SESSION 1A
A week of errors: a 5 day multi-disciplinary ward simulation exercise

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Centre for Simulation and Patient Safety

BACKGROUND
In-situ simulation is being increasingly used to improve patient safety by detecting latent errors in healthcare systems [1]. Examples include short scenarios repeated over the course of a few months [2,3].

PROJECT GOALS
We undertook a 5 day in-situ training exercise at Aintree Hospital. We designed scenarios containing specific errors and aimed to see if participants could recognise these during a busy simulated ward environment. The learning objective was to increase understanding of the role of human factors in error causation.

METHOD
We designed 20 scenarios containing errors relating to patient safety issues. Using 9 high fidelity mannequins and 6 simulated patients, we recreated a 15 bedded ward. We simulated ward rounds and emergencies. We invited 115 multi-disciplinary professionals to attend. The sessions were facilitated by a human factors educator. Debriefs focused on error recognition. We also created a “room of horrors” – a simulated room containing 25 errors. 58 participants entered the room and were asked to identify as many errors as they could. They then attended a lecture on error types before repeating the exercise.

RESULTS
This was a highly successful exercise. We noticed that most candidates found it difficult to identify the implanted errors. This was uniform across all error types. Of the 58 volunteers that entered the room of horrors, error recognition ranged from 0 to 75.9% (0–44). After the lecture, this ranged from 3.4% to 77.6% (2–45).

DISCUSSION
We have used simulation to demonstrate that healthcare professionals find it difficult to recognise errors. This could be due to a lack of understanding about error types or a high level of workload and distractions.

CONCLUSION
Debriefing the sessions and providing a lecture has allowed us to facilitate awareness of error causation. We hope that this will improve patient safety.

References available on request.

Conflicts of interest: NO
An intercontinental partnership: Interprofessional education and interdisciplinary research in healthcare simulation

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We would like to present this strategic project, which has been accepted and funded after an international contest, to obtain comments from our SESAM colleagues.

Background
Established in September 2012, the G3 [1] is the grouping of three French universities, the University of Geneva, the University of Montréal, and the Université Libre de Bruxelles, for their common interests and objectives. The Program for the development of strategic partnerships in education and research is one of the main vectors for the collaboration of the G3. He provide selected funds to pursue these collaborations.

Our three faculties, although at different stages of their evolution in simulation, recognize the urgent need to develop and integrate simulation into our communities, into our medical teaching programs as well as our healthcare systems. Our strengths, distinct orientations, and experiences will be utilized for mutual enrichment.

Objectives
1. To bring together teachers and Francophone institutions involved in simulation in healthcare.
2. To impart experiences on:
   a. the design and content of interdisciplinary simulation curriculum in healthcare;
   b. the planning and management of simulation centers;
   c. the methods (best practices) to creating activities in simulation.
3. To produce common and intercultural activities which address our students, and to share scenarios for simulation.
4. To initiate research.

Method
This project aims to pool our expertise in order to provide a structured response to both academic and societal needs, by developing new learning techniques, training and assessment tools which can be applied to future research projects.

We plan on:
- Creating an operational interuniversity infrastructure which will operate at a distance.
- Developing programs for the students, professors, instructors, technicians, actors or fellowship programs of the Francophone community in simulation.

Conflicts of interest: NO

1 http://www.international.umontreal.ca/Appel_G3_2014.htm
Interdisciplinary High Fidelity Simulation (IHFS): a better immersive experience for all

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Background
IHFS is an effective team training method (1). Previous experiences showed it was difficult to involve every participant in multidisciplinary scenarios, especially surgical team members. Thus satisfaction level can be insufficient and individual learning goals difficult to achieve.

Project goals
Our aim was to explore ways to address this problem and assess their impact on learners.

Method
We conducted 2 IHFS days, according to the French Health Authority requirements.
Day 1 (2012): in a simulation center, with 4 modified pre-existing scenarios. Functional surgical tools and draping were available, but not usable by surgical members on a standard high fidelity manikin.
Day 2 (2013): in situ, with 4 specific new scenarios. Hybrid simulation was obtained by adding simple procedural simulators to a high fidelity manikin, usual surgical tools and draping could be used.

Results
We compared characteristics and results of the 2 days. Instructor teams were identical and learners were analogous: Anesthesiologists (3), nurses anesthetist (3), nurses (2), operating room nurses (3), surgeons (3). Better individual goals achievement (93,3% vs 81,7%) and satisfaction (93,9% vs 86,7%) were reported after day 2 . Additional cost induced by in situ IHFS and hybridization was 893 Euros.

