and to detect the possibility to evaluate the transfer to the clinical setting.

Description

The courses topics were transportation (day 1) and Emergency medicine (day 2 and 3).The non-technical skills were divided in to 3 different categories – extracted from ANTS1. 1: Teamwork and leadership 2: Decision making 3: Situations awareness (scale 1-4) 1=below average, 2=average, 3=above average and 4=excellent. All participants had to be evaluated during their 3 days course. For all simulations 3 evaluation forms was filled out. One by each instructor, participant and fellow participant. Participants had feedback from the instructors at the end of each day. Furthermore evaluated at their workplace after 3 and 6 months by a senior colleague. We had several meetings with senior doctors from the clinical setting to facilitated the process
At the end of the 6 month period, all students received a questionnaire stating their experience.

Discussion

A total of 37 doctors participated, resulting in a total of 407 evaluation forms. 138 filled out by the participants, 136 by fellow participants, and 132 by instructors. There were statistical significant difference between the ratings among the participants themselves, their fellow participants and the instructors. On average the participants rating of themselves was lower than the instructors rating (tables). Fellow participants had a tendency to evaluate other participants higher (tables). Increasing over time. Participants expressed a moderate degree of satisfaction with the project (3.6, scale 1-6) They experience a high degree of connection between the scenarios in the courses and the Non-technical skills evaluation methods (85%). However they only expressed a low degree of help with them to decide their career planes (2.33, scale 1-6). We have not received any evaluation form from the clinical settings at this time. However these are being gathered and will be presented at the congress
Data indicate that it is possible to introduce ANTS as evaluation method in the simulation center. Data suggests that it was not possible to evaluate the transfer to the clinical settings. Despite this the participants had a moderate degree of satisfaction with the evaluation methods. The fact that the participants in general rates themselves lower than the instructors indicates a good learning environment.

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Fostering STEM-disciplines with high-fidelity human patient simulation.

Format: Accepted for Poster Presentation
Subject: Others

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Introduction & Aims

Recruiting and retaining underrepresented minorities in the STEM (Science, Technology, Engineering, and Mathematics) disciplines is vital to reviving local and national economies. Empowering young women from underrepresented and disadvantaged backgrounds to pursue the STEM disciplines presents a greater challenge as this population may have limited awareness of STEM-based disciplines. The Human Patient Simulation Lab within the College of Pharmacy participates in two statewide programs that foster opportunities in STEM disciplines for young women (ages 12-17) from underrepresented and economically limited backgrounds. The objectives of these programs include: 1) Introduce underrepresented minority students to the expanding practice options within pharmaceutical sciences, pharmacy, nursing and medicine. 2) Provide students with mentoring relationships with university faculty, university students and STEM-professionals.

Description

Our simulation lab developed a series of simulation-based workshops run by university faculty, staff and student volunteers. The first workshop, entitled “A Dose of Reality” was designed to introduce the field of healthcare simulation to participants as well as illustrate the pharmacologic effects of select drugs using high-fidelity human patient simulators. The second workshop, entitled “Rescue & Recovery” was more clinically applied, teaching participants to perform physical assessment skills on human patient simulators followed by teaching participants about clinical signs and symptoms of opiate overdose. Participants were then instructed in the use and administration of intranasal naltrexone and were able to “treat” an opiate overdose via the high-fidelity human patient simulator.

Discussion

With its ability to engage and educate, high-fidelity human patient simulation has rapidly emerged as a valuable teaching tool that can readily engaged the learner. Based upon this premise, we used the resources in our simulation lab to design and deliver workshops that aim to involve underrepresented and disadvantaged young women in the STEM disciplines. With consistently high participant numbers and positive student ratings, we believe offering simulation-based workshops to these students may serve as a motivating factor when considering pursuing a STEM-related discipline.

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Gains perceived with medium and high-fidelity simulation: A randomized controlled trial

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

The perceived personal gains from simulated clinical experiences are translated into the students' attitude toward the patients and the situations that they experience, and the impact of their behavior on the assessment and decision-making processes.
The aim of this study is to analyse and comparatively assess the gains perceived by nursing students, depending on their participation in medium and high-fidelity simulation (HFS) practices.

Methods

This is a randomized control trial with a post-test only design control group conducted to compare the gains perceived with medium and HFS.
A scale of perceived gains from the simulation(Baptista, et al. 2014) was applied to the 4th year students of the Bachelor's Degree in Nursing who underwent simulated practice in a medium-fidelity environment (control group) and high-fidelity environment (experimental group). Statistical analysis was performed and a significance level of $p < 0.05$ was established.
The study was approved by the Ethics Committee of the Research Unit in Health Sciences: Nursing of the school (P182-09/2013) and authorized by the President of the school. The participants were informed about the study and expressed their consent in writing.

Results & Discussion

Of the 85 nursing students who participated in the study, the majority were female (92.94%), with an average age of 21.89 (SD = 2.81 years) and ranging between 20 years and 37 years of age. The students perceive simulated practice as very important to their teaching/learning process with average gains in both groups between 75.55% (SD = 10.45) and 82.99% (SD = 9.13). A comparative analysis of both groups finds that only the recognition/decision dimension have a statistically significant difference ($U = 626.00$, $W = 1292.00$, $p < 0.05$).
Gains expressed by students who participated in simulated clinical experiences with HFS, are significantly higher than those who participated in medium fidelity simulation. In the five dimensions of the scale, students from both groups, consider that they obtained gains with simulated practice. HFS helps students to perform a better assessment of the patient, establish diagnoses by recognising signs and symptoms of gravity and they are therefore able to have structured thinking and correctly decide the care to provide.

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Hi-Fi simulation and teamwork training: what is it good for?

Format: Accepted for Poster Presentation
Subject: Debriefing

Authors

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Introduction & Aims

Three to 8% of deaths in critical care may arise because of non-technical skills weaknesses, such as inadequate team working. Training to teamwork has therefore became a major goal of quality of care improvement. Studies performed under various settings have demonstrated that high fidelity (Hi-Fi) simulation techniques have the potential to increase learners' satisfaction. However, the impact of Hi-Fi simulation on non-technical skills learning such as team working performance remains unknown. We conducted a preliminary study aiming to evaluate both learners and facilitators' satisfaction and to determine the impact of Hi-Fi simulation on knowledge or teamwork skills.

Methods

Data were collected during 6 Hi-Fi simulation sessions between 17 May and 24 June 2016 into the Simulation University Centre of Liège. Participants were residents and nurses in emergency medicine and anesthesiology. Each video-recorded Hi-Fi simulation session lasted 90 minutes (15 minutes briefing, 15 minutes critical care patient scenario and 60 minutes debriefing). Learners and instructors completed a satisfaction questionnaire, scored on a 10-point Likert scale. They also estimated the learners' perceived level of competence through a questionnaire scored on a 4-point Likert scale. These data further estimated the consistence between the perception of learners and instructors. Finally, open-ended questions informed us about the expectations (before debriefing) and the real experience and benefits of the participants (after debriefing), in view of the current recommendations in terms of resuscitation and team working.

Results & Discussion

Twelve physicians and 11 nurses participated to this study. Learners' mean satisfaction was 6 ± 1.68 for the simulated critical care, and 7.7 ± 1.84 for the debriefing. The instructors' mean satisfaction was 5.9 ± 3.01 for the simulated critical care, and 8 ± 1.02 for the debriefing. Before debriefing, competences perceived by the learners concerning teamwork and current resuscitation recommendations were consistent with the perception of the instructors for one-third of them. After the debriefing, such perception became consistent for half of them (Fig.1).
After the debriefing, 50% of the respondents (n=6) matched their technical learning objectives but 89% (n=18) reached their non-technical objectives. From the instructor's point of view, learners actually did reach the technical skills objective half of the case and the non-technical skill objective for 83% of them.
Hi-Fi simulation in healthcare appears to have the potential not only to increase the competences perceived by the learners concerning teamwork and current resuscitation recommendations, but also the consistency between these

learners' perception and the instructors' ratings.

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High fidelity laparoscopic simulation training: long term basic skills retention and transfer to procedural skills

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Simulation in laparoscopic training has gained wide acceptance, but long term retention after basic skills training has seldom be explored, and transfer to more complex surgical interventions remains controversial. The aim of the present study was to assess (i) skills retention at more than six months after initial training, and (ii) skills transfer to a simulated surgical procedure.

Methods

All patients gave their informed consent before the beginning of this experiment, in accordance with institutional review board requirements. Nine five year medical students had a two sessions training on the "Simbionix LAP Mentor™'s" basic skills. They completed a 4-tasks workshop six months thereafter, as well as a cholecystectomy module. For the later, their results were compared to the ones of another group of 9 participants that had never trained on laparoscopic simulation. Evaluation was assessed by the Objective Structured Assessment of Technical Skills (OSATS) global rating scale and by "LAP Mentor™'s" metrics.

Results & Discussion

For basic skills training, median OSATS score improved from 17 (10-21) during the first session to 25 (2-27) in the second one (p=0.009), and remained at 24 (19-26) in the third session 6 months later. These results were concordant with metrics such as total time and path length of instruments, which remained stable between the second and the third sessions, and were significantly improved as compared to the first one. Concerning the completion of the cholecystectomy, median OSATS scores were quite comparable between trained and novice participants (21 vs 23), and "LAP Mentor™'s" metrics even showed a tendency toward better performance for novices. Hence, laparoscopic high fidelity simulation seems efficient for long term retention even after a short training, but has not displayed efficiency on skills transfer to more complex surgical procedures.

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How to effectively link pre-clinical and clinical skills in simulation center?

Format: Accepted for Poster Presentation
Subject: Curriculum Development

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Introduction & Aims

One of the main problems in a course of medical curriculum is not enough opportunity to point out the necessity of connection between pre-clinical and clinical skills. Therefore, one of the additional benefits of undergraduate training based on simulation center, may be the ability to present usefulness of pre-clinical knowledge during the course of scenarios.
The aim of the new educational approach was to verify whether short pharmacological introduction to medical simulation influences students' self-confidence, patient management and educational outcomes.

Description

The participants of the lessons were undergraduate medical students from 8th semesters who participated in the obligatory medical simulation course in the Simulation Center. The length of the course was 20 hours divided into 5 consecutive days and the scenarios were based on different acute cases from internal medicine, surgery and obstetrics and gynecology. During first day of the course students were introduced with brief revision of pharmacology based on the drugs accessibility at emergency service. Students actively participated in this part of the course giving the examples of drugs used for particular indications, stressing out briefly their main contraindications, side effects, way of administration and doses.

Discussion

The efficacy of the curriculum was assessed in a focus group consisted of 11 course participants and 2 teachers. The awareness of being supplied with special tool useful during management with patient was outlined in the discussion. Another benefit from this approach was the increase in students' self-confidence, as well as self-education motivation. The teachers observed an improvement in scenario fluency, the facilitation of students' decision-making and patient management – it can have a significant effect on broader perspective during debriefing. This study shows that simulation center-based courses allow an early and effective implementation of theoretical knowledge into clinical classes.

HOW WE CREATE DCD-ECMO PROCEDURES

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

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Introduction & Aims

We present the procedural preparation of using high-fidelity medical simulation for Poland's first unique regional program "ECMO for Greater Poland", that takes full advantage of the perfusion therapy (Extracorporeal Membrane Oxygenation - ECMO) covering a total population of 3.5 million inhabitants of the Greater Poland region (Wielkopolska). Maintaining the viability of organs from non-heart beating donors (NHBD) for transplantation is a complicated procedure from a time perspective in the absence of appropriate organizational capabilities that make such transplantation cases difficult and not yet widespread in Poland, yet demonstrated as achievable in other countries.

Description

We present the procedural preparation for Poland's first case of organ (kidney) transplantation from a donors after circulatory death (DCD) in which perfusion was supported by Extracorporeal Membrane Oxygenation (ECMO). Because this organizational model is complex and expensive, we used advanced high-fidelity medical simulation to prepare for the real-life implementation. The system uses silicone tubing forming a loop to simulate blood vessels, filled with pressurized red-dyed liquid, embedded into the groin of a mannequin and covered with artificial skin. The real time scenario included all crucial steps: prehospital identification, cardiopulmonary resuscitation (CPR), Advanced Life Support (ALS); perfusion therapy (CPR-ECMO or DCD-ECMO) inclusion and exclusion criteria matching, suitability for mechanical chest compression; DCD confirmation and donor authorization.

Discussion

Warm ischemia time, i.e. time from the first contact of mannequin to the cannulation of artificial vessels and starting in-situ organ perfusion on ECMO, including CPR, did not exceed two hours. The success of our first simulated DCD-ECMO procedure in Poland is reassuring. Soon after this simulation, Maastricht category II DCD procedures were performed involving real patients and resulting in two double successful kidney transplantations. During debriefing, it was found that the previous simulation-based training allowed to build a successful procedural chain, to eliminate errors at the stage of identification, notification, transportation, donor qualifications, and ECMO organs perfusion. The training program resulted in a team appropriately qualified to successfully undertake this complex procedure.

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HOW WE CREATE HYPOTHERMIA-ECMO PROCEDURE

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

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Introduction & Aims

We present the procedural preparation of using high-fidelity medical simulation for Poland's first unique regional program "ECMO for Greater Poland", that takes full advantage of the perfusion therapy (Extracorporeal Membrane Oxygenation - ECMO) covering a total population of 3.5 million inhabitants of the Greater Poland region (Wielkopolska). Patients in hypothermia who suffer cardiac arrest do not respond to standard cardiopulmonary resuscitation. There is growing interest in utilizing veno-arterial extracorporeal membrane oxygenation assisted cardiopulmonary resuscitation (E-CPR) in the management of refractory cardiac arrest and hypothermia treatment.

Description

We present the procedural preparation for first case in region of patients undergoing life-threatening deep accidental hypothermia. In algorithm cardiopulmonary resuscitation and heating is supported by Extracorporeal Membrane Oxygenation (ECMO). Because this organizational model is complex and expensive, we used advanced high-fidelity medical simulation to prepare for the real-life implementation. The system uses silicone tubing forming a loop to simulate blood vessels, filled with pressurized red-dyed liquid, embedded into the groin and neck of a mannequin and covered with artificial skin. The real time scenario included all crucial steps: prehospital identification, cardiopulmonary resuscitation (CPR), Advanced Life Support (ALS); suitability for mechanical chest compression; perfusion therapy (CPR-ECMO); transportation.

Discussion

The CPR total time i.e. time from the first contact of mannequin to the cannulation of artificial vessels and starting in-situ organ perfusion on ECMO, did not exceed one hour. The success of our first simulated HYPOTHERMIA-ECMO procedure in Greater Poland region is reassuring. Soon after this simulation, we performed two successful hypothermia category IV patients (Swiss Scale) therapy. During debriefing, it was found that the previous simulation-based training allowed to build a successful procedural chain, to eliminate errors at the stage of identification, notification, transportation, and ECMO perfusion. The training program resulted in a team appropriately qualified to successfully undertake this complex procedure.

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HOW WE CREATE INTOXICATION-ECMO PROCEDURE

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

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Introduction & Aims

We present the procedural preparation of using high-fidelity medical simulation for Poland's first unique regional program "ECMO for Greater Poland", that takes full advantage of the perfusion therapy (Extracorporeal Membrane Oxygenation - ECMO) covering a total population of 3.5 million inhabitants of the Greater Poland region (Wielkopolska). Organ support that can be applied with ECMO makes it especially useful in patients with severe poisoning as the clinical impact of the intoxication is often temporary. Fortunately ECMO can be used as a 'bridge to recovery'.

Description

We present the procedural preparation for intoxication with cardiac arrest treatment using ECMO. Because this organizational model is complex and expensive, therefore we propose to use the advanced high-fidelity medical simulation test to prepare for real-life experiences. In algorythm cardiopulmonary resuscitation is supported by mechanical chest compression and Extracorporeal Membrane Oxygenation (ECMO). The system uses silicone tubing forming a loop to simulate blood vessels, filled with pressurized red-dyed liquid, embedded into the groin and neck of a mannequin and covered with artificial skin. The real time scenario included all crucial steps: prehospital identification (Department of Toxicology), poisoning treatment, CPR ALS; mechanical chest compression; veno-arterial cannulation of the mannequin’s artificial vessels and implementation of ECMO therapy and transport to another hospital (Department of Cardiac Surgery).

Discussion

The CPR total time i.e. time from the first contact of mannequin to the cannulation of artificial vessels and starting in-situ organ perfusion on ECMO, did not exceed forty minutes – including 20 minutes of ECMO team transport. The program will help to create algorithms and better coordination of Medical Rescue System to build the “ECMO rescue chain”. The team is totally prepared for this procedure, fortunately we did not have to test that in real life yet. During debriefing, it was found that the previous simulation-based training allowed to build a successful procedural chain, to eliminate errors at the stage of identification, notification, transportation, and ECMO perfusion.

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Human Error in Practical Procedures.

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Doctors are required to achieve competency in a set of skills. Traditionally these have been 'learnt' on the job, watching and learning from colleagues. With the introduction of the European Working Time Directive and shift patterns, doctors in training in the UK have reduced patient exposure and supervision. With a greater emphasis now being placed on patient safety, the 'see one, do one, teach one' method is no longer an acceptable training method. The resulting lack of knowledge may then expose patients to harm. Practical skill competence is thus important but so too is the knowledge of the impact that the Non-Technical Skills (NTS) has on patient safety. These skills are recognised factors contributing to mistakes (Rodriguez-Paz et al, 2009).