Discussion
Simple and relatively inexpensive ways could improve the implication of learners, especially surgical team members, in IHFS. Familiar workplace and devices enabled by in situ simulation, specific scenarios, and procedural simulators allow a better immersive experience. With optimized simulation, surgical team members may be more active so their cognitive state may be analogous to real-life, which would allow a more relevant analysis of human factors during debriefing.

Conclusion
Some relatively simple upgrades can be implemented to significantly improve the immersive experience provided by high fidelity simulation. Cognitive mechanims and impact on knowledge transfer must be studied.

1 Br J Anaesth 2013 ;110 :529-44

Conflicts of interest: NO
SESSION 1B
A simulation-based teaching model of radiological anatomy – a novel approach to improve students’ comprehension during subsequent clinical training.

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Background
The knowledge of sectional anatomy is a necessary prerequisite to understanding radiological images including ultrasonography and CT scans.

Objectives
We developed a small group, hands-on teaching model of anatomy with application to ultrasonography and computed tomography, which incorporates elements of medical simulation. The course integrates clinical skills and basic science during a simulation based experience. In our study we aimed to assess the feasibility of this new teaching approach and to investigate students’ opinions about the course and the impact it had on their professional development.

Material and methods
The study was performed in the group of 539 students. To assess overall students’ opinions anonymous questionnaires were utilized. First survey was conducted directly after completion of the course and the second six months following the course. The questionnaires were prepared using standard survey methods (five-point Likert scale).

Results
97.1% of students were highly satisfied with the course. 91.6% reported it provided in-depth understanding of anatomy with respect to practical utilization. 87.5% admitted it preserved their knowledge of anatomy. 92.7% stated that they acquired practical skills, useful in their future carrier. 80% acknowledged they got to know modern diagnostic techniques. In the follow-up survey retention of the knowledge was about 52%. 67.4% and 66.4% of the students stated the course was very useful in improving their understanding of radiological topography and comprehension of radiological images during subsequent clinical rotations, respectively.

Conclusion
The study proved the feasibility and utility of our novel, hands-on teaching model of radiological anatomy, which was achievable using little resourcing and only three faculty members. The vast majority of students considered the course very useful with respect to subsequent radiology rotation. Based on obtained results the course was incorporated into the curriculum of the medical program.

Conflicts of interest: NO
Virtual Patients in the Cloud: Perspectives for Medical Education Offered by the Virtual Physiological Human Community

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Background
Virtual patients (VPs) have gained popularity at medical universities worldwide. Current limitations include: low interactivity of locally developed web-based VPs and the high cost and expertise required to maintain an on-demand technical infrastructure. These challenges are discussed in the context of the Virtual Physiological Human (VPH) Initiative which promotes application of simulation outcomes in clinical practice and the VPH-Share project which is building a cloud infrastructure for distributed medical applications.

Objectives
The aim is to present our experience in extending VPs and other e-learning resources by VPH initiative derived simulations. Discussed are resulting perspectives for medical education enabled by the cloud infrastructure.

Methods
Outcomes of three simulations based on computational models from VPH projects were exposed to students at three medical universities (n=63): 1) ARCH – vascular access modelling for surgical planning; 2) VIP – generation of authentic X-Ray images with different calibration settings; 3) Virolab – decision support in personalized ranking of anti-HIV drugs. Students’ opinion was collected by evaluation questionnaires.

Results
We observed in all three exposures that outcomes of VPH projects, being in the first instance targeted at clinical application, are also appreciated by learners. When presented to the right audience (often specialist training) VPH models enhance the experience of more traditional training. Validated models resulting from research projects are often available as open-source tools on the Internet. The diversity of the computational requirements has allowed us to explore educational exposure of the models using both pre-generation of simulation results and on-the-fly simulation. The problem with balancing the computational load and the required technical expertise was solved in the case of Virolab by exposing the system in the VPH Share cloud infrastructure.

Conclusion
Our positive experiences motivate us to intensify integration of VPH outcomes with VPs. Cloud infrastructure has the potential to ease configuration burden and reduce maintenance costs.

Conflicts of interest: This work was partially funded by the European community’s 7th framework programme (VPH NoE, grant agreement no. 223920; VPH Share, grant agreement no. 269978).
Basic Science in Simulation – a pilot study of clinical solving skills in undergraduate Physiology course

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The aim of the study was to introduce simulation into the basic undergraduate medical school curriculum. The Physiology course was extended into interaction with patient simulator (SimMan 3G, Laerdal, Norway). 78 first year medical students naïve both to medical simulation and other clinical activities were exposed to obtaining history and physical examination from the mannequin with various heart rhythm abnormalities. Subsequently, using vital signs Emergency Room monitoring, they independently recognized clinical abnormalities of the clinical state and introduced pharmacological and non-pharmacological means of correcting it based on the knowledge gathered during the theoretical part of the course.

The students unanimously evaluated the simulated course as being an superior element of the course as compared to the theoretical only. Based on this pilot study, the medical simulation may be effectively introduced at the very basic level of medical education.

Conflicts of interest: NO
SESSION 1C
SESSION 2A
How can a fair and objective assessment of communicative and interpersonal skills of nursing students be ensured?

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Background
Advanced medical simulation centers are the ideal setting for sessions on gestural or communication skills for students of the medical professions. Audio-video recording students’ performance during simulation provides added value for educational and certifying evaluation. High fidelity simulation environments give students the opportunity to build their communication skills and confidence in their own abilities without compromising patient safety.

Project Goals
Investigate whether fairness and objectiveness can be maintained in an Objective structured Clinical Examination (OSCE) on interpersonal communication skills with a large student population for the entire duration of the assessment.

Method
Eight scripts were designed to meet core competence requirements for students who had completed their first year. Learning objectives were divided into 5 behaviors for examiners to observe. The station was manned by two assessors - one from the same campus as the students and one who did not know them - who both evaluated each student. The final mark was the average of the two assessors. All study data were uploaded onto an Excel database and processed using SPSS vers.15.1.

Results
All the 2013 first year nursing students, who sat the summative assessment of clinical competencies participated in the study. Of the 425 students, 76% passed the three tests. The students scored less on interpersonal relational competence. The mean OSCE scores were significantly lower (24.87±2.62) than that of the clinical practice program (28.11±1.89) (p<0.001). The students tutored during clinical practice easily passed the OSCE test.

Conclusion
Close attention to organizational details, drafting scripts that matched the students’ core curriculum, using validated assessment instruments, the presence of supervisors and sharing the entire assessment process with the panel of assessors, were crucial to achieve the results of the study.

Conflicts of interest: NO
Student’s experiences of interprofessional course in simulation environment

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Background
Quality of care and improvement of patient safety are common challenges for health care professionals and educators. Oulu University of Applied Sciences and University of Oulu have developed interprofessional (IP) courses for undergraduate medical, nurse and other health care students. “Acute situations in health care” course was carried out first time in April 2010.

Project goals
The main goal for this course was to develop student’s professional identity and knowledge of other healthcare professions. Important goal was also to improve CRM – skills in interprofessional group.

Method
The optional course has been carried out once a year. 24 students attended to four simulation days during the course. Theory lessons were offered in internet based platform. Two teachers from medical faculty and two teachers from school of health care were developing the scenarios and trained students.

The evaluation focused to learning experiences and attitudes of the students (N=170) participated in course during the years 2010-2013. The data was collected with structured questionnaire.

Results
Simulation was experienced as an effective learning method. Students felt that they learned both clinical and CRM skills. The subjects of the scenarios were important and scenarios were realistic. Students pointed out debriefing as an important part of learning. Practise in realistic interprofessional team was appreciated.

Discussion
Studies of IP- learning have indicated the benefits to growth of professional identity and to the knowledge of other professions. According to our results, students experienced that they learned with, from and about each other. Collaboration between two universities and teachers from different organizations has its own challenges but the work is rewarding; the improvement to student’s attitudes and skills is evident.

Conclusion
The excellent results of the course have motivated teachers to develope more IP-courses in to the curricula. Negotiations are ongoing of modifying this particular course from optional to obligatory studies.

Conflicts of interest: NO
Assessing the Inter-professional Competency Using a High-fidelity Mannequin-Based Simulation

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Background
When critical emergent incidents happened, they commonly involved multiple disciplines. To safely handle such a complicated situation, health personnel has to be proficient in both individual and teamwork skills. High-fidelity manikin-based simulation has long been used in medical education on the interprofessional clinical skills, while a quality tool that measures both team and individual competency remained lacking.