To our knowledge this is the first programme of its kind in the UK combining practical skills teaching with NTS teaching. The aim is to provide an environment in which skill based competencies are integrated with NTS knowledge to allow skills to be performed without patient safety being affected.

Methods

The course accommodates doctors at any stage of their training. The morning consists of four practical procedures– chest drain, lumbar puncture, ultrasound-guided central line and nasograstric tube insertion, taught by an expert instructor providing real-time feedback to trainees. The skills chosen are based on Serious Untoward Incidences(SUI's) at our trust alongside consideration of common emergency procedures. Consent processes, guidelines and identity checking are explored prior to practising each procedure. A maximum of 12 trainees per course ensures adequate time for hands-on practise.

The afternoon is spent understanding and exploring the impact of human factors on performing procedures using procedural based SUI's.

Results & Discussion

Results:

Data collection involves feedback from participants, asking specifically about whether the skills stations improved their knowledge and whether the afternoon session added to learning. Initial results show a self- related improved confidence in knowledge around performing practical procedures with a greater understanding of the impact of human factors. Comments included 'really useful', 'concepts that I did not know about' and 'very interesting discussion about human factors'. Further results will be presented at conference.

Discussion:

Combining practical skills training and NTS learning improves trainee confidence in performing procedures and increases understanding about the human factors that contribute to procedural error and patient harm. This has the potential to improve patient safety and reduce error related to performing skill. Further work is needed to conduct a level 3 Kirkpatrick evaluation.

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Impact of a feedback device on chest compressions quality over time: a randomized crossover study on manikin

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Cardiac arrest survival is known to be directly linked to chest compressions (CC) quality and minimal interruptions. Well performed CPR represents an important effort rapidly leading to fatigue. CC quality then starts to decline. Feedback devices are used to optimize CC quality and performance. They also delay fatigue's effect on CC quality. We tested the hypothesis that a feedback device allows extending CC switch-over duration while maintaining the CC quality through time. Extended switch time would reduce interruptions in CC.

Methods

After ethics committee approval, we conducted a prospective, randomized, crossover study on manikin (ResuciAnne®, Laedral). The objective was to assess the continuous CC quality guided by a feedback device (CPRmeter®, Laerdal). After randomization, 67 professional emergency rescuers performed continuous CC with (group G) and without (group B) the feedback device (at least 4hrs between the two performances). After 2 minutes of a CC performance, they were allowed to stop as soon as they felt the effects of fatigue. The primary outcome was the efficient compressions rate defined as the simultaneous association of targeted frequency, depth and release. Those criterions were also independently analyzed as well as the subjective fatigue at CC stop (Borg scale). Results were analyzed in blocks of 20 seconds of data.

Results & Discussion

After written informed consent, 67 volunteers (sex ratio 0.8; median age 39+/-10 years) were randomized. Results regarding primary and secondary outcomes are summarized in the Table. There was no difference in the stop times between group G and group B. Except for the first 20 seconds, efficient compression rate was significantly better in group G than in group B ($p<0.001$) and still above 68%. Except for the first 20 seconds, adequate frequency was

significantly better in group G than in group B ($p<0.001$) and still above 80%.The dispersion around the mean was lower for the average frequency in group G than in group B. Except for the first 40 seconds, mean depth was significantly better in group G than in group B($p<0.002$) and still deeper than 53 mm.
Feedback device guidance allows good, steady and efficient compressions rate above the 2 minutes switch-overs currently advocated in cardiac arrest management recommendations. Based on those results, using a feedback device, extended switch-over duration to 3 to 4 minutes should reduce harmful CC interruption and improved CPR quality.

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Impact of collection bag for bleeding estimation after spontaneous vaginal delivery

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Post partum haemorrhage is the first avoidable cause of maternal death in the world. The collection bag allows bleeding mesurement in order to diagnose post partum haemorrhage. The aim of the study was to assess the clarity of the bleeding quantification after spontaneous vaginal delivery.

Description

Quantitative, descriptive, forward survey conducted between September 29 and october 2014 and then, between November 10 and 23 2014, in a Level III university hospital. The targeted population was : midewives,, ob-gyn practitioners, ob-gyn residents, student midwives and medical students. Participants had to estimate 9 blood volume in 3 different types of bag. Then they had to answer a questionnary to evaluate their performance and the differents bags.

Discussion

The study included 196 participants. With the second bag, 96,9% correctly estimated volume lower than 1900mL. The third bag had the best estimation for the bleeding higher than 1900 mL, more or less 20 % (84,7%correctly estimate on average). The rate decrease to 71,1 % when the volume is less than 1900 mL. The most appreciate bag by the practitioners was the first one with an evaluation about 8,7/10. However, the first bag underestimate, on average, about 7,43% the bleeding .
Conclusion :
According to the collection bag (1,2,3), the bleeding estimation was different. With the most appreciate bag, there is an underestimation of the bleeding. When the volume is higher than 1900 mL , the bleeding is always underestimated. It will be usefull to put simulation session to improve the estimation .

Impact of learners role (active participant-observer or observer only) on learning outcomes during high-fidelity simulation sessions in anaesthesia: single centre, prospective and randomised study.

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

High-fidelity simulation has recently been implemented in France in the Anaesthesia training curriculum. However, due to an increasing imbalance between the growing number of students and the human resources available, all residents cannot play a role during scenarios. The study objective was to assess the impact of learner's role (active participant -observer or observer only) on learning outcomes immediately after high-fidelity simulation and the 3-month retention of knowledge.

Methods

This prospective randomised study was conducted at LabForSIMS (Paris Sud University) simulation centre. All third to fourth-year anaesthesia residents of Paris were invited to attend a one-day training session which included 4 different scenarios using a high-fidelity mannequin. During each scenario, 3 residents played an active role while others observed the scenario in a separate room using direct video-retransmission. All residents participated to the common debriefing which was delivered after each scenario . After obtaining consent to study participation, the residents were randomised between active participant-observer group (active participant during one scenario and observer of the 3 others) (AP-O group) or observer group (observer during all the 4 scenarios) (O group). A similar questionnaire was recorded immediately after the session and at 3 months and included self-reported evaluation of satisfaction, medical knowledge (noted 0-16), non-technical skills and perceived transfer of learning using 1 to 10 Likert scales (Kirkpatrick level 1, 2 and 3 respectively). Data are expressed as medians [interquartile range] and analysed using a Wilcoxon test. A p value < 0.05 was considered statistically significant.

Results & Discussion

107 anaesthesia residents were included and 104 questionnaires analysed. Satisfaction regarding the training session was high in both groups but higher in the AP-O group (9 (8-9) vs 8 (8-9) /10, p = 0.019). A significant increase in medical knowledge scores was recorded in both groups immediately after simulation with a higher score in the P-O group (median score: before: 6 (5-8) vs 7 (5-8) /16, p=0.382, and after: 10 (8-11) vs 9 (7-10) / 16, in AP-O and O groups respectively, p=0.001, Fig 1). High scores for non-technical skills and learning transfer were observed after the session, without any difference between the two groups (p > 0.05). Retention of knowledge was difficult to interpret because of limited participation (48%). This study suggests an immediate improvement of learning outcomes for both roles after immersive simulation but some learning outcomes may be better for residents engaged as players in scenarios.

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Implementing simulation as pedagogic method in a nurse education program in Tanzania; an experience

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Simulation-based education is described as a key component to nurse students' learning and preparation for practice and professional life. Research points how students' knowledge and confidence increase from simulation-based education and that students find simulation more satisfactory as a pedagogic method compared to other teaching strategies.
While simulation-based education has increased in extent and scope in many education programs in Europe and in the US, literature shows a lack of implementation and research linked to simulation in low- and middle-income countries. To our knowledge, no studies have highlighted simulation-based education in nurse education programs in sub-Saharan Africa.
The aim of this pilot project was to implement simulation-based education in a nurse education program in a low-income context in Tanzania. The implementation project was a co-operation between nurse teachers at a local nursing school in northern, central parts of Tanzania and nurse teachers from a Norwegian nursing school.

Description

The simulation sessions were conducted with 27 third year nurse students. Three scenario sessions with 8-9 students in each session were carried out. Two different scenarios were selected; (1) a patient case concerning postoperative care and (2) a patient case concerning sepsis. The learning outcomes were that the students should conduct a primary survey of the patient, implement relevant nursing interventions and work as a team. After the simulation session, the students were asked to complete an evaluation form describing what they had learned.

Discussion

Students' comments in the evaluation forms were overwhelming positive. They reported that they had (1) learned about the importance of teamwork and communication, (2) the principles of ABCDE, (3) to take full history of the patients before contacting the doctor and (4) the important role they had as a nurse in assessing the patient. Other learning points described was the significance of hand hygiene, enough available equipment, to document nursing care and to take care of relatives in an acute situation. In a setting where nurses are referred to as being task-oriented it was interesting to notice that the nurse students emphasized communication and working as a team as particularly important areas of learning through the simulation-based learning.
The experiences in this pilot project may provide insights for other nurse education programs in a low-income context, though future research projects are necessary.

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Incorporating the Patients Experience of Trauma Care in Medical Simulation.

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Simulation has been well evidenced for the development of skills and knowledge, however it has never been used to explore the patient's perspective of care. This has particular significance in trauma care given the vulnerability of patients who are spinal immobilised with restricted visual fields. This study set to assess the use of wearable technologies in medical stimulation to assess the patient's experience of trauma care by observing previously unclassified doctor-patient behavioural markers such as eye contact.

Description

Methods: This proof of concept study was integrated into an emergency medicine module for third and fourth year medical students. Six high fidelity trauma simulations were conducted involving simulated spinal immobilisation patients. Simulations were recorded using point of view glasses and ceiling mounted cameras. The location of verbal communication events were triangulated and assessed for doctor-patient eye contact.

Results: 110 communication events and 29 eye contact events were observed in five predefined locations. There was a significant difference in the number verbal communication events and eye contact events below the waist, above the waist and above the shoulders ($p=0.0312$, 0.0156 and 0.0312 respectively).

Discussion

The conclusions drawn from the study are limited by the low number of commutation events observed. However we demonstrate that the use of point of view glasses can be used to identify subtle non-verbal communication such as eye contact. This offers the potential to improve feedback for learners by modifying current communication tools to include non-verbal communication with the aim of improving the patient's experience of care; especially in vulnerable patient groups.

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Interdisciplinary simulation based team training during the World Economic Forum (WEF) 2017 in Davos

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

The World Economic Forum (WEF) annual meeting takes place in January in Davos, a small town in the Swiss Alps. Due to the increased number of visitors and staff, additional civil and military forces are mobilized to provide medical care during the WEF and to ensure support in case of a mass casualty situation.
Being aware that civil and military medical forces have different approaches to handle mass casualties, we aimed for an interdisciplinary simulation based team training involving all of the medical staff on duty during the event.
The main challenge was to offer the training in addition to the regular day-to-day duties of the health professionals during the WEF.

Description

The training took place on a temporary military medical base. The entire week consisted of simulating one scenario twice per day in the context of a mass casualty situation, which was followed by a 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.
We defined OSCE-criteria for the scenario, measured the time necessary to take adequate care for the patient and every participant answered a questionnaire to evaluate the subjective value of the trainings. Some of the participants had to accomplish the same scenario multiple times. Those individuals answered a different questionnaire to assess the benefit of repeating the same scenario as part of another team.

Discussion

We have been able to prove that it is possible to operate a simulation based team training during an ongoing major event like the WEF without compromising the regular day-to-day business and keeping our health care teams and medical bases in full operation.
We will present the results of our evaluation of the training, pointing out that participants can improve their skills in attending a second or third training.
We will demonstrate how team training can reveal multiple possibilities to optimize logistic and medical procedures and therefore reach an understanding of military and civil approaches. Many of those optimizations were already introduced during the WEF 2017, others will be kept in mind for upcoming events.

Furthermore, we will describe the problems we had by running a simulation in three different areas on the medical base within one specific scenario and how we solved them.

Is medical simulation needed in teaching of pediatrics ?

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Medical simulation involves teaching in a simulated clinical setting. However not many studies involving medical simulation at undergraduate have been reported. In the survey, the students were asked about the opinion about the medical simulation used in their education. The survey concerned the use of simulation techniques in pediatrics.

Methods

The survey was attended by 121 students. Also the residents of Pediatrics from University Children's Hospital in Lublin were involved. The survey was addressed to all residents of pediatrics, regardless the residency level. It concerned the medical simulation performed for educational purposes in the field of pediatrics.

Results & Discussion

In the vast majority of students and residents do not have contact with use of medical simulation teaching pediatrics (75 %). Surveys show that currently experience in the education of students and residents using medical simulation techniques is very limited. Students admit that medical simulation techniques are very important and necessary part of their education. In their opinion conducting such exercises will acquire the knowledge and skills how to behave in real conditions. The repetition of certain procedures, for example intubation, will increase their confidence in normal conditions. For many young doctors the child as a patient is a difficult situation, inducing fear and concerns about the rightness of their decisions. With the help that comes from learning through medical simulation, allowing acquire the necessary skills and knowledge, which in the future will allow to take action. As it turns out not only the young doctors are exposed to the stress associated with the treatment of young patients. Participants declared their willingness to participate in simulation exercises in order to eliminate this problem .In the opinion of both: students and residents, this method of teaching pediatrics is very valuable and brings the necessary experience, particularly in the sudden life-threatening states. There is no doubt that questionnaire conducted among our students and residents of pediatrics, designed to determine their experience with medical simulation, shows that there is a demand for this type of exercise.

La Simulation: Un outil innovant pour modifier les representations des futurs soignants sur la sante mentale et mieux apprehender le stage en psychiatrie chez les etudiants paramedicaux.

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Les étudiants infirmiers et les élèves aides-soignants ont une représentation très négative des patients présentant des pathologies psychiatriques, ce qui les amène à avoir très souvent peur d'effectuer un stage en service de psychiatrie.

Partant de ce constat, nous avons cherché à permettre à ce public d'apprenants de travailler sur leurs représentations sur la psychiatrie, ainsi que de mener des actions pédagogiques concrètes leur permettant de mieux appréhender leur stage en psychiatrie et de modifier leur représentation de la santé mentale.

OBJECTIFS
■Dédramatiser le stage en psychiatrie pour les étudiants paramédicaux grâce à l'utilisation de la simulation

Description

Il nous a paru particulièrement pertinent d'utiliser l'outil de la simulation clinique haute-fidélité dans l'objectif de permettre aux apprenants de se confronter à des situations cliniques qu'ils pourraient vivre ensuite lors de leur stage en psychiatrie.

Dans cette optique, les apprenants ont été confrontés à des situations de simulation cliniques haute-fidélité, utilisant des comédiens comme patients simulés.
L'objectif de ces séquences étant de se confronter à des situations de soin qu'ils auraient à vivre par la suite en stage mais en ayant la possibilité de se « tester » dans une situation où les « erreurs » de prise en charge pourraient être retravaillés sans conséquence négative ni pour le patient, ni pour l'apprenant.

Les différentes séquences menées permettaient en particulier :
- de mettre en situation pour permettre aux apprenants de se faire confiance dans leur capacité de prise en charge des patients en psychiatrie.
- d'impliquer l'apprenant émotionnellement dans la confrontation avec une patiente très réaliste (une patiente simulé joué par une actrice) ;
- de générer un stress suffisant pour que l'apprenant s'implique ;
Trois points très générateurs d'apprentissage.

Nous avons réalisé durant l'année 2016, plus de 14 séquences cliniques haute-fidélité de 3h30 avec utilisation de l'outil vidéo dans le débriefing. Chaque séquence comprenant deux scénarii.

Discussion

Une évaluation a été réalisé sur l'impact de cette simulation sur leur pratique, lors du stage qui a suivi cette séquence de simulation. Cette évaluation a permis de démontrer que la simulation a permis une modification de leur pratique en stage chez l'immense majorité des étudiants (94%).

Perspectives :
- Nous pensons que cette approche pédagogique devrait être généralisé à l'ensemble des futurs professionnels de santé ayant un rôle dans la prise en charge des patients dans les différents services de santé mentale, en particulier les étudiants en médecine.

Lets Work Together To Improve Patient Safety

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

South-East Regional Health Authority Norway HSØ RHF consists of seven hospital areas (HA) providing secondary healthcare in Norway; each HA has a catchments area of 300-500.000 inhabitants.
The use of Simulation-based medical education (SBME) varied significantly within the region. Based on the competence of the SBME unit at SimOslo, Oslo University Hospital (OUS), a plan for coordinated reinforcement of the SBME competence in our region was established and implemented.
Objectives:
Improve quality and patient safety in healthcare in the South-East Regional Health Authority Norway
Establishment of standardized competence and activities in the region organized by SBME.

Description

Strategy for change:
*Mapping the SBME activity within the region and making a plan for establishing SBME competence to increase the activity and competence in all the hospital areas.

*Arranging Train- the-Trainer Course in collaboration with HSØ RHF, at SimOslo (OUS)and in the region.

*SBME included Menthal Health Care as a priority.

*Primary Care has been included later on.

*Establishing medical simulation network

*Offering three educational programs requiring more advanced SBME competence and equipments by SBME unit at SimOslo, OUS.

Discussion

Since 2013 totally 400 participants have been educated as ”Facilitators in Medical Simulation”, including both Medical and Mental Health Care.