Purpose
The research is to (1) demonstrate the development of a high-fidelity simulation that involves multiple disciplines and (2) construct a tool that measures candidates’ interprofessional and individual clinical skills with the aim of reporting the test quality and the performance of the health personnel.

Methods
This study used a case of mother at her gestational stage of 34 weeks in a traffic accident. Emergent cesarean (C/S), neonatal resuscitation and other critical management are necessary. The participants worked in groups of 7, composed of ER doctor, anesthesicist, pediatrician, obstetrician and nurses. To assess candidates’ interpersonal and individual competency, a tool was developed based on a standard test development procedure. The tool was composed of a modified Operating Room Teamwork Assessment Scales (ORTAS) and a task-specific skill scales. The participants were also assessed using (1) a written test of knowledge before simulation and (2) feedback and a questionnaire were provided after the simulation. There were two trained raters.

Results
There were totally five groups of 35 participants. The manikin-based simulation examination was found to be a realistic, and valid tool, which well reflected individual and team skills. A significant portion of participants were deemed unsatisfactory in team skills. The level of inter-rater concordance of participants’ clinical performance was good. Knowledge and judgment were found correlated with the clinical performance.

Conclusions: The manikin -based simulation examination is feasible, realistic and valid in assessing inter-professional competency.

Conflict of interest: NO
SESSION 2B
Teaching anaesthesiology to medical students:
the value of simulation

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Background
Simulation based medical education (SBME) is a innovative teaching method that have demonstrated to be effective. There is evidence that high-fidelity simulation (HFS) is educationally valuable and improve medical students and physicians confidence, competency and clinical skills.

Project goals
The aims of this study were to verify students’ opinion about learning with HFS and assess their perception about their confidence on managing clinical situations before and after high fidelity simulated cases.

Methods
This descriptive study resulted from a simulation-based methodology using HFS, during an anaesthesiology course. Confidential surveys were applied to students before and after HFS sessions. Statistical analysis by SPSS20® software, using Sign test for non-parametric variables. Significant was set to a probability value of 0.05.

Results
A total of 20 students were included in this study, 60% females. The median age was 23.2±1.36 years. After simulation of clinical cases, students positively changed their opinion on the use of HFS, with statistically significant difference in 7 of 8 questions, wherein the strongest was “I can learn by HFS how to work in teams” (p = 0.006), “I can improve my knowledge about the diseases of clinical cases by HFS” (p = 0.004) and “I would advise the use of HFS as an educational tool to my fellow students.” (p = 0.006).

Discussion/Conclusions
After HFS, students recognized the importance of training with simulation and agreed that they could improve their knowledge, communication and team work skills, and ability to manage stressful events on clinical setting. In the future we want to investigate if student’s confidence improvement objectively traduces better clinical skills.

Conflicts of interest: NO
Developing ward round non-technical skills: a simulated course for undergraduate medical students

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Background
Conducting clinical “rounds” is perhaps one of the most onerous and important duties that every junior doctor is expected to perform. Currently there is evidence that newly qualified doctors are not adequately prepared by their undergraduate experiences for this task.

Project goals
The aim was to analyse the challenges pertaining to non-technical skills that students would face during ward rounds, to create a model that facilitates the transition from medical student to doctor.

Methods
Over a three-week period, a total of 217 final year medical students completed a simulated ward round in groups of eight to twelve.
All students took part in a facilitated debrief of the ward round scenario, after which the students provided written anonymous feedback with a mixture of quantitative and qualitative responses.
Free text responses were analysed using template analysis applying an a priori template developed from the literature by the research team. This drew on the generic categories of non-technical skills as suggested by Flin et al.

Results
97% of students (out of 206 responders) agreed or strongly agreed that the simulated ward round improved their insight into the challenges of ward rounds and their perceived ability to work efficiently as an active member of the ward round.
The responding students (206) submitted written feedback describing learning that they would plan to use in future clinical practice (a total of 800 learning points were recorded and interestingly all could be categorised one of seven non-technical skills).

Discussion and Conclusions
We believe that improved task efficiency and insight into the challenges of the ward round gained by medical students will lead to an enhancement in performance during clinical rounds and have a positive impact on patient safety. We would suggest that UG medical schools consider this model in the preparation for clinical practice element of the curriculum.