A medical simulation-network with participants from all HA has been established.

Three Advanced Educational Programs have been offered by SimOslo in collaboration with HSØ RHF:

*SBME related to Endoscopy for colorectal cancer
*SBME related to Laparoscopy for colorectal cancer
*SBME related to Handling of violent patients

All activities are evaluated with a program monitoring the development of various practical- and communication skills

All facilitators i the region have later on been offered participation in a course with "Difficult Debriefing" as a main theme.

Conclusion:
SBME is considered to be a valuable tool for educating health care personnel to improve quality and patient-safety. Due to our experience there is a need to establish SBME competence before the staff is able to utilize the potential of advanced SBME equipment. Four years after the network was established an increase in SBME activity throughout the region has been observed. We strongly believe in establishing competence through a structured network lead by a central SMBE unit. Due to our experience it has been important to include Mental Health Care and Primary Care in this program.

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LOW-COST MANNEQUIN MODEL FOR THORACOSCOPY PRACTICAL TRAINING

Format: Accepted for Poster Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

Today simulation mannequins are used in world practice for training of specialists in various areas. This ensures a high safety in training, both the patient and the physician. High fidelity mannequins are very expensive and low fidelity list is limited.
Objective: The development of more affordable and quality mannequin for practicing skills in the thoracoscopy is quite relevant today.

Description

The basis of the dummy was made of plastic. In addition, wear strips were made of 2 components: a grid and silicone. The main feature was a dummy rib arc and the neurovascular bundle to simulate the possible complications due to incorrect entry of the cavity. The dummy opening is provided to set various training modules, models and organs (lungs, bronchi, vessels), as well as to set a fixed camera. Thus, it can simulate the preparatory stage of entry into the thoracic cavity, as well as out of the chest cavity, suturing or clipping holes.

Discussion

At the Department of Simulation Medicine and Educational-Innovative Center for the Physicians Practical Training ONMedU the dummy was tested by 30 experienced surgeons. At stage 1 primary objective assessment of doctors' theoretical knowledge was performed. On stage 2 dummy testing was conducted. On the 3rd stage a survey was offered on the subjective assessment of their theoretical knowledge and practical skills after training and testing of the manikin. On the 4th stage was carried out an objective assessment of entering cavity stage and their theoretical knowledge. Practical skills final amount showed that 13 people got 5 points, 7 - 4 points, 10 people - 3 points. Even theoretical knowledge increased by 20 of them got 5 points, 6 - 4 points, 4 - 3 points.
The work on the dummy enables us to understand that the work carried out was highly evaluated by physicians, and the mannequin is cheap and affordable, also requires further necessary testing. The advantages of this simulator: accessibility, clear visualization, the ability to perform any training tasks for thoracoscopy.

Lumbar puncture simulation training improves students performance for patients procedure.

Format: Accepted for Poster Presentation
Subject: Faculty Development

Authors

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Introduction & Aims

Since past decades, simulation has firmly established itself as an essential learning method for health professionals. Procedures and specific cares can be repeated on task mannequins as many times as necessary, safely and in faithful conditions. Lumbar puncture (LP) is often perceived by students as a difficult and potentially hazardous procedure. Does simulation training impact medical students' performance for implementing this procedure?

Methods

In this prospective cohort study, 179 third to sixth year medical students were randomized into two groups ; 106 of them were enrolled . The T group (“Theory”; n= 41) received a theoretical lesson about LP. The S group (“Simulation”; n=65) received the same lesson associated with a training on task mannequins. Then, all students of these two groups were asked on their experience and their fears. Afterwards, for six months, students were asked to assess themselves after each LP they realized in hospital units (success, fluency, installation, communication). Statistics were performed using Fisher test, Mann Whitney test and logistic regression.

Results & Discussion

83% of students never practiced LP before the study and 87% indicated an apprehension of this procedure, measured at 5.4/10 with visual analog scale. We received 35 post LP surveys. The success of the LP on patients was significantly higher in the S group (OR=13.7 ; p=0.025). Otherwise, students of S group were more comfortable with real LP procedure. Our study attests that simulation significantly improves student's performance for LP.

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SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

Medical Simulation in Gross Examination.

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

The importance given in recent years to the acquisition of practical skills in university training programs is mainly due to the Bologna Process (1999) and to the implementation of the Objective Structured Clinical Examination (OSCE) as evaluative methods. This new educational framework implies self-evaluation and a renewal of the process of training teachers. For this purpose, a practical simulation test for the gross examination of pathological surgical samples was carried out in the academic calendar year of 2016-17.

Description

Silicone simulators of different shapes, sizes and color combinations were used. The students conducted the gross examination study in different clinical contexts using the simulators in a guided approach, including: clinical correlation with the application form, description of the surgical sample, including weight and measurement, use of colored dyes to evaluate surgical margins, sectioning of the sample and its inclusion in cassettes. Finally, for the final diagnosis of the cases and for the understanding of macro-microscopic correlation, digitized histological preparations (iScan Coreo, Ventana, routine mode, 40x) were used. The simulation was developed with third year medical students from the University of Murcia, who were given a questionnaire for its evaluation.
A total of 42 students (26 women and 16 men) participated in the simulation, guided at all times by the facilitator or teacher. The results of the questionnaire showed an average score of 4.26 on a scale of 5 in the following items: understanding tumor surgery (3.85), understanding gross examination management (4.23), assessing surgical margins (4.57), microscopic visualization and diagnosis (4.52) and prognostic significance (4.12).

Discussion

- Gross examination simulation can serve as a good learning system, in support of traditional methods, in which the students have a more passive role.
- The implementation of these interactive teaching methodologies is well accepted by students.
- The experience presented in this study is adapted to the new requirements in medical training, with the acquisition of clinical skills and competencies, while at the same time transmitting a more realistic idea to the student of the work carried out by the physician specialized in Pathology.

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PROMOTING SIMULATION IN MEDICAL EDUCATION
SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

Medical Simulation in Italy: preliminary results of a nationwide survey

Format: Accepted for Poster Presentation
Subject: Center Administration and Program Evaluation

Authors

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Introduction & Aims

The purpose of the survey was to assess the current state of simulation in medical education in Italy. Medical Simulation is generally perceived as a newly introduced tool in medical education in Italy, no data however are available to date, about its real use and distribution nationwide. A survey monkey questionnaire was created and distributed by directly emailing known simulation centers in Italy. 22 medical simulation centers participated in this survey.

Description

Of the centers 77% are public and 23% are privately owned. Of the public centers 41% are run by medical schools while 59% by teaching hospitals. 89% of the centers lived on a yearly budget of less than 250.000 euro, only one center with a budget between 250.000-500.000 euro and one center with a budget greater than 1.000.000 euro. The average number of course editions delivered in the last year (2016) was between 10 and 60 for 60% of the respondents, less than 10 for 20% of the centers, between 50 and 100 for 15% of the centers and >100 only for one of the centers. 50% of the centers answered that in the last year they trained 250 participants or less, 32% trained between 250 and 999 students, 10% between 1000 and 2500 and 5% more than 2500 trainees.
Goals declared for the simulation were: education and training for 100% for the participating centers, evaluation and certification for 55% of the respondents and simulation research for 40%. Topics delivered at the centers: emergency medicine simulation is offered in 95% of the centers followed by anesthesia and paediatrics simulation offered in 70% of the centers, cardiology simulation 60%, obstetrics simulation 50%, surgical simulation 26%, disaster medicine 21%. Only 4 centers regularly use standardized patients. Regarding the faculty 100% of centers employ specialist medical doctors as simulation instructors, 70% also employ nurses and only 50% employ resident doctors. 20% include emergency medical technicians in their faculty. 80% of the centers declared that their instructor team followed a formal training program before being appointed simulation instructor.

Discussion

Overall more than 50% of the centers trained a very small number of trainees over a year (<250), it is not clear yet if this is due to limited financing (approx 90% of centers living on a yearly budget <250.000 euro) or from limited human resources. It appears clear however that at present public simulation centers are highly under-financed.

Medical Simulation in Psychiatric Healthcare

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Mental Health units include a wide range of patient situations and challenges. From the many community units to acute and forensic units. Some personal work alone, meeting the patients in their homes, some work in teams in inpatient units.
Implementing SIM in psychiatry has been a Challenge, but now all the main hospitals i South-Eastern Norway Regional Health authority, and a lot of communities has established a model for their Challenges. And we meet each other thru the common structure.

Description

Different models has been made, according to the different logistic possibilities. But the prosess with debriefing structure and the focus on the six key elements of debriefing (Dash)has established a culture and network better than ever.
The establishment of logistic solutions and implementing help from a network can compensate for the difficulties Our New fasilitators(t-t-t) meet "back home"

Discussion

The implementing seems to be the most important Challenge. Different units need time, place and coordinating. Fasilitators need help from other fasilitators. Leadership anchored, and the users involvement seems very omportant. The users have to pinpoint as exactly as possible what they need to train for. Pinpoint Your Challenges!

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Modification of KIDUKI Trainig System for Patient Safety in Integrated Community Care System in Japan

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

KIDUKI Training System has been developed within Japan for improving patient safety. KIDUKI is a symbolic word covering several synonyms such as awareness, notification and identification.
For reduction the social medical cost, Japanese government started Integrated Community Care System which conducts reduction of 10-20& hospital bed within 10 years.
Therefore, we started development of modified KIDUKI Training Methods for community care.

Description

Japan Integrated Community Care System (J-ICCS) is covering from the ordinary medical care to the community care with participation of volunteers and patient family.
Basic design of KIDUKI course is a half day simulation training, using scenarios and simulator, for training of nursing staff. The concept of KIDUKI course is consists of 3 steps such as: 1) Identification of killer symptoms causing sudden deterioration of patient condition and rapid assessment of the situation, 2) Report, Activate in-hospital emergency response system, 3) Adequate management of deteriorated patient using several standard life support technique, using high-fidelity simulators. KIDUKI-ICCS training should be designed for volunteers and patient family.

Discussion

Due to the target change of KIDUKI-ICCS, scenarios are updated presenting common situation within community care. Simple textbook and easy access e-learning system is designed for community. With collaboration of NeuroResuscitation Simulation Training for ICCS, learning of simple observation, rapid assessment and adequate report for deterioration should be am important elements in KIDUKI-ICCS. Development of modified KIDUKI will be presented.

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Multi simultaneous in situ simulation in operating theatres: Just a challenge or a real training model?

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

For the quality day of operating theatres, our hospital exceptionally suspended all scheduled activities (18 theatres) and organized many conferences and workshops for more than 250 theatre professionals (surgeons, theatre nurses,

anesthesiologists, anesthesiologists' nurses and nursing auxiliaries). Among other workshops, management had requested in situ simulation to implement non-technical skills (NTS) culture: communication, team work, call for help, etc… The dedicated timing was from 8:00 am to 10:30 am. The challenge was to set up on site simulation that would concern enough participants in the short given time.

Description

We planned four simultaneous in situ locations with two scenarios each. The eight scenarios were multi-professional situations based on the usual participants' activities. Simulation staff (14) included 4 teams of instructors (2 of 2 and 2 of 3 for confederated necessities), 2 logisticians, 1 deputy instructor and 1 supervisor instructor. Four in situ audio video systems were set up at the same time as the four manikins, the evening before, after the end of surgical activities. For each location a control and a debriefing areas were dedicated. At 08:00, 56 participants were welcomed into two recovery rooms for a 15 minutes briefing on simulation followed by 15 minutes presentations of the manikins. Then two simulation sessions started for each location with two different participant teams for each scenario (1h).

Discussion

This experience allowed the training and the initiation to simulation training for 56 participants in only 2h30 in accordance with the institutional expectation (implementation of NTS culture) and in coordination with conferences and other workshops. Participants reported a significant increase in NTS knowledge and awareness.
Nevertheless, it required the mobilization of a large number of staff members (14) and an important logistic preparation for setting up audio video systems and manikins. The morning time slot was technically constraining because it obliged a late installation time and an early start in order to be operational on time.
Such an event would be replicable taking into account lessons learned from this experience: a larger time slot in the afternoon to allow at least one more scenario for each location and to be able to setup the materials in the morning thus avoiding time pressure.
Despite some constraints, this organizational challenge succeeded in training a large group of people in a short time period and in response to the institutional expectation (NTS). It is a real specific training model meeting particular conditions for training.

Multi-Dimentional Evaluation of A Gynecological Teaching Associate Program in the Graduate Nursing Curriculum in Turkey

Format: Accepted for Poster Presentation
Subject: Center Administration and Program Evaluation

Authors

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Introduction & Aims

Intimate procedures such as breast and genital examination make students anxious or distressed. They also cause embarrassment and discomfort for the patient being examined more than the other noninvasive techniques because of the sensitive nature of the examination. Simulation methods have been increasingly used to improve students' clinical and physical examination skills before their initiation into patient care since 1980s. Gynecological Teaching Associates (GTAs) use their bodies as teaching tools to instruct students in clinical breast, pelvic, and/or rectal examination technique, assess the effectiveness of the instruction, and provide immediate and constructive feedback to the students. However, we could find very few studies on GTAs in Turkey and other relatively conservative countries. It might be difficult to discuss even an educational activity in a part of the world where cultural norms dictate a more conservative approach to medical training. The purpose of this study was to evaluate GTA program gathering data from all partners of the educational environment: Graduate nursing students' experiences about GTAs as an educational activity, GTA educators' thoughts about GTA training and implementation process, and GTAs' feelings, attitudes and thoughts about their job.

Methods

Qualitative study design was used. Face to face semi-structured interviews were undertaken with seven female graduate nursing students before and after an educational session using GTAs, and two GTA educators and two GTAs after the session. Only verbal consents were obtained for this process in an attempt to respect the wishes of the participants and their desire for privacy, and the identities of the participants were also kept confidential. Interviews were conducted in November 2016 and transcribed verbatim between December 2016- January 2017.

Results & Discussion

Analyses have still been in process for gaining deeper understanding of participants' responses. The results will be categorized according to research questions, and some quotations will be provided to explore their thoughts, experiences and feelings.

Multi-disciplinary training in Obstetrics and Gynaecology: a six year commitment to teaching.

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Multi-disciplinary teams (MDT) “provide better overall care” and can optimise patient safety. Better Births, improving outcomes of maternity services in England (2016), potentiated the importance of optimum relationships between midwives, obstetricians and other health professionals to deliver safe maternal care. At Chelsea and Westminster Hospital we have been providing the Multidisciplinary Obstetric and Midwifery Simulation Course (MOMs) since 2010; this has been integrated into the mandatory updates for all staff. Each year the course is evaluated and adapted to include the most recent updates in guidelines and reports(eg MBRRACE, NICE and RCOG etc). MOMs has successfully trained teams in South Africa, Uganda, Ethiopia and India. Since 2010, we have delivered 20 international training courses to over 300 healthcare workers, reaching an estimated 30,000 patients. We report our experience of maintaining quality MDT training.

Description

Teams undergoing MOMs training between 2010 -2014 completed surveys and pre and post test MCQs. The course was evaluated using the Kirkpatrick’s 4 level Training Evaluation Model: stage 1- participant reaction; stage 2- learning; stage 3- behaviour and stage 4- outcome.
Between April 2010 and December 2014 1713 candidates underwent testing at MOMS training course. Comparison of pre and post-course MCQ results from 2010- 2014 showed statistically significant improvements with consistent course feedback remaining positive (Kirkpatrick level 1). In 2010 participants increased their MCQ scores by an average of 1.76 points (p=0.0002). This was maintained in 2011 with MCQ increases of 1.34 (p=0.01). Further MCQ comparison shows significant increases in both 2012 and 2013 (p=0.06). In 2014, with an average MCQ rise of 1.7 points (p=0.00025), 70% of participants ranked higher marks post-course for their ‘confidence on a typical day’ by a mean of 1.5 points (p=0.08) and 1.1 points for ‘confidence in a stressful situation’ (P=0.006) (level 3.) A correlation coefficient was performed to measure any relationship with greater clinical experience and higher pre-course MCQ that was, interestingly not significant (r=0.22). Comparison of post MCQ results for 2010-2014 showed significant similarities to their standard of achievement ($\sigma 2 = 0.144$).

Discussion

By continued monitoring and evaluation the MOMS course has maintained a quality of multidisciplinary teaching. This can be demonstrated by the Kirkpatrick model of evaluation and analysis of results of each year of training, in terms of

its 4 stages. The MOMs team at Chelsea and Westminster have demonstrated the importance of long term commitment to MDT.

Multidisciplinary team training in obstetric emergencies based in high-fidelity simulation: experience of- 7 workshops.

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Obstetric emergencies are rare events. High-fidelity simulation provides the opportunity to improve outcomes during such emergencies. From Obstetric Simulation Programme, a workshop was designed to reinforce clinical, teamwork and communication skills based in four clinical scenarios of obstetric emergencies.

Description

We carried out 7 editions of 8 hour-workshops since april 2015 to july 2016. Total number of participants was 61. Groups were multidisciplinary (obstetric senior and junior/residents physicians, anesthesiologists, midwifes and nurses). Each edition had a 2h-introduction of simulation, teamwork and crisis resource management, a 1h- workshop about shoulder dystocia and four scenarios of 1h (15 min. of scenario and 45 min. of debriefing). Contents treated were eclampsia, sepsis collapse and postpartum haemorrhage. All the groups were surveyed at the end of the course. Evaluation answer was between 0 and 10. 60 surveys were fulfilled. Punctuation range of teaching and documentation was 9,29-9.91 with 9 questions (well explained, interesting, wondering aspects, participatory, attending questions, exchange of experiences, good environment, experienced teachers and documentation). Methodology was evaluated by 4 questions (structure of contents, new knowledge, new abilities, reached objectives, correct time and good methodology) with 9,34-9,84. Organization was evaluated by 4 questions and punctuation range was 8,01-9,81. Contents were evaluated by 2 questions and punctuation range was 9.75-9.84.

Discussion

Multidisciplinary team training in obstetric emergencies based on high-fidelity scenarios was useful for all participants. They marked very high the usefulness for their daily work and the methodology applied, within a safe environment. Simulation multidisciplinary training is a powerful teaching method for health-care professionals.

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Near-peer interprofessional simulation training

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Interprofessional education has been shown to be an effective educational tool to improve knowledge, teamworking and communication (Tofil, 2014). We conducted a 6 week near-peer interprofessional simulation programme to assess the potential educational benefits to undergraduate students. 6 medical and 4 nursing students volunteered for the programme which was conducted using the simulation suite of the University of Exeter Medical School in Truro, Cornwall. Junior doctors, qualified for less than 2 years, were used to run and debrief the sessions.
The aim of the programme was to assess the effectiveness of using near-peer educators to train medical and nursing students in a simulation based environment.

Description

Questionnaires were given to the students before and at the end of the programme. They focussed on questions relating to human factors, confidence managing acutely unwell patients as well as differences between near-peer and senior led simulation sessions.
Each set of students was involved in 2 scenarios each week. Each week had a different focus (airway/breathing, shock, chest pain, reduced consciousness, abdominal pain and cardiac arrest), although the main learning objectives were good quality A to E assessments with appropriate escalation of care and effective handover.

Discussion

Overall, the results of the programme suggest that near-peer educators are felt to be more approachable (average 8 out of 10) and cover content more relevant to clinical practice (average 9.1 out of 10) compared to senior members of staff. Improvements were also seen in confidence and human factor related fields. We will be re-running the programme with a further set of medical and nursing students this year and hope to gain more evidence for the benefits of near-peer simulation training.
The results were very encouraging and showed an improvement in every score for human factor (ranging from 2.5 to 5.3 for medical students and 0.2 to 1.5 for nursing students) and anxiety related questions. The questionnaires also show confidence in near peer educators improved by the end of the programme.
Smaller scale improvements were noted for the nursing students potentially due to the lack of nursing staff involved in debriefing. We hope to improve this by involving more nurses in the debriefing in future sessions.
Qualitative feedback was encouraging also with comments including ‘near-peers have a better concept of what we really need to know at our level’, ‘really improved my confidence in communicating and working in an MDT’ and ‘the F1/F2s were really approachable’.

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NEONATOLOGY SIMULATION BASED TRAINING EFFICACY IN UNDERGRADUATE STUDENTS

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

Volodymyr Artyomenko	Odessa National Medical University
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Introduction & Aims

For 2016/2017 studying year department of simulation medicine was developed the curriculum for 6th year students, that consists of 36 academic hours (6 days) of practical classes on different fidelity level simulation equipment. Eight hours of curriculum dedicated to a newborn resuscitation practical skills mastering. In order to research efficacy of new studying method was provided a comparative knowledge and skill assessment in students that were studied according to the traditional scheme at Neonatology department (1st group – 60 persons) with students, studied by new curriculum (2nd group – 60 persons). There were totally 120 students taken part in the research.

Methods

Classes by new method are provided on mannequins of middle and high fidelity level according to systematic (methodical) indications of studying plan. There were up to 10 students in one academic group. On the first stage the student master practical skills on a middle fidelity simulator. These are: newborn assessment by Apgar score system, newborn proper positioning, opening of airway, applying of oxygen mask, applying of bag-valve mask and mechanical ventilation, cardiopulmonary resuscitation, calculation of adrenaline dosage. Next step is a briefing where student is being acknowledged with the high fidelity simulator facilities and the environment. On the second stage of curriculum there are clinical scenarios provided: Newborn asphyxia of middle and severe level. Two students take part in the scenario while others observe their performance in the classroom by online video. During one practical class one student has possibility to take part in clinical scenario. After scenarios the detailed analysis of students' performance takes place. Overall performance is assessed according to Ukrainian Ministry of Public Health clinical protocols; emergency care unified clinical protocols, 2016 European guidelines.

Results & Discussion

For the efficacy analysis were used checklists with 10 criteria for each practical skill. During the analysis in comparsion with the 1st group following was observed: level of practical skill mastering in students studied by new simulation based training method is on 21 % (■ < 0.001) higher, progressing in quality of practical skills is higher on 18 % (■ < 0.001), time needed for each skill appropriate facilitation is less on 23% (■< 0.001), overall performance in critical care providing is 26 % (■ < 0.001) better. Thus, innovational technologies in healthcare allow students a progressive studying with accent on a final goal. This also influence positively on practical skill mastering and improvement of overall healthcare professional study level.

New approaches to improving ward staffs verbal and non-verbal skills- a hybrid simulation curriculum

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

A new system with a consistent approach to the way ward nursing teams start and end their shifts, was designed for a large teaching hospital. The aim was to standardise processes around patterns of working in a 12-hour shift. Developing a simulation-based education (SBE) curriculum to meet the objectives of this project presented a unique challenge.

Due to the logistics that a large scale project, with limited time and budget, presents a number of methods were selected and a two-pronged approach to training taken.

Objectives:
In a 6-month time period, test newly devised communication tools and train 80% (n=1115) of nursing staff in their ward teams. Training centred on enabling the team to think ahead, plan & work effectively together & leave shifts on time enhancing staff well being & the quality & safety of our patients.

Description

The traditional immersive simulation of clinical scenarios with learner-led debrief was not going to be an effective solution on its own. Nor was the deployment of in-situ simulation going to meet the time scale required to train a critical mass of staff in the new system. Skills required by the ward nurses included being able to lead or participate in a safety brief & huddle, give colleagues coaching skills to support each other and embed change and use their verbal and non verbal skills to enhance relationships across the multi-professional team. An ambitious multi-method programme of interactive learning was developed for ward nurses & nursing assistants to come in teams and learn together.

Teaching strategies employed included didactic introduction with handouts on the Ward safety tools & Human factors in a classroom setting – then small group teaching methods including role play, issue-centred discussion groups, deliberate practice with feedback, 2 x immersive clinical scenario & debriefing, a flipped classroom method called a Coaching Circle and an energising non-verbal exercise all took place within the pop-up simulated ward environment.

Discussion

Employing multiple techniques in a simulated environment encouraged full group participation in every day tasks in a safe learning environment. Flipping control to the participants in the group exercises allowed participants' knowledge, ideas and experiences to be shared, and new ideas and latent threats to be identified. Preliminary findings suggest significant improvements in participants' human factor skills ($p<.001$) post training. Furthermore, participants report enhanced rapport and trust within their teams, which is a benefit only afforded by whole team training.

NEW ASSESSMENT SYSTEM IN RESIDENTS HYSTEROSCOPY SIMULATION TRAINING

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

Volodymyr Artyomenko	Odessa National Medical University
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Introduction & Aims

The most important principle of medical education is to obtain students and physicians practical and theoretical skills with minimal threat to health of their patients. Simulation trainings are very important in this case. To determine the new system effectiveness in residents' hysteroscopy simulation training.

Methods

For this research results of 136 Obstetrics and Gynecology residents simulation trainings during 2 years were taken. They were trained using the virtual hysteroscopy simulator "VirtaMed HystSim". It allows to implement feedback in real time. We used the module "Diagnostic and operative hysteroscopy" for 2 months for no less than 10 trainings for sessions. The number of each practical skill repeats was from1 to 10 during 1 training. Practical skill time was registered and also safety settings, the correct choice of device, work with pedals, coagulation, laser marcelation work with video camera of 30, 12 and 0 degree angle. It was assessment of the initial, intermediate and final level of the practical skills. According to this 6 summarized results of self-assessment and the calculated coefficients of practical skills were received.

Results & Discussion

All questionnaires and evaluation check-lists have been specially developed by us for specific simulator. The initial questionnaire was filled by resident himself before first training, the final – after the last training, intermediate – before the fifth. Preliminary evaluation check-list was filled by instructor after the 1 training, final – after the last training, intermediate – after fifth training. During comparing in dynamics of initial level of practicals and the level at the end it was showed a significant increase in 1.38 times ($p<0.01$).
1.Coefficient of practical skills has a great practical importance for the evaluation of hysteroscopy performance during simulation trainings.
2.The resulting self-assessment coefficient and practical skills, resulting coefficient of practical skills enable us to evaluate residents more specific during trainings.
3. During comparing in dynamics of initial level of practicals and the level at the end it was showed a significant increase.

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New possibilities for training cervical incompetence treatment skills

Format: Accepted for Poster Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

In the world for the treatment of cervical incompetence obstetric pessaries are widely used. In some cases of this pathology it is necessary to suture the cervix. There is no special simulator for training of these skills.
The goal. During simulation training with obstetricians we have noted how necessary to have the skills of installation obstetric pessaries and suturing the cervix in emergency case of cervical incompetence. Known robotic patients and simple simulators, phantoms do not have technical opportunities for such trainings or opportunities of using them in the training are really limited. We offer modification of basic birth phantom which allows using it for training skills of installation obstetric pessaries and suturing the cervix in case of cervical incompetence.

Description

We made a model of pregnant uterus from fabric and sintepon. The special feature of the model is the presence of cervical simulating cervical incompetence in a period of 15-16 weeks of pregnancy. To increase realism of the training by special ties the model is installed into the birth phantom in the right position of this organ. Good fixation of the model in the phantom allows training the skills of installation obstetric pessaries and suturing the cervix in emergency case of cervical incompetence.

Discussion

The birth phantom modification, by installation of pregnant uterus model with cervical simulating cervical incompetence, allows training the skills of installation all kind of obstetric pessaries and suturing the cervix in emergency case of cervical incompetence.
We offer a simple and inexpensive modification of the birth phantom, which extends the simulation capabilities for effective development of manual skills to manage cervical incompetence. The proposed modification, which is of practical interest for our trainees, allows developing these skills for a long time and repeatedly.

NEW SIMULATION-BASED CURRICULUM FOR UNDERGRADUATE STUDENTS AT ODESSA NATIONAL MEDICAL UNIVERSITY

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

In modern conditions medical education is based not only on acquiring definitely stated knowledge but also on mastering of practical skills and professional functions. Most of them have to be self facilitated by the medical student before the graduation. One of the important aspects of standardized healthcare professional education is a use of simulation technologies. Therefore, Department of simulation medicine, Educational-innovative centre for the physician practical training conjointly with another university departments (Obstetrics and gynecology, General surgery, Internal medicine, Neonatology) elaborated studying curriculum for 6th year students. This curriculum contains 36 hours of class work (6 days) on simulation equipment of different fidelity level. In general 720 students from in-state and foreign faculty have passed through practical classes according to this curriculum.

Description

New curriculum contains practical skills, which theoretical backrground was already studied at other university departments. These are: basic cardiopulmonary resuscitation (basic life support), physiological labor assistance, neonatology resuscitation, pleurocentesis, cricothyrotomy, pericardiocentesis and management of emergency hypertensive crisis, acute coronary syndrome and anaphylactic shock. Practical class starts with the briefing, during which students are acknowledge themselves with mannequin facilities and environment. In following clinical scenario take part two students while others have possibility to observe an online translation of current scenario. During one practical class every student has possibility to participate in the scenario. Amount of students in each group is 10 persons. Final part of the curriculum is the debriefing with analysis of clinical case, students' performance of practical skills and their medical assistance administration according to Ministry of Public Health of Ukraine clinical protocols, emergency care unified clinical protocols, European guidelines of 2016 year. Assessment of student's performance is taking place on final practical class according to check-lists and consists of 5 practical skills and scenarios.

Discussion

Modeling of real life clinical cases facilitates better acquiring of practical skills and functions needed for further professional activities. Moreover, conceptualization of studied topic practical implementation influences intensification of learning process. This is also an additional motivation factor determining successfully learning, uprising self-estimation and self –confidence of medical students.

NurSim: Practical Internship Development Through Simulation

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Simulation has been used during competency development for decades, as it upholds professional standards while ensuring safety. Theorist believe simulation will broaden to include fully immersive 3D reality scenarios and physiological pharmacological modeling. In 2015, the Finnish government enacted a framework for the development of clinical nursing skills. Their intention is that universities together with third sector health care units will work together to ensure the proposed changes in healthcare practices in Finland. Act on Polytechnics (932/2014) and Government Decree (1129/2014). Within higher education, supporting students as they transition into their future working life environment while simultaneously participating in simulation allows students, teachers and clinicians the opportunity to evaluate the competency level of nursing students and address any unmet needs or knowledge gaps in the delivery of care. The main aim of this project is the collection of evidence that will aid in the development of future educational offerings that support students needs and evidence based practice.

Description

This project encompasses data generated from students, teachers and empiric data from mentors in the field. The materials used for this study are questionnaires, self-evaluation, teacher and mentor evaluation forms. Students (N=26) are randomized into two groups, (T1 and T2). The group T1 will have their clinical practice before the simulation period while the T2 group has the simulation period before going out on clinical practice. Experiencing simulation exercises during different phases of practical internships may impact students level of knowledge and performance. The results of this investigation will facilitate the development of a new study design that will support students clinical competency development through simulation during the phases of practical internships.

Discussion

It is reported that nurses remain the largest health care professional group. Their care activities impact not only the health outcomes of clients but also have economic significance. This, together with the changes in public health trends due to factors such as; the advancement of technology and changes in population demographics, support the idea that caring practice renewal is evident. The continual development of quality, evidence based education that meets the needs of a changing society will require genuine collaboration on behalf of educators and working life clinicians that support government mandates. As mentioned earlier, the evidence brought forward through this research will facilitate the future planning of new study paths for students embarking on various practical internships during their time at university.

Nurturing Nurses the Nightingale programme reducing variation, improving patient safety

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Mary Lavelle	Kings College London
Karen Bonner	Guys & St Thomas' NHS Foundation Trust

Introduction & Aims

A large teaching hospital in London sought to reduce variation to improve patient safety for 56 wards across it three hospital and community sites. Following a review of data, including staff satisfaction reports, 11 pilot sites were set up to develop consistency in communication processes that could be adopted for each ward, each shift. The simulation team were invited to observe practice, co-develop the tools and design a training package to implement change across the whole healthcare trust. The aim was to apply systems in the first and last hour and the middle of shifts to strengthen nursing team member's abilities to care safely and effectively for their patients, whilst considering their own health and well being and ways of working. Training was commissioned for 80% of the nursing in-patient workforce (n= 1391) over a 6 month period.

Methods

Tools were designed to support and foster good communication practice at key stages of the shift. Firstly, during the first hour supporting a Safety Briefing, SBAR bedside handover and beside checks, to enhanced situational awareness. Secondly, through a mid-shift team huddle to facilitate a review of the busy ward environment, updating the collective team situational awareness, enabling prioritisation revision, and a structured aide memoire for staff in the last hour of their shift to facilitate anticipation and planning for a safe and effective handover.

Pilot areas were observed testing the tools and latent threats identified (e.g. distractions from ward visitors and general activity). Staff patterns of language use, & behaviours were noted including the nurse role in briefings and handovers and timings of key communication episodes during shifts. Based on these observations and current literature, we developed a single one-day team based training, using hybrid simulation and interactive learning methods. Scenarios were designed for speciality specific training for adult, paediatric and midwifery in patient ward teams
Training was delivered in a pop-up simulation centre with two two-bedded bays and a nurses' station set in a recently vacated day unit, to accommodate such a large volume of training into an already planned clinical simulation curriculum.

Results & Discussion

Training was evaluated using pre and post training structured surveys assessing participants' learning of human factors skills for healthcare1 and their understanding of the specific communication focus (e.g.
SBAR, decision making and prioritisation).

Preliminary analysis demonstrate a significant improvement following training both in participants' human factors skills ($t(637)=21.4$, $p<.001$) and their course specific skills ($t(613)=20.6$, $p<.001$).

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ParaSIMtesis: a low-cost parecentesis simulator

Format: Accepted for Poster Presentation
Subject: Others

Authors

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Nicole Karina Nicolaiko Temperly	Universidade Federal do Paraná

Introduction & Aims

Paracentesis is an invasive procedure of peritoneal fluid aspiration with the aim of diagnostic and therapeutic interventions. The right and safe practice of this procedure involves both theoretical knowledge and practical skills, perfected through repetition of the technique. Several medical teaching models can be used during training, including cadavers, animals and simulators. These last ones present themselves as an interesting alternative, because they surpass the ethical questions surrounding in vivo simulations and provide training in a controlled environment. However, there are difficulties in the use and maintenance of these simulators in the context of developing countries such as Brazil. The aim of this project was to develop a low-cost simulator of easy and accessible manufacturing for the training of paracentesis.

Methods

The manufacture of the structure of the ParaSIMtesis included a plastic torso manikin, Polyvinil Chloride (PVC) pipe 100 mm, epoxy mass and threaded screw. For the abdominal contents it was used a foam block, paper and rubber physiotherapy ball of 6 cm of diameter. The fluid system was composed of a bottle, an infusion set, a rubber hose, a flexible catheter, water and yellow nankin ink. The skin was made with silicone rubber and catalyst (proportion 10:1), brown acrylic ink, non-woven fabric, pencil and hot glue.

Results & Discussion

The ParaSIMtesis model allows the simulation of the following steps: identification of anatomical references through palpation of the iliac crests, visualization of the umbilical scar and puncture and aspiration of the anatomical site with a radius of change of 3 cm. The cost of the materials used in the development was € 33,09. The cost per-procedure was calculated on € 0,04. The ParaSIMtesis reached its goal, being a low-cost alternative that offers autonomy to the user over the simulator and its consumable pieces. A limitation of this model is the inability of using ultrasound to simulate guided procedures, being an improvement goal to future developments.

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Preparing undergraduate students for theatre

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

Narendra R Bhimsan — University of KwaZulu-Natal

Introduction & Aims

The University of KwaZulu-Natal has four hi-fidelity human patient simulators manufactured by CAE Healthcare. This state of the art simulation technology is used to train medical students, physicians, nurses and other allied health professionals at our institution.

Description

Fourth year undergraduate medical students are allocated two weeks doing their anaesthetic block. During this time two days are spent in the simulation laboratory at Inkosi Albert Luthuli Central Hospital (IALCH). Students are randomly selected to begin their block either in theatre, the simulation centre or at a tutorial. The first simulation session involves hands on training on airway management, monitoring and drug dosing on the HPS after which they perform the same in theatre. On their second visit in the centre, they perform a full “anaesthetic’ on the HPS under the supervision of an Anaesthetic Consultant.

Discussion

From the feedback obtained from the medical consultants it was found that students who attended a simulation session on the first day of the block performed much better in theatre on the subsequent days while the others seemed unprepared for theatre until they completed the simulation session.
The modus operandi has subsequently been changed to allow all 40 undergraduate students per quarterly block to spend the first day in the simulation centre. On subsequent days they are allowed into theatre. Consultant staff in theatre are noticing a vast improvement in the competence of the students using the latter method. Simulator based teaching allows us to cater to varying class sizes without further impacting on the already understaffed and over worked medical practitioners.
This method of preparing students for their first exposure to theatre has resulted in bringing back the excitement of working on real patients after exposure to the “simulated patient”.

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Program for nursing students to achieve simulation competence

Format: Accepted for Poster Presentation
Subject: Others

Authors

Jon Viktor Haugom	NTNU in Gjovik
Randi Tosterud	NTNU in Gjovik
Terje Odegarden	NTNU in Gjovik

Introduction & Aims

Simulation is a basic learning activity in bachelor and post-graduate nursing education at NTNU in Gjøvik.
To create a community for learning, the students need to know, develop, build understanding, rules and agreement on how to communicate, motivation for communication, the value of discussion and diverse viewpoints (Tosterud, 2015).

Description

First step
To prepare the students for simulation we start with an introduction showing different ways to perform a debriefing. “Olympic debriefing” concept is used. Three facilitators debrief either as patient oriented, student oriented or topic oriented. The students use colored cards to vote for their favorite facilitator after discussing “pro et contra” for the different ways of debriefing.
Second step
Before simulation, the students receive the scenario to discuss and prepare themselves for the case. We focus and prioritize on the briefing part of the simulation to make the students comfortable and confident. This briefing contain Information about practical possibilities with simulators, equipment and the environment.
Third step
As the student get more familiar with simulation and the scenarios get more complex, the debriefing get a higher priority to ensure competence in observation, decision-making, action, hand-over and teamwork.
We have developed twelve different scenarios with different topics to give the students experience from the most common reasons for hospitalization (data collection, COPD and COPD with exacerbation, chest pain, cardiac arrest, postoperative bleeding, drug overdose, anaphylaxis, sepsis, congestive heart failure, stroke and severe depression).
We use the Objective Structured Clinical Examination (OSCE) before students are allowed to preform different procedures on patients.
Post-graduates students in anesthesia, intensive care and surgical nursing use simulation to focus on teamwork and the challenges caring for acute and critical ill patients.

Discussion

Summary
Simulation competency is a prerequisite to achieve a positive learning outcome in simulation (Tosterud, 2015).

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SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

Questionnaire based validation to assess the quality of cost-effective artificial bones in orthopedic surgical simulation based training.

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

Paul Siegfried Kuenzle	University of Hamburg
Joerg Wulf	3B Scientific

Introduction & Aims

Artificial bones have become a common part of professional medical teaching in recent times, as real human bone specimens are not always available. The aim of this study was to examine the clinicians' opinion on the quality of artificial bones and their applicability to practice osteosynthesis techniques. How can current synthetical bones be improved? How suitable are ORTHObones for osteosynthesis techniques and can they lead to more frequent synthetical bone training courses?

Description

In this study, we asked 34 participants of 3B Scientific's ORTHObones courses (March/May 2014) to complete a questionnaire with 12 points assessing their personal practical experience and the accuracy and quality of 3B's bone models. We distinguished two separate groups (group 1 of n=9 and group 2 of n=25) participating in two different ORTHObones courses. The questionnaires were answered by practising surgeons and orthopedists. Almost 70% estimated the anatomical accuracy to be „Very High". For Drilling and Sawing of Compacta, respectively 56% and almost 50% estimated it „Very Good" of our first group. Drilling of Spongiosa was judged „Very Good" by 44% and Sawing by 33%. In the second group, we comprised Drilling and Sawing as „Haptic Quality". Haptic Quality of Compacta was judged „Very Good" by 43% compared to less than 33% for Spongiosa. The accuracy of weight was estimated „Good" or „Very Good" by 60% and for density by almost 70%.
Overall, over 85% determined the bones „Good" or „Very Good". Regarding the osteosynthesis procedures learned, 85% rated the ORTHObones „Good" or „Very Good". More than 66% would most likely recommend 3B ORTHObones.

Discussion

The study shows that training bones of 3B Scientific have their strengths in anatomical accuracy as well as the haptic quality of Compacta, whereas the haptic quality of Spongiosa could be improved.
The practical experience from an established manufacturer of anatomical teaching aids indicates that possible improvements in biomechanical characteristics, better resources and refined production processes could only be accomplished by transferring additional costs to the customer. Unfortunately, higher prices may refrain individuals and companies from organizing practical osteosynthesis courses like ours. Good quality bones provide physicians with realistic osteosynthesis simulation circumstances which are economically accountable, recommended by a vast majority of participants and motivate external companies to organize self-supporting osteosynthesis courses which spread superior practice to recuperate thousands of patients.

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Safe Implementation of new sepsis criteria

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

Susanne Christoffersen	Nordsjællands Hospital
Rikke Hjelmsø	Nordsjællands Hospital

Introduction & Aims

North Zealand Hospital (NZH) has focused on patient safety and sepsis through many years. The objective has been to diagnose sepsis urgent and treat it correctly. Untreated sepsis is associated with a high mortality. Guidelines are published electronically and staff is expected to seek knowledge here both when published and updated.

NZH simulation unit SimNord has worked with medical simulation since 2009 and therefore gained extensive experience in simulation-based teaching, including pedagogical approach and learning methods.

By changing the learning method and using an interdisciplinary model, NZH will be able to achieve an efficient and rapid introduction of new guidelines for sepsis, to ensure a patient-safe implementation.

The aim is to optimize the implementation of our new sepsis criteria (SOFA and Quick SOFA) by using simulation-based in situ training in our Infectious ward, using the Model for improvement as a method.

Description

To reflect reality in situ training takes place in the local setting at the ward in interdisciplinary teams. The simulation unit contributes with skilled and experienced teachers in medical simulation. Simulation equipment is advanced wireless manikins and the technicians are educated in handling them and trained to act as a “patient”. The training takes place during 8 days.

Each day is built with scheduled training of three teams. There will be a brief introduction to the patient room and manikin. Each team is practicing for 2 hours and working with 2 patient cases. Feedback is based on the objectives agreed for the cases, and for the training in general.

- Nurses must be able to identify “quick sofa” criteria.
- Nurses must know when the physician should be contacted.
- Physicians should be trained in the start-up of the sepsis treatment.
- Physician must recognize that the new guidelines involve them earlier in the process.
- Nurses must be trained to perform artery puncture.

The training is evaluated with answering of a questionnaire:

- Prior training.
- Right after training.
- 3 weeks after training.

Discussion

Is simulation based in situ training a solution, to implement new guidelines for sepsis criteria?

What kind of adjustments will be needed?

Do staffs see it as an effective learning method?

Will comments from staff lead to proposals for adjustments?

Authors:
Susanne Christoffersen
Rikke Hjelmsø

Scrub-Up I Simulation Competition for Medical Students in Portugal

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

A simulation-based education can be valuable. It unique features providing a safe and controlled environment to teach a variety of technical and non-technical skills. Simulators are now widely used in education and training in a variety of high-risk professions and in medical care.
During the full-scale scenario-based training, the learner can acquire important skills: interpersonal communication, teamwork, leadership, decision-making, the ability to prioritise tasks under pressure, and stress management.
Training through simulation will not replace learning in the clinical environment, so it is important to integrate simulation training with the clinical practice during curriculum development.
Simulation competitions offer learning opportunities for those watching and instructing, as every person involved can benefit from observing and reflecting on decision making, as well as viewing and discussing practice variations across disciplines and institutions.

Description

Four teams (N = 20) of medical students on clinical rotations participated in the competition. All members had the same simulation experience prior to the competition and similar clinical practice. Selected reading support and a clinical tutor experienced in simulation were provided two months before the competition. Each team completed a 10-min standardised resuscitation scenario in a high-fidelity simulator setup in a conference room. Order of team performance was decided by draw. A nurse facilitator and a dedicated technician were used for all scenarios. At the conclusion of each case, the expert panel led a debriefing session for 10 min. Judges evaluated the team's performances using standardised assessment tools and selected two teams to perform at the final competition at the same conditions, after two days. The winning team was selected to represent Portugal in the Simulation Competition at 2017 SESAM Congress.

Discussion

The goal of clinical medical education is no longer merely to impart knowledge but has become more extensive. Medical education is now expected to cultivate students' skills and professionalism.
The performance of students in the competition reflects the achievements and weaknesses of daily teaching, identifies deficiencies in teaching, and seeks improvement, which is more intuitive than an academic conference with quicker feedback.
To our knowledge, this Simulation Competition was the first of its kind in Portugal to be offered at an academic teaching hospital.

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Sim is Stressful!

Format: Accepted for Poster Presentation
Subject: Center Administration and Program Evaluation

Authors

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Dr Aine Cafferkey	College of Anaesthetists of Ireland
Dr David Greaney	College of Anaesthetists of Ireland
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Introduction & Aims

Six years since its inception, the College of Anaesthetists of Ireland's Simulation Training (CAST) programme has been evaluated revealing that 11% of participants self-reported feeling stressed, anxious and intimidated by the experience. When a participant perceives that the demands of the situation are outweighed by their coping strategies, then this results in distress due to the assessment that the individual is threatened. Stress in the learning environment has been shown to negatively affect the experiential learning experience. The aim of this research is to determine whether this result is consistent with the current literature and to determine if further intervention should be undertaken.

Description

A thematic analysis of the post-course feedback forms for four of the nine courses run by the CAST programme was performed. This included feedback from a total of 459 participants over a six 6 year period, with courses running at least twice yearly. In response to the free-text question "What did you like least about the course?" strong themes of stress, fear of judgement and intimidation were present.
A literature review was performed via PubMed including terms simulation, medical education, negative learning environment, stress and anxiety.

Discussion

Excessive stress can contribute to cognitive overload, attentional narrowing and distractibility, all of which are associated with impaired performance. An evaluation of post-course questionnaires revealed 51 participants (11%) noting stress and anxiety among their least favourite aspects of the course. Of those that did, 22% reported this on multiple courses. There was a female predominance (73% vs 27%). The literature was sparse on self-reported stress levels with one study identifying an incidence as high as 73%, with 36% believing this negatively affected their learning. Another study reported an incidence of 22% in trainees and 25% in consultant anaesthetists.

Our thematic evaluation of those experiencing stress during simulation demonstrates a lower incidence in comparison to the current literature. It would be worthwhile investigating this further with a validated questionnaire such as the State Trait Anxiety Inventory. As simulation has become a well-recognized method of teaching, simulation educators should be cognizant of the potentially negative effects of stress on performance and consider strategies to minimize unnecessary stress.

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Simulation and performances in the theatre of OSCEs: an exploration of context, roles and social dynamics in OSCEs

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Jenny Johnston	Centre for Medical Education, Queen's University Belfast

Introduction & Aims

OSCEs are a widely used form of assessment in health profession education. They draw upon many simulation principles to ‘recreate a slice of clinical life’. To date a psychometric discourse dominates OSCE related research. However there is a need to illuminate the highly contextually and socially embedded nature of OSCEs. In this study, we used qualitative methods to look in-depth at the context, social roles and dynamics that occur within the ‘theatre’ of OSCEs.

Methods

Underpinned by a social constructionist epistemology, Goffmans' dramaturgical metaphor was used as an analytical lens in this study. Senior medical students, OSCE examiners and SPs were invited by email to participate in this study. A matrix of willing participants was used to select a maximal variation sample of 18 OSCE station encounters. Subjects in the study were allocated to one OSCE circuit that already had unobtrusive pre-existing ceiling mounted video cameras. Consent was obtained from all participants. Candidates were not made aware of which OSCE station was being recorded and each examiner/SP combination did not know which candidate was being recorded. Video footage of all 18 triadic encounters were transcribed. Using transcripts and video footage, analysis was inductive, focusing on the social roles and interactions within the OSCE triad. Consensus on themes was reached by the research team.

Results & Discussion

Over 126 minutes of video footage (18 triadic encounters) was captured. Four main themes emerged from analysis of the data: ‘Creating the right impression?’; ‘A performance of contradictions’; ‘Simulated patients: Dehumanized, objectified and industrialized’, and ‘Examiners hold the power: hierarchy within OSCEs’.

This study provides deep insight into the realities of the social roles and dynamics that occur within OSCEs. While on a superficial level – OSCEs appear to simulate clinical encounters – but in reality they are disconnect with clinical practice in many ways. In this process medical students are driven by the pursuit of creating an impression of themselves that is perceived by examiners to be of a competent performance. However it is clear that OSCEs are a complex form of drama that do not necessarily reflect the true social interactions of clinical practice. Above all else, checklists mediates all social roles and behaviours within OSCEs, with a shift from patient-centric to checklist-centric behaviours. In the pursuit of standardization, OSCEs can promote undesirable test taking behaviours that are not patient-centric. There is a need to reframe this method of assessment and change our current practices.

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Simulation Competitions as a Medical Education Tool

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

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Jeffrey Franc	Università del Piemonte Orientale
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Introduction & Aims

At present, most medical residents belong to the generation usually referred to as Millennials or Generation Y. This new cohort of health care practitioners is optimistic and assertive, comfortable with multitasking, utilizes self-directed and electronic learning, prefers instant results and immediate feedback and learns promptly from their mistakes. Motivating Millennial residents to engage regularly in simulation training became a challenge for many educational programs. Gaming is a newer education concept with characteristics that appeal to Generation Y. Onstage competitions, called SimWars, are now very popular in multiple medical specialties and their effectiveness in medical education has been supported in the literature.

Description

We created a novel simulation competition format (SIMCUP) with the goal of exposing postgraduate trainees to elements of experiential learning. The format of the competition was designed in order to include different models of simulations and to expose participants to multiple clinical cases and procedural skills from many areas of care. Residents from any accredited training program throughout the country could enter the competition as teams of four and multiple disciplines within teams were encouraged. The competition was designed as a two-day event that included both educational and competition time. The first day was dedicated to preliminary rounds where each team was exposed to a sequential series of different simulation stations in a fashion similar to an Objective Structured Clinical Examination (OSCE): high fidelity adult and paediatric/neonatal simulations, mass-casualty virtual simulations, standardised patients and skill trainers. The performance (technical and non technical) at each station was rated and a ranking was obtained. The top four teams moved on and participated, during day two, to the finals single-elimination round. The finalists performed their simulation in front of the audience, consisting of those teams who did not qualify, the faculty and the judges. At the end of each scenario a debriefing was conducted. Levels 1 and 2 from the updated Kirkpatrick's framework were explored, measuring participants' reaction and educational effectiveness.

Discussion

A competitive yet controlled environment, such as simulation competition, can serve as a meaningful instructional format during residency training. Residents were able to practice their skills and demonstrate abilities while developing clinical management skills, psychomotor abilities, communication strategies, and teamwork skills. The performance assessment allowed delineation of both technical and non-technical areas, which might deserve a corrective intervention. Residents reported high satisfaction with the simulation experience and a greater improvement of self-perceived confidence in competency and proficiency.

Simulation education for MS2 students at St. Georges University, Grenada

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

At St. George's University (SGU) School of Medicine (SOM), all MS2 students are scheduled in small groups to spend a three-hour session in the Simulation Lab during the final term of Basic Sciences. The main goals are to foster team interaction and encourage empathy as students interact with patients, practice focused physical exams, reinforce heart and lung auscultation and communication with patients and medical teams. Simulation sessions are intended to enhance SGU SOM MS2 student ability to perform well in future clinical rotations and standardized exams.

Description

Pre-briefing is held at the beginning of the simulation session to emphasize aspects of formative assessment and safe learning environment. Distinctive learning objectives are described. High fidelity manikins are used in a simulated clinical acute care environment. Simulation facilitators with health care backgrounds have been trained to facilitate the simulation and debrief the small groups. The simulation scenarios are designed to standardize the student approach to each patient when performing basic clinical scenarios. Bedside simulation bays contained one of six high fidelity manikins; four Laerdal males and two Gaumard females. Groups of 5-6 MS2 students are provided brief patient history, process for interacting with patients, steps for stating or performing the appropriate physical exam, and further diagnostic information as necessary. Student teams rotated through three patient scenarios using deliberate practice and repetition in simulated cases, integrating theoretical basic sciences material with emphasis to perform a focused exam and communicate findings. Students were asked to inspect, palpate, percuss, ausculate, produce a differential diagnosis, and report findings to patient and attending physician. Each 50 minute simulation session concluded with debriefing so students could summarize their experience and plan for improvement.

Discussion

After each simulation session MS2 students were asked to evaluate their experience in the Sim Lab. In Spring 2014, 93% ranked the simulation facilitators as excellent. Students stated appreciation for the opportunity to practice reporting of the patient to an attending physician. This positive trend has continued across subsequent terms. The following table shows one of the questions asked via Likert Scale over four terms of simulation sessions, indicating that the majority of MS2 found the skills practiced in the simulation session to be beneficial.

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Simulation on the move Lessons learnt after delivering external simulation courses on Mental Health Crisis in the Emergency Department

Format: Accepted for Poster Presentation
Subject: Faculty Development

Authors

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Rosemary Humphreys	Maudsley Simulation, South London and Maudsley Hospital NHS Foundation Trust
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Introduction & Aims

Collaborative working between emergency department (ED) staff and mental health clinicians is essential to bridge the existing gap between mind and body and to provide the best care for patients. Interprofessional simulation training has been shown to lead to improved confidence, leadership, teamwork, communication and collaborative care (Fay-Hillier et al 2012; Goldfarb & Gorrindo 2013; Naeem et al 2007; Robertson & Bandali 2008).
Due to the above, Maudsley simulation developed an interprofessional half-day simulation course: 'PsychED-Mental Health Crisis in the Emergency Department' aiming to improve care for patients presenting with a mental health crisis to EDs by enhancing staff confidence, knowledge and collaborative care. This course has shown statistically significant improvements in knowledge and confidence in a number of areas. In 2016, Health Education Kent, Surrey and Sussex (HE-KSS) collaborated with Maudsley Simulation to run Psych-ED in thirteen hospitals throughout HE-KSS.
This presentation is aimed to describe and discuss the challenges and opportunities that arise when delivering

simulation courses in external locations and lessons learnt that have significantly improved our training and workforce.

Description

From May 2016 to March 2017, Psych-ED was delivered in different locations across KSS, training 8 ED and 68 participants to date. The course consists in three in situ simulated scenarios about medical deterioration and follows a patient with a mental disorder's journey through the ED.
A study of this course's need for KSS area was conducted; including our technical team travelling across KSS to recognise different simulation facilities to ensure that high fidelity simulation could be reached. Regular and effective communication between our team and HE-KSS was required in order to decide course dates, advertise course and making sure the right mix of participants was found. Team organisational skills were essential to ensure course props and other materials as well as travel for all faculty and technician travelling were arranged.

Discussion

Delivering simulation courses in external locations is an opportunity to implement essential clinical training in areas that may not have the workforce and/or skills to distribute required training. This experience would potentially enhance your skills as a faculty, however, several challenges may arise that can compromise high fidelity simulation and have a direct impact on learning outcomes and participants experience, especially when delivering in situ simulation in an unknown simulation facility. Reflecting on those challenges and difficulties is crucial to improve educational practice.

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Simulation strategy and the development of the competencies in nursing education: the measurement of the knowledges

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Vanessa Caminha Aguiar Lopes	Federal University of Piauí
Aida Maris Peres	Federal University of Parana
Maria da Gloria Carvalho Moura	Federal University of Piaui

Introduction & Aims

The development of competencies can be pointed out as outcomes of the simulation experience. Competent action in Le Boterf's(2003) perspective is the combination of knowledge, skills and attitudes(KSA).The competency of risk assessment for pressure injury is exclusive to the nurse in Brazil. The wound can be an indicator of quality and safety. Objective: evaluate the acquisition of the knowledge dimension of the competency "risk assessment for pressure injury" through the advanced simulation strategy

Methods

A quasi-experimental, multicentre study developed at the Simulation Laboratory' Federal University of Piauí and Paraná, Brazil, with 155 nursing students from the Last year in August-September, 2016. The data were collected by the instrument for measurement of the competence "risk assessment for pressure injury" validated of contents in panel of expert. The psychometry resulted unidimensional and high discrimination(average of 2,50 ± 0.38), increasing difficulty of items with satisfactory magnitudes and high reliability(0.945) for knowledges. The instrument has 32 items with 14 of knowledges. It was applied before the class on competence; After the simulation scenario and debriefing. The scale of response ranges from "nothing" (0) to "extremely effective" (1) for the combination of knowledges

Results & Discussion

Participants were predominantly female 135(87,1%), aged mean 26.2(± 6.6) years, 105(67.7%) were in the professional stage,134 (86.5%) had had contact with patients' pressure injury. There was a reduction of 2% in the level of effectiveness before the class and after the simulation scenario and the increase of 8% in the scores between after the scenario and after the debriefing. There was a reduction in the frequency of students who self-referred nothing and moderately effective 42 (27.1%), and increased to quite and extremely effective 43(27.7%) between the measures after the scenario and debriefing.There was a statistically significant increase in the mean scores of the level of effectiveness of the combination of knowledge for the exercise of competence after the scenario and debriefing($p < 0.001$) and in the overall variation between before and after deabrifing($p < 0.001$). The strategy rescues the student's operational rationale during the course of action, develops critical-reflexive thinking about knowledge, facilitates identification of learning gaps by teacher-moderator, and improves professional self-image provided reliable measuring instruments are used. The strategy develops the knowledges of the competency "risk assessment for injury pressure", suggesting promising results in the dimensions of doing(skills) and act-want, act-learn and act-power(attitudes), explored in this study, in view of the

construction of the KSAs items' of the measuring instrument in question

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Simulation training: how to provide medical care to the language barrier in obstetric hospital?

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

Vladislava Sukhovskaya N. Protopopova, V. Sukhovsky, T. Pavlova

Introduction & Aims

The flow of refugees increases every year in every highly resource country. In Irkutsk region (Russia), there is a flow of migration from Tajikistan, Turkmenistan, Kyrgyzstan, Kazakhstan.
Women need emergency medical care for pregnancy and childbirth in 60 percent.These women often don't have citizenship, don't know language of the country of immigration.

Aims:
To develop a simulation training for teaching medical staff to overcome the difficulties in language barrier to collecting medical history, the fact of allergic to drugs and registration consent to medical intervention.

Description

Training lasts of 60 minutes.
Group of medical staff included 6 specialists: midwife, obstetrician - gynecologist, nurse on care of the newborn, anesthesiologist - resuscitator, a neonatologist, junior nurse on care of patients.
In training use technique "standardized patient".

Simulation training include briefing, during which focuses of mentality on immigrant: of the spread of infectious and hereditary diseases.

Simulation training includes "acquaintance" with women in preterm labor, don't speaking in Russian, without an the accompanying Russian speaking relative.
History burdened by the presence of mitral stenosis in pregnant woman, and allergic shock on an antibiotic of penicillin.
With the introduction of beta-mimmetics will develop clinic of pulmonary edema.
When administered antibiotic of group of penicillin will develop an anaphylactic shock.
Held video training followed by debriefing.
Finally conducted questioning participants.

During the training participants were focused on full physical examination including cardiac auscultation, and if necessary, ECG on admission.
Images the different parts of the human body have been used to indicate the location of pain with analog pain assessment scale: "0" – doesn't feel pain, "10" - unbearable pain.
During the training used 4 cards with names of drugs most allergic in the population in the languages of the country, from the usually received migrants in Irkutsk region.

In difficult cases participants turned to online - translators to clarify certain circumstances.

Discussion

Simulation training with development of medical emergencies in language barrier in an obstetric hospital considerably increased readiness of medical staff. It focuses attention of medical staff to full inspection of the patient and obligatory blood tests and urine at such patients. Pictures the different parts of the human body and translation of informed consent of medical interventions help to correct communication, to prevent complications to life-endangering states with woman in labor and her newborn.

Standardising Simulation Debrief for Undergraduate Interprofessional Education

Format: Accepted for Poster Presentation
Subject: Debriefing

Authors

Alexandra Murphy — Royal Victoria Hospital Belfast

Introduction & Aims

Many models of debrief have been designed for use during simulation-based education. Several of these models have been researched and the evidence elicits the advantages of implementing such tools. At the university associated with our deanery, interprofessional education training has been incorporated into the medical curriculum over the last decade. The current half day session is attended by a small group of both medical and nursing students. The students must assess and treat critically ill patients during several simulated scenarios. The sessions are facilitated by a nurse educator and a clinical teaching tutor. The roles of the clinical teaching tutors are fulfilled by senior anaesthetic registrars.

As one of the six current clinical teaching tutors, I identified that there was marked variation in the level of training we each had received on delivering simulation-based education. This translated to each of us facilitating the debrief in a range of styles, including the use of an assortment of evidence-based debrief models.

Description

The unique features of simulation-based education in this setting included the multidisciplinary nature of the participants and also their relative unfamiliarity with this method of learning. It is well established that debriefing is the section of simulation-based education that offers most opportunity for learning and, therefore, it should be prioritised for optimisation and standardisation. I chose one model of debriefing, adapted it for use in this setting and introduced it to the other clinical teaching tutors.

In order to assess if a standardised debrief model would benefit the students, I designed a survey that was anonymously completed by the students and rated various aspects of their experiences. The survey was completed by 62 students who attended sessions prior to the introduction of the new debrief model. The same survey was then completed by 49 students who participated in sessions following institution of the standardised approach.

Discussion

The results demonstrated an improvement across all assessed elements of the students' experiences, including greater confidence in their role as both participant and observer during the scenarios. The students also felt that their clinical knowledge and skills and interprofessional skills were greater enhanced with the use of the standardised debrief model.

There are currently plans in place to facilitate the wider use of this debrief model with the aim of standardising simulation-based education throughout our region.

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SESAM
PROMOTING SIMULATION IN MEDICAL EDUCATION
SOCIETY IN EUROPE FOR SIMULATION APPLIED TO MEDICINE

STUDENTS SELF-CONFIDENCE IN MATERNAL-INFANT SIMULATION

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

Guilherme da Costa Brasil	Universidade de Brasília
Laiane Medeiros Ribeiro	Universidade de Brasília
Alessandra Mazzo	Universidade de São Paulo
Rodrigo Guimarães dos Santos Almeida	Universidade de São Paulo
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Introduction & Aims

Realistic simulation is a new teaching possibility which embraces situations such as technical abilities, but also makes it possible to deal with crisis management and conditions that could put the patient at risk. The maternal – infant simulation at emergencies provides competence and skills at clinical practice to undergraduated students. This study aimed to measure individual fulfillment and self-confidence with learning through simulation.

Methods

Descriptive research, with a sample which consists of 47 nursing students from Universidade de Brasília – Brazil. The inclusion criteria were: being registered in the Mother and Child Integral Healthcare subject and having agreed to participate in the research. The students were exposed to theoretical-practical classes regarding emergency situations in maternal-infant health. Afterwards, the students participated in simulated scenarios which consisted in dealing with pre-eclampsia, neonate resuscitation, pneumonia in critical state neonate and placental abruption induced by trauma. After the simulation, the students answered a questionnaire labelled “Student Satisfaction and Self-Confidence in Learning” - validated to Brazilian Portuguese and adapted to maternal-infant situation which measures individual’s fulfillment and self-confidence acquired through high fidelity simulation – composed by 13 items style 5 score Likert, divided into 2 dimensions (satisfaction/05 items and self-confidence in learning/08 items). The data were double typed at Excel and exported to the statistic software SPSS version 23.0. The Project was approved by the Research Ethical Committee (55504716.7.0000.0030). Out of the 5 items for satisfaction, there was more than 78% agreement regarding the educational material utilized and the way of conducting the simulation from the professor. Out of the 8 items for self-confidence in learning, the student who was the least confident about the subject presented by the professor obtained 55,3%, other items had a congruence of over 60%.

Results & Discussion

The students felt confident in the development of skills and knowledge through simulation to execute required procedures at a clinical environment. Simulation brings evidence for performance and group management in emergency situation.

Surgical Patient Flow at the Core of Surgical Skills Training: A New Perspective on Teaching Surgical Skills

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Technical Medicine is a 6 year health care educational program including two years of clinical rotations. Next to professional communication courses including physical examination at entry-level, 80 graduate students follow a 3 ECTS Surgical Skills course in 10 weeks. Previously, our Surgical Skills training included anatomy, (patho-)physiology, drylab training for suturing, local anaesthesia and incision/excision, however, lacked a close relationship with clinical practice. The goal of the current project was to redesign our course using surgical patient flow in the hospital as backbone of the course.

Description

For pre-operative Surgical Skills, lectures addressed pre-operative assessment (Problem Based Learning), optimising patient conditions and anaesthesiology. Group meetings included interpretation of medical imaging and surgical guidelines in a simulated multidisciplinary council and drylab simulation of local anaesthesia administration.

For peri-operative care, lectures included surgical time-out procedure, general surgical techniques and surgical complications. Hygiene and safety, scrubbing and electrosurgery were covered in lectures/group meetings. Wetlab simulation on porcine (skin, lung, heart) tissue included instrument handling, suturing and incision/excision. A live heart surgery was attended to experience patient centred care.

Post-operative care included wound healing and infection management. Figure 1 depicts a full overview of the course in relation to surgical Assessment was both on technical skills (scrubbing, suturing, local anaesthesia, incision/excision) and a knowledge/surgical principles test.

Discussion

Surgical Skills education before clinical rotations familiarises students with surgical techniques. Often, pathology specific knowledge is covered, while in rotations a broad spectrum of surgery is covered. Therefore, our course focuses on general principles in many surgical disciplines.

Students are well-prepared for their rotations using a mixture of lectures, group meetings and wetlab sessions, theoretical surgical principles, hygiene and safety. Knowledge is integrated by attending live heart surgery. Patient centred Surgical Skills education gives a comprehensive view on surgery. Procedural proficiency has to be demonstrated before practice on actual patients.

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The ASK course: is our practice safe and could we justify it in court?

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Mark Leopold	Croydon Health Services
Craig Johnson	Croydon Health Services
Vanessa Cowie	Croydon Health Services
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Gita Menon	Croydon Health Services
Emma Stewart	Croydon Health Services
Laurence SHARIFI	Croydon Health Services

Introduction & Aims

In healthcare we are constantly faced with challenging situations, none more challenging than going to a coroners court to answer for the care we delivered as healthcare professionals.
We developed an Advanced Skills & Knowledge (ASK) course that follows an evolving error chain to understand what attitudes and behaviours influence that chain of events to improve patient safety and enhance our organisational resilience.

Description

Exploring a situation from the stress loaded trigger event leading to the death of a patient we look at how the behaviours of others especially our seniors can influence our own behaviours. We unravel the importance duty of candour and understanding lessons learnt are when faced with such situations. We even experience attending coroners court to answer questions about our care from our own legal team.
The AHRQ patient safety questionnaire is completed by all attendees prior to attending the course programme to understand what are the current team working and patient safety attitudes within our organisation.

Discussion

Despite multidisciplinary training there still appears to be a divide between professional groups impressions of how safe our systems are. Team functioning and performance are affected by attitudes and behviours of others causing long term behavioural changes that could impact on patient safety like when to and who to escalate patient safety concerns to. Developing action plans within multidisciplinary groups to this problem the ASK course is challenging stereotypes and traditional norms. To ensure greater understanding of our individual and team roles when faced with such challenging situations through experiencing them first hand in a simulated environment we hope to be able to influence how we view near misses and best practice to ensure the safety of all our patients.

The Day of the Tech: How to Increase Support and Program Success Through Additional Technical Staff

Format: Accepted for Poster Presentation
Subject: Technical Operations (Supported by SimGHOSTS)

Authors

Lance Baily SimGHOSTS

Introduction & Aims

Why do our simulation programs ask non-technical clinical faculty to select, utilize, maintain, and replace technology components?

Despite the tremendous advances in technology acceptance by the end user is not a foregone conclusion. Behavioral intent to use a technology can present a large barrier to an innovations effective and efficient implementation. This course explains the use of the Technology Acceptance Model (TAM) and how a skilled and competent Healthcare Simulation Technology Specialist can overcome barriers to technology implementation.

This session will also explore why a dedicated full time simulation technology specialist is a requirement to long-term simulation program success. Further, we will provide examples of where to find and train qualified support specialists, as well as gain administrative investment into the emerging profession.

Description

Expanding your sim lab staffs skillsets is a must for short and long-term program success. This session will provide a valuable perspective from global healthcare simulation consultant and SimGHOSTS founder Lance Baily on why hiring a Sim Tech is such a crucial step toward increasing simulation lab operational efficiency and learning quality. Maximize your budget through system analysis of your
technology-based simulation lab.

Discussion

Share examples for the expansion of simulation technology specialist staff in our programs.

The Effect of Simulation-based Learning on the Performance and Stress Levels of Novice Surgeons While Performing a Circumcision Procedure for the First Time: A Pilot Study

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Dr. Yaser El-Hout	American University of Beirut Medical Center
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Introduction & Aims

Various high and low fidelity simulators are currently being used for teaching, practicing and mastering the skills required of novice surgeons for the operating theater. In this randomized blinded behavioral study, we aim (1) to investigate the effectiveness of a low fidelity circumcision model (Erickson SS et al. 1999) on teaching the procedure to novice surgeons and (2) to evaluate stress levels of surgeons while performing a circumcision for the first time on a real newborn male infant.

Methods

Following the approval of the Institutional Review Board (IRB), all 22 first year surgical residents at the American University of Beirut Medical Center (AUBMC) attended a didactic lecture on circumcision. Following consent, participants were randomized into the simulation group and the control group. The control group residents received only the lecture and a tutorial video of a circumcision performed by an attending physician. The simulation group received the same lecture and video followed by practical training on the Erickson model.
Baseline salivary cortisol- used as a bio-marker of psychological stress- was collected from all participants following the didactic lecture. Practical sessions on the simulator were conducted the month following the lecture in two groups of five. During the first practice, residents were asked to complete a pre and post questionnaire to assess their comfort levels and nervousness and their heart rate and salivary cortisol samples were collected before and after the practicum.
After one month of deliberate practice on the model, residents were called to perform the circumcision procedure based on the demand for circumcisions in the normal nursery. They were called based on alphabetical order from A to Z and depending on their availability. Participants completed pre/post procedure questionnaires regarding their readiness and comfort levels, and we documented their heart rate and collected their salivary cortisol samples. The attending surgeon, blinded to the randomization, supervised the procedure and rated the resident's technique on a scale of 1 to 5.

Results & Discussion

This pilot study is ongoing and has reached the half way point; we plan to complete the study by the end of May, 2017. We anticipate residents from the intervention group to be more comfortable with the procedure technique and to have lower salivary cortisol levels indicating less stress while performing a circumcision procedure for the first time.

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THE EMPLOYMENT OF SIMULATED SCENARIOS IN NURSING AS A TEACHING STRATEGY IN THE MATERNAL-INFANT FIELD

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Anna Karolyne Carvalho Fernandes	Universidade de Brasília

Introduction & Aims

Simulation is a new method which improves team work and leadership, promotes creative thinking and contributes to better problem-solving skills. This study aimed to evaluate the structure of simulated scenarios in the maternal-infant field from the students perspective.

Methods

Descriptive research, with 47 nursing students from Universidade de Brasília – Brazil. The inclusion criteria consisted of being registered at the Mother and Child Integral Healthcare subject. After simulation, the students answered the “Simulation Design Scale” questionnaire, with 20 items, divided into 4 factors: goals and information; support; problem-solving; feedback and reflection and the scenario realism. The data analysis was made by descriptive statistic at the software SPSS version 23.0. The project was approved by the Research Ethical Committee (55504716.7.0000.0030). 74,5% of the students reported to have being given enough information in order to obtain orientation and motive at the beginning of the simulation; 74,5% understood clearly the main goal of the simulation; 76,5% claimed that the simulation provided enough information in a clear way to solve the given problem; 76,6% affirmed to being given enough information during simulation; 87,7% stated that the clues were adequate and directed to promote student’s better understanding; 87,3% declared to being given support at suitable time; 74,5% alleged recognization when help was needed; 83% felt supported by the professor during simulation and through the learning process; 78,7% reported that problem-solving occurred in an independent and facilitated way; 80,9% felt driven to explore all the possibilities in simulation; 83% stated that the simulation was planned accordingly to the specific level of knowledge and skill; 91,5% declared that simulation allowed the opportunity to prioritize evaluations and nursing care, as well as establishing goals for the patient; 87,2% expressed that the given feedback was constructive and at suitable time; 89,4% claimed that simulation offered the possibility to analyze their own behaviour and actions; 87,2% said to be given the opportunity for orientation/professor feedback after simulation, in order to increase knowledge; 87,2% perceived similarities between the scenario and real life situation and 97,9% reported that factors, situation and variables from real life were incorporated in the simulation scenario.

Results & Discussion

The students considered to being given enough information throughout the simulation, and felt supported during the learning process. Realistic simulation is an efficient and relevant teaching strategy that optimizes the teaching-learning process.

The Evaluation of a Pilot Simulation-Based Critical Incident Station in a National Postgraduate Anaesthesia Exam

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Elizabeth Coyle	College of Anaesthetists of Ireland
David Greaney	College of Anaesthetists of Ireland
Ruth Flaherty	College of Anaesthetists of Ireland
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Introduction & Aims

The College of Anaesthetists of Ireland (CAI), the postgraduate training body responsible for the training and evaluation of Specialist Anaesthesia Trainees (SATs), hold two examinations prior to the awarding of the Fellowship of the College of Anaesthetists of Ireland (FCAI). The examination process is divided into the Membership exam and the Fellowship exam. Candidates must pass the Membership examination before being considered eligible to sit the Fellowship examination. An objective structured clinical examination (OSCE) forms part of the Membership examination.
The OSCE consists of up to 18 stations, one or two of which are PILOT stations that do not contribute to the candidates mark. Neither examiners nor candidates are aware which stations are PILOT stations. Each station lasts five minutes and is marked out of 20. The pass mark is set at 12 out of 20.

Methods

At the upcoming Spring sitting of the OSCE examination we will introduce a new PILOT critical incident station using ALSi® simulator (iSimulate, Canberra, Australia). This station will be evaluated by comparing the mean scores and pass rates to those achieved at the TRUE stations. In addition, an external assessor blinded to the status of the station will evaluate the performance of the examiner, station administration and general comments.
Mean scores and pass rates for the PILOT station will be calculated. Modification would be required if the following two criteria were simultaneously met:
1. Mean scores were 2 marks outside the average for the TRUE stations
2. Pass rates were 20% outside the pass rate for the TRUE stations

Results & Discussion

We will present the results of our evaluation of the PILOT station and detail any modifications that are deemed necessary prior to the introduction of this station as TRUE stations in the Autumn OSCE examination.

The mountains and the forest environment as unsafe working conditions. The First Aid workshop in a dangerous workplace, implementing medical simulation techniques, using the principles of civil and tactical emergency guidelines.

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Katarzyna Naylor	1Department of Didactics and Medical Simulation, Chair of Human Anatomy
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Introduction & Aims

Employees working in the forest and mountain environment are constantly exposed to accidents. Additionally, the terrain is also an obstacle preventing rapid arrival of emergency services. The chance of surviving in these conditions increases when co-workers or bystanders are characterized by the skills and sufficient knowledge concerning First Aid proceedings enriched by the elements of the battlefield medicine. The aim of the study was to evaluate the newly develop course prepared for the employees working in the forest and mountain environment

Description

31 people participated in the course. They were employees of Roztocze National Park and the Forestry Commission Lutowiska. A diagnostic survey was implemented in a form of a questionnaire. The respondents were provided two original questionnaires. Surveys were anonymous and voluntary. The workers' knowledge has been assessed using a Likert scale (1 - 5), the average assessment of First Aid knowledge before the workshop was 2.48. Majority of participants (58%) described First Aid as difficult. After the workshop, the respondents assessed the knowledge on average as 3.87. After the course, 58% declared that definitely would always provide First Aid to a stranger, and 81% to a close person. The average assessment of the course was 4.81. Over 80% of respondents stated that they definitely need such workshops frequently.

Discussion

The knowledge of the exposed workers is inadequate. The analysis showed that regular improvement of First Aid skills is very important and can increase safety in hazardous workplace such as the forest and mountain environment. Each time the training should be adjusted to the group's profile in terms of the program, teaching techniques and the place of training. There is a need to implement such training on a wider scale among forestry and mountain workers.

THE ROLE OF MEDICAL SIMULATION TECHNOLOGIES IN CME OF STROKE UNIT STAFF

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

Ukraine has the highest rate of stroke incidence in Europe and need to improve the system of specialized care for such patients The most important condition is a special stroke units training personnel for the thrombolytic therapy and emergency assistance. The study was aimed to assess the role of medical simulation technologies in continuous medical education (CME) of stroke unit staff.

Description

The retrospective analysis of the available publications in the opened sources was conducted using databases PubMed, Ovid and specialized web-resources (ESO, Angels initiative). The own experience of the implementation of medical simulation for training neurologists and nurses employed in stroke units was also analyzed. The quality of training was assessed by interviewing 22 neurologists and 14 nurses using special questionnaire with ranked answers. The obtained information demonstrates that both virtual environment (Virtual Body, Virtual Patient), and practical training using mannequins could be helpful for improving practical skills and readiness for emergency assistance. 80.6% of interviewed specialists marked “serious improvement” of their professional competence after training at the Educational-innovative Centre for the Physicians Practical Training and the Medical Simulation Department in Odessa National Medical University. This training included modules of cardio-pulmonary resuscitation, emergency care for critical health conditions and, endotracheal intubations, puncture of central veins, peripheral blockades, lumbar puncture and thrombolysis.

Discussion

Accordingly to the Angels Initiative every 30 minutes a stroke patient who could have been saved, dies or is permanently disabled, because they were treated not in stroke ready hospitals. But not only equipment is important for successful work of stroke unit team – much more important issue is competence of personnel and readiness to provide care in the complex clinical situations. Thus the role of medical simulation technologies in continuous medical education is crucial.

THE ROLE OF SIMULATION TRAINING FOR THE MILITARY MEDICAL PRACTICE AND THE COMBAT EXPERIENCE RESULTING IMPACT ON SIMULATION EDUCATION IN UKRAINE

Format: Accepted for Poster Presentation
Subject: Faculty Development

Authors

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Konstantyn Gerzhyk	Odessa National Medical University
Oleksiy Telyatnikov	Odessa National Medical University
Volodymyr Nosenko	Odessa National Medical University

Introduction & Aims

About 3 years in Odessa National Medical University exist the Department of simulation medicine and Educational-innovative Centre for the Physicians Practical Training with qualified teachers, doctors of various specialities along with anti-terrorist operation (ATO) continuation in Eastern Ukraine.
Identify the major specific aspects of simulation education (SE) in ATO conditions.

Description

Medical service of the Ukrainian army has been forced to restructure in the short term to increase its potential. It had to take as a basis the European and world standards of medical care. Many questions have been revised for the army focusing on simulation training. The Ministry of Health Academic Council special decisions on 17.03.15. reorganized our center into an urgent-agency for military medical personnel training assigned to the ATO zone. More than 400 professionals have been trained already. Our staff has developed new scenarios for training, providing extra training cycles. The department has become the main connecting link of educational and methodical training of military physicians in Ukraine. Trainees before being sent to the war zone have passed SE modules of military emergency medical care, including own developed additional scenarios and check-lists. Trainings were conducted, using mannequins, moulages and robotic simulators, adapted for combat operations. Leading surgery and anesthesiology specialists from Military Medical Clinical Centre of the Ukrainian Southern Region started working at our department. According to the rotation our professors were repeatedly (3-4 periods each) called to the 3 months military medical service in combat conditions, helping both soldiers and civilians. After returning from ATO zone they continued to work with hands-on experience in SE system.

Discussion

Training before being sent to the combat zone allow to eliminate possible errors in the battlefield and rework their skills to automaticity.
The experience significantly reduced the time to provide medical care in war conditions and increased its efficiency. All this together helped to reduce the mortality among the military and civilians. Our Department's teachers as military doctors not only provided specialized medical care in the ATO zone, but also actively performed the training of sanitary instructors, military personnel and the civilian population to modern principles of first medical care, premedical and medical care during war. Further they have prepared a group of trainers for teaching process continuation. All done made a significant contribution to the development of theoretical and practical aspects of medical care in combat

conditions, SE for the military battlefield and tactical medicine.

THE USE OF WECHAT AS A FUTURE SIMULATION EDUCATION METHOD: THE NETWORK PLATFORM APPLICATION IN PEDAGOGY AND CHINESE EXPERIENCES

Format: Accepted for Poster Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

Microblog is a Web 2.0 technology that provides an online social networking platform for communicating and sharing information.It can effectively enhance pedagogy in a blended .In China, Weibo is an popular microblogging site that is equivalent to Twitter. Wechat is also extremely popular online social networking service.For this reason, we believe that Weibo and Wechat may be the most likely candidate for integrating social networking with medical education. However, there is very little research to demonstrate how to use.The aim of this study which is still in progress is to evaluate the feasibility and the interactivity of the application of Wechat in field of medical education especially for the courses of simulation training.

Description

Part I: To evaluate and compare the advantage of Weibo and Wechat as a pedagogical method. Method: We released the same information through Weibo and Wechat at the same time and same date from 23 Dec 2013 to 14 Feb 2014 and collected and reviewed the reading quantity of these information 2 months after the first release.
Part II: To evaluate the feasibility of Wechat as a pedagogical method and the possibility to promote its learning function. Method: We classified all the multimedia information in two classification four category and released these information since 3rd aug 2013. We collected and reviewed the reading quantity and transmitted quantity of all these information at the end of June 2016.

Discussion

Part I Result: The overall read quantity and that of medicine knowledge formation were larger in Wechat while activity notice & self-improvement information was widely spread through Weibo.(Via Table 1). No significant difference was observed in terms of release time and date.(Via Table 2 &3)
Part II Result: We released 995 information and got 2667975 pageviews of all the information. No significant difference was observed in terms of release date while medical education associated information was widely spread.(Via Table 5&6).
Wechat appears to be well-accepted than Weibo and is feasible as a pedagogical method. The users may profit from Wechat freely through the fragmentation time both in workdays or holidays. We propose to implant video-audio materials such as surgical training courses, EKG and radiology courses on Wechat platform in order to broaden the time limitation of traditional course. We are looking forward to combine multimedia materials on Wechat platform in order to create a MOOC platform for the development of simulation education in Shanghai China.

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THE USE OF WECHAT TO IMPROVE TEACHING EFFICIENCY: THE SOCIAL NETWORK PLATFORM APPLICATION IN SURGICAL HANDS-ON CURRICULUM

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

In China, we have a huge amount of trainees and got a difficulty to well prepare the hands-on curriculum because of the time limitation. Wechat is an extremely popular online social networking service, accessible from any Internet-capable device such as mobile phone, iPad and is designed and used as a vehicle to converse and share ideas with video-audio materials.
For this reason, we believe that Wechat might be the most likely candidate for integrating social networking with medical education to Improve teaching efficiency.
The aim of this study is to evaluate the feasibility, effectiveness of the application of Wechat in field of hands-on surgical training curriculum.

Description

From Jan 2016 to July 2016, we set three training sessions of laparoscopic training curriculum for all the trainees and divided them in two groups (via Table 1). The difference between two groups is the ways of distribution of demonstration video and introduction of the curriculum via Table 2&Figure1) so that the training session duration time is also difference. At the end of each curriculum we make an examination and compared the examination results of three session between two groups.
We got 57 trainees in traditional group and 51 in Wechat group. There is no significant difference of gender distribution data and trainee identity data of two groups(via Table 3&4).The examination result of three training session shows Wechat group is better than traditional group but with no significant difference.(via Table 5)

Discussion

The study shows that even without a face-to-face explanation of demonstration video from tutor to trainee, there is no influence of training result. With the help of Wechat platform, we might increase the training session duration time or make more trainees for one curriculum. We propose to implant video-audio materials such as surgical training demonstration videos, introduction of curriculum on Wechat platform in order to broaden the time limitation of traditional course. We are looking forward to combine multimedia materials on Wechat platform in order to create a MOOC platform for the development of simulation education in Shanghai China.

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Tools and strategies used for the assessment of competences in simulated clinical activities

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

The assessment can be understood as one of the main steps for the teaching-learning process, it allows the success of the simulated practices and the students and professors' progress. It is necessary to chase strategies that assess the students practices in a systematized way in a simulated environment. This study aims to identify how the competences' assessment has been done in the simulated clinical activities.

Description

Qualitative study, carried out between December 2016 and January 2017, following the ethical norms, questionnaires about "how the competences in simulated practices have been assessed" were forwarded by electronic platform to experts in the clinical simulation field, development and competences assessment.

Discussion

The questionnaire was answered by 15 experts from Brazil, Chile, Portugal and Mexico. All of them work on the health assistance and/or on university teaching and have experience on clinical simulation and competences assessment.The usage of scenarios with assessment with checklists built by the experts themselves were the most cited tools among the respondents. The checklist is a standardized tool that can be considered as a systematic assessment tool that rates the individual's performance. However, it is possible that this tool restricts the appraiser's eyes for expected points, like the teamwork, the decision making, the therapeutic communication, and others, limiting the scope, the potential and the quality of the assessment. To choose a assessment tool, it is necessary to clarify what will be measured, like the clinical judgment, the critic thinking, the competence or the technical ability. The simulated practices with scenario solving, the respective debriefing and the development of the OSCE were also cited. The assessment in clinical simulation has been performed with the support of several tools, with different characteristics, however, the competences assessment requires the estimation of other more expanded aspects.

Towards positive simulation learning in Faculty of Medicine, University of Helsinki

Format: Accepted for Poster Presentation
Subject: Assessment using Simulation

Authors

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Introduction & Aims

Chest pain and Dyspnoea course (14,6 ects points) is first clinical course with simulation teaching at the University of Helsinki. During the course, early clinical phase students practice working in small groups and solve emergency room patient cases by working with patient simulator.

Total of 160 students attend the simulation teaching in groups of eight. Every simulation teaching begins with an introduction into simulation learning environment, before moving into the three arrhythmia patient cases. Two or three students work together, with one student leading the group. Two other groups observe in the same room. After every case learning outcomes are discussed.

In addition to the training of clinical skills, the aims of the simulation teaching are to provide a nonthreatening, authentic and positive simulation experience for all. The emphasis is on interaction, team-work skills, ISBAR communications, patient safety and reflective thinking.

Description

Chest pain and Dyspnoea course features a simulation teaching team with a clinical teacher and senior nursing officer. Additionally, the patient simulator is operated, maintained and programmed by a technician and IT specialist working at the simulation centre.

To assess the course, electronic survey was held after the course in September 2016 – February 2017. Students rated the simulation experiences on a tablet computer immediately after the course, surveyed in Likert-scale (N = 160).

The main results illustrate that students value the simulation teaching highly (4,84/5) and consider the teaching useful and important. All the surveyed students believed that they had learnt from the simulation teaching. Results are similar from our focus groups interviews with the students.

Discussion

Chest pain and Dyspnoea course has included patient simulation teaching from the year 2012. Patient cases have been finely tuned to be positive, safe and constructive learning situations. From 2016, simulation team has supported the teaching. The learning atmosphere is more relaxed when teacher can concentrate on teaching, instead of technology.

Discussion sessions after the case have also been focused on the positive experiences and reflections.

Simplified AV-system with HDTVs helps observations and vocoder enhances reality. The whole simulation team has also been trained on both using patient simulators and planning simulation patient cases.

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TracheoSim: a low-cost tracheostomy simulator

Format: Accepted for Poster Presentation
Subject: Others

Authors

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Introduction & Aims

The procedure of tracheostomy is fundamental to guarantee the respiratory function of the patient in several clinical situations, prompting to survival. Teaching the practical part of the procedure can be done using animals, and also, simulators. Nowadays, however, the tracheostomy simulators on the market have high price of purchase and maintenance that limit their use. This project has the goal to develop a tracheostomy simulator, pursuing the following points: low cost, likeness to human tissues and easiness of reproduction of the consumable materials.

Methods

The manufacture of the structure of the TracheoSim included a head and bust plastic manikin, Polyvinil Chloride (PVC) pipe 1 1/2 inch, epoxy mass, threaded screw and acrylic ink. For the cervical contents it was used a foam block covered by a piece of fabric, silicone trachea, pastisol tyroid and silicone rubber subcutaneus tissue. The skin was made with silicone rubber and catalyst (proportion 10:1), brown acrylic ink and non-woven fabric. The final product was submitted to testing with a sample of 10 professors – experts in simulation and tracheostomy – of medicine from the Universidade Federal do Paraná, Curitiba, Paraná, Brazil.

Results & Discussion

The TracheoSim simulator allows teaching and trainning of the procedure of tracheostomy. The cost of the materials used in the development, including molds, was € 78,51, expressively lower than the market's average price (estimated in € 1.854,62). The model also has a cost of € 0,53 per procedure. The simulator offers autonomy to the user, who can make its own consumable pieces (skin, subcutaneous tissue and trachea), contributing to the reduction of the maintenance cost. The tests signalized satisfactory results related to the technique's simulation (average of 9,38 ± 0,396 on a zero to 10 scale) and experience in using it (average of 9,36 ± 0,361). Also, the participants stated that the simulator can be applied to the teaching of medical students (average of 9,8 ± 0,422). The simulator reached its goal of allowing the teaching and training of tracheostomy, but still needs a wider didactical validation.

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Training communication skills and clinical reasoning in Paediatrics clerkship through GOSCE

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Undergraduate medical education commonly separates the training of communication skills (CS) from clinical reasoning (CR). This separation seems to contribute to students' misperception of communication skills and patient centeredness. CS training is often non-experiential, without direct observation and lacking effective feedback. A Group Objective Structured Clinical Experience – GOSCE (Konopasek L. Patient Educ Couns. 2014) has shown to be a feasible method for an integrated approach of teaching CS and CR enabling direct feedback to learners. At the Faculty of Medicine of the University of Porto, we have implemented a GOSCE to simultaneously train communication skills and clinical reasoning in a 5th year Paediatrics clerkship. The aim of this study is to describe the methodology used and to present students perception on its impact.

Description

GOSCE is a recent educational methodology for teaching communication and clinical reasoning within the clinical clerkships. As opposed to OSCE, GOSCE application provides formative rather than summative assessment, focusing on the "Experience"' rather than on "Examination". GOSCE was also designed to promote high quality, collaborative, detailed and immediate feedback from the instructors, standardized patients (SPs), and peers, and to encourage the development of the skills of self-assessment and reflective practice.
Small groups of students (12-15) participate in each GOSCE (4h). Three scenarios (two parts each) were developed to expose students to specific pediatric challenges, such as, adolescent counselling, new-born diagnosis and breaking bad news to parents. Two experienced members of the faculty played as SPs. Two or three students act in each scenario, while the other students and facilitator observe specific aspects such as the empathy, non-verbal communication, exploring emotions, among other. Immediately after the scenario, the students participating in the scenario complete an adaptation of the Calgary-Cambridge Guide checklist, promoting self-assessment and reflection on their performance. After sharing their self-assessment, a three level feedback is given by peers, SPs and faculty. At the end of the GOSCE, students are invited to share their take-home message. An anonymous questionnaire is sent to students after this experience.

Discussion

Students consider training in CS as important or extremely important in undergraduation (24/25), in residency (24/25), and in continuous education. 23/25 considered that needs continuous training on CS. The students evaluated the GOSCE concerning the scenarios (mean: 8,4 over 10) and discussion/reflexion (mean: 8 over 10).

Medical students positively recognize the need of an integrated training of communication skills and clinical reasoning, highlighting the relevance of the training method (GOSCE).

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Training in the simulation center or in situ what is better?

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Nowadays the most effective way of practical training and hospital staff assessment is simulation training which surpasses training at the patient's bedside in performance and safety. The goal is evaluation of the team training effectiveness in the hospital (in situ) and in simulation center (SC).

Methods

The study was conducting during 2016. The subject of the training was pre-eclampsia. Group ■1 - obstetricians and anesthesiologists (n=55) - training in the MSC SSMU. Simulation center equipment was used. Group ■2 – in situ training in Perinatal center of Seversk - obstetricians and anesthesiologists (n=40); midwives and anesthetist (n=96); other professionals working on the day of the training. The mobile High Fidelity (Victoria, Gaumard Scientific), audio/video, and real hospital equipment were used. Stages of the training: the emergency room; intensive care unit; the delivery room. Type of training was continuous. Patients were moved from stage to stage in real time. Control was separate checklists for obstetricians and anesthesiologists at each stage. Debriefing was collective.

Results & Discussion

Table 1.
In situ training. Negative: expensive; it takes more time; continuous learning process is necessary; debriefing time is limited; trainings are held in the real hospital – possibly there will be complexity of preparation facilities.
Positive: high level staff motivation; forming and saving skills, including team work in the workplace environment; improving communication skills, team building, identifying leaders in real teams; reveal the shortcomings of hospital equipment, the wrong placement of equipment; defects in the organization and warning system in the healthcare facility.
Training in the SC. Negative: trainees have to work in an unfamiliar environment; SC medical equipment is different from the equipment of trainees' workplace; teams are formed from the staff of the various agencies; it is impossible to involve all specialists participating in the real patient care. Positive - trainings are held in specially prepared rooms, the exact time estimate allows increasing number of training sessions per day; it requires fewer employees what decreases the cost of the training; debriefing duration is not limited.
Results:

1.Training in the SC is more effective for forming and/or saving hard skills, mastering aid guidelines, development of leadership skills and information transfer.
2.Training in situ is more effective for assessment of hospital staff and aid system in the real hospital, improving team building skills and communication skills.
3.Training in the simulation center should be preceded by in situ training

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TUTOR SUPPORT SYSTEM FUNCTIONING DURING SIMULATION MEDICAL EDUCATION

Format: Accepted for Poster Presentation
Subject: Others

Authors

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Introduction & Aims

Tutor support during medical simulation education is important part of medical education monitoring and quality control system in university.
Aims - professional medical training improvement of students, residents, graduate in Educational-innovative centre for physicians practical training (The Centre) with tutor support attraction.

Description

According to the requirements of National Standards of Ukraine ISO 9001:2015 and tutor project concept in the Centre were developed appropriate action and procedures in the tutor support system, namely: the general principles management quality in simulation medical education; process approach, that ensures completeness of closed-loop learning; leadership, organizational roles; planning and ensuring; functioning, evaluation of results and improvement simulation medical education in the Centre with tutor support attraction. The research works were carried out by employers and tutor from Simulation medical department and the Centre during the period 2014-2016. The results were presented in 86 reports on conferences, 2 patents, 42 articles, 30 theses, 4 tutorials and 1 textbook. The Centre possibilities allow passing learning courses for 2500 trainees throughout the year with teaching prospect up to 5 thousand with tutor support involvement.

Discussion

The received results show the efficiency of tutor support system during integrative education in the Centre, which improves management performance of educational units providing medical educational services with closed cycle education.

U can't touch this a simulation intervention to increase speaking-up behaviour for improving hand hygiene.

Format: Accepted for Poster Presentation
Subject: Patient Safety / Quality Improvement

Authors

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Introduction & Aims

We designed a hand hygiene speaking up training that targets the three main influencing factors known from the literature: risk perception, perceived costs and perceived efficacy and test its effectiveness in a real life setting. For this study healthcare providers (HCP) should comply with hygiene guidelines as opportunities to speak up in the team. Hands of HCP are the most common vehicles for transmission of pathogens in hospital settings. Thus, hand hygiene has been widely accepted as the leading measure for preventing healthcare associated infections (HAI). Opportunities for hand hygiene are low impact but rather frequent and thus can add up to a big risk for the patient over time (1). Further, drawing from the feedback literature we know that frequently given feedback has a higher acceptance rate than infrequent feedback (2).Therefore frequent speaking up for HAI should also lower the barrier for speaking up in more severe cases.

Description

Anaesthesia teams from two different departments will receive either a) a technical training targeting hygiene processes during the intubation process or b) the same hygiene intervention and additionally a speaking up training. Intervention A contains a lecture of infection control specialists and should therefore increase the risk perception of HCP for hygiene processes. In addition to the hygiene lecture, Intervention B will contain a behavioural speaking up training in an in situ simulation including an embedded simulated person (ESP) that is not sticking to hand hygiene guidelines. All participants will be video recorded.

Discussion

Anticipated Results and Discussion
We hypothesize that a technical training to increase the risk perception will increase speaking up behaviour as well as technical performance because through the increased risk perception HCP are able to see more opportunities for speaking up. The outcome variables will be safety climate, this will be measures pre and post with the psychological safety questionnaire (3), clinical performance and learning about hand hygiene guidelines and procedures will be assessed. Overall we expect that unsafe hygiene behaviour will decrease after the intervention. Further we expect interventions B resulting in more speaking up behaviour than intervention A. Overall we expect that unsafe hygiene behaviour will decrease after the intervention. This is a new approach trying to change the climate in a team, further this is the first study that might be able to show the effect of a speaking up intervention on real HCPs behaviour in real live settings.

Use of Obstetrical Simulation to Improve Patient Care in High Risk Situations

Format: Accepted for Poster Presentation
Subject: Interprofessional / Team Education

Authors

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Introduction & Aims

Our institution utilized simulation sessions involving high risk situations in obstetrics and newborn care to improve team readiness and performance. Our aims were to improve labor and delivery staff recognition of a high risk situation, develop an appropriate response, coordinate work with a multi-disciplinary group, and use closed loop communication.

Description

A core team received standardized training on conducting simulation and leading debriefing. The project team then created simulation scenarios and curriculum. The team members conducted simulation exercises three times per year for 3 separate hospital labor and delivery units. Each simulation included a obstetrical and neonatal component. Simulations were multi-disciplinary including nurses and providers. The participants were then asked to complete an online survey. Survey results showed consistent overall satisfaction with each simulation event.

Discussion

Simulation is an effective tool for education at community labor and delivery units. Our results show that simulation is well-received by staff and providers. Obstetrical and neonatal simulation is an effective tool for improving readiness for high risk events, multi-disciplinary team functioning, and closed-loop communication.

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Validation of heart rate variability monitoring in high fidelity cardiac arrest simulation training in PRESAGE simulation center

Format: Accepted for Poster Presentation
Subject: New Technologies and INNOVATION

Authors

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Introduction & Aims

Simulation training is an effective teaching tool, preeminently in high-risk situations such as advanced cardiac life support (ACLS). Simulation-based ACLS education improved quality of care during in hospital cardiac arrest (CA). Sudden cardiac death resuscitation in real life or high fidelity simulation (HFS) represents a highly stressful medical situation. Stress could be beneficial or detrimental in one`s capacity of knowledge acquisition and achieving tasks. Stress measurement and its correlation to technical and non-technical performances could be a tool to improve teaching methods.
Heart rate variability (HRV) is mediated by the autonomic nervous system and a lower HRV reflects sympathetic activation and parasympathetic inhibition therefore it could reflects stress.
The aim of this study was to validate the feasibility of objective stress measurement by HRV monitoring.

Methods

An open monocentric prospective study was conducted from December 2015 to December 2016 in Lille's PRESAGE Simulation Center. Intensive care residents from Lille Medical University played team leader in a CA scenario. Objective stress was measured from recordings of three leads electrocardiogram portable device (PhysioDoloris® monitor, MDoloris Lille, France). Heart rate variability (HRV) was obtained by analyzing time interval between successive R waves (RR interval) through an algorithm validated in previous studies. The Analgesia/Nociception Index (ANI) gives both a qualitative and quantitative measurement of HRV.

Results & Discussion

64 intensive care residents were monitored for HRV in simulation training. 36 signals (56.3%) were fully interpretable, Bluetooth connection failed in 16 cases (25%), 8 cases (12.5%) weren't connected and in 4 cases (6.2%) signal quality wasn't sufficient for interpretation (Figure 1). HRV monitoring is a feasible method to evaluate continuous physiological stress for team leaders in highly stressful simulation-teaching. Upgrading signal connection by Bluetooth 4.0 or Wi-fi could improve the method. Correlation between reduction of ANI, self-reported stress and performance will be a key to validate the impact of HRV monitoring.

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Visualization as a reflection technique in the learning process. A qualitative approach.

Format: Accepted for Poster Presentation
Subject: Others

Authors

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Introduction & Aims

Introduction: There are several teaching strategies that promote clinical reasoning and the development of procedural competences, which emphasize clinical simulation, role playing and mental imagery. Imagery includes various mental training interventions such as visualization that promote students' effectiveness in motor skills training.
Aims: To describe the reflexive elements of the preparation of medicines in the subject of Practical Nursing for Medicine.

Description

Qualitative research, with case study approach, descriptive scope. Thirteen first-year medical students participated, after informed consent process. There were 4 visualization sessions after the demonstration of drug preparation. Students were asked to describe what they had visualized after each imagery session. The data were analyzed using the content analysis technique.

Discussion

ResultsA total of 12 units of meanings were created prior to visualization and 19 units of significance after visualization sessions. In relation to the above, there are 3 categories of analysis. Differences between the previous and post ideas were observed regarding the progression of learning in the preparation of medicines.
Conclusions: The incorporation of visualization to the learning of clinical procedures can be useful as a strategy to verify the progression of student learning, as well as a useful tool to evaluate the training process planned by the teacher.

When you hear hoofbeat, think of horses not zebras

Format: Accepted for Poster Presentation
Subject: Curriculum Development

Authors

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Introduction & Aims

Differential diagnostics is a big challenge during undergraduate education, as well as daily clinical practice. Therefore, it is very important to outline its significance, which can improve patients' safety.
The aim of the study was to assess usefulness of new approach, based on original set of scenarios applied for medical simulation course.

Description

The undergraduate medical students from 8th semesters were participating in the obligatory medical simulation course in the Simulation Center. The length of the course was 20 hours through 5 consecutive days and the scenarios were based on different acute cases from emergency medicine. During one of the days the students took part in four clinical scenarios. All of them started with the same introduction given to the group: "A 67-years old women with ovarian cancer was admitted to an emergency department complaining of an acute dyspnea". Despite of the similarity of the primary description, there were significant differences between each patient's vital parameters and course of the scenarios. The main aim for each group was to make a proper differential diagnosis (pulmonary embolism, psychogenic dyspnea, pneumonia and anaphylactic shock) and adjust an adequate management. Additionally, each scenario was focused on particular non-clinical skills (communication with difficult patient, agitated family member, non-cooperative team member, leadership and team work).

Discussion

The efficacy of the new approach was assessed in a focus group consisted of 11 course participants and 2 teachers. Students realized a necessity of an appropriate differential diagnostics – confirming the most common health problems and/or introducing a correct management for life-threating conditions. They reflected about a danger of focusing on rare diseases, which may complicate diagnostic process. They understood the importance of constant vigilance and humility for patient's safety. Combining this approach to differential diagnostics with concern on clinical and non-clinical skills may present whole spectrum of daily practice, which can be improved by training in safe, simulation-based environment.

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