Conflicts of interest: NO
Prepared to prioritise? Using a ward simulation to prepare final year students for practice

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Background
Preparation for practice is a key function of undergraduate medical education. Junior doctors feel under-prepared for their role, particularly with regards to prioritisation and time management; processes not easily learned away from the workplace. Traditional shadowing of junior doctors does not adequately replicate their role as students frequently default to observation rather than practice.

Project Goals
To evaluate the use of a simulated ward in preparing final year students for every-day junior doctor tasks such as prioritisation of tasks, time management and giving/receiving handover.

Methods
An exercise for final year medical students was designed to simulate the junior doctor role prior to their shadowing placement. The 25-minute exercise involved giving and receiving handover, prioritising tasks and dealing with interruptions. During debrief, the student received feedback and created a learning plan for their on-call shifts.

Results
The first cohort of ten students highlighted that self-identified learning needs changed from “assessing unwell patients” to process oriented goals of “prioritisation”, “handover” and “time management”. Following the simulation, students viewed shadowing as a previously unrecognised opportunity to learn these skills. Approaches to learning changed after simulation from “observation” of practice to “doing”.

Discussion
Students gained insight into the role of the junior doctor; their learning needs moved from “knowledge-based” to “practical-based”, and approach to learning from “observation” to “practice”. The students highlighted multi-tasking and prioritising independently as the most useful aspect of the simulation. Students felt less prepared for practice following this insight, however there was a new eagerness to perform the jobs of a junior doctor rather than observing whilst shadowing.

Conclusion
A simulated ward setting raises awareness of the skills needed to work as a junior doctor and provides a safe environment for identifying learning needs.

Conflicts of interest: NO
Tutors in simulation training

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BACKGROUND
Since last decades simulation training methods in medical education have become of great importance. One of the most critical problems is the shortage of qualified personnel. Motivation of part-time educators is relatively low and well-trained full-time employees are not able to cover fast-growing educational needs of simulation centers.

GOAL
Using hidden internal reserves to fulfill the needs in education staff without additional investments and operational budget increase.

METHOD
Undergraduate students in Russia are allowed to work as junior medical staff in hospital. This permission is granted if a student passes certain theoretic exams and passes a credential assessment of practical skills. Since such hospital activity offers valuable clinical practice, it is in great demand of many students. The list of essential nursing skills is long and the proficiency level is relatively high, so in 2012 only 6% of students passed the credential test from the first attempt.

We offered to some of the most diligent and reliable students to play a role of a tutor. They received the advanced training from our best educators and unlimited access to the training facilities of our simulation center. Main principles of the Tutor’s Corps are:
- Voluntary participation;
- No salary (except their assistance in commercial trainings);
- Limited number of tutors;
- Minimal period is one academic year.

RESULTS
Today Tutor’s Corps consists of 15 students. During the period of half a year tutors performed 286 training courses. The total percentage of students who successfully passed the credential test was increased up to 23%, in the groups trained by tutors up to 69% and among of tutors up to 100%.

CONCLUSION
Senior year students have a great educational potential and can enforce educational staff of a Simulation Center on the voluntary basis without additional expenses.

Conflicts of interest: NO
Intubate the trachea with a glottiscope: lesson from the performance of novices?

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The aim of this study was to compare the usability of two glottiscopes by students without clinical experience of intubation and who had never seen these devices before.

Materials and methods

Medical students were invited to participate in a randomized trial of simulated intubation comparing Ambu® Kingvision (K) and Verathon® Glidescope (G).

The elements measured were:

- Time between the beginning of the procedure and the introduction of the device in the mouth (T1), between the entrance in the mouth and vocal cords exposure (T2), between glottic exposure and the passage of the endotracheal tube (T3), between the passage of the tube and the connection to respirator (T4).

Incidents were rated: number of laryngoscopies (L) of times the epiglottis has been loaded (C), where the esophagus was intubated (IO) and dental injuries (D).

Results

Table 1 reports the average of the different measured time (in seconds : m + SD).

<table>
<thead>
<tr>
<th>Group</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group G (n=32)</td>
<td>13 + 6</td>
<td>23 + 14</td>
<td>65 + 37</td>
<td>26 + 25</td>
<td>126 + 52</td>
</tr>
<tr>
<td>Group K (n=29)</td>
<td>10 + 5</td>
<td>13 + 10</td>
<td>77 + 83</td>
<td>13 + 5</td>
<td>111 + 84</td>
</tr>
<tr>
<td>P (Student)</td>
<td>0.054</td>
<td>0.001</td>
<td>NS</td>
<td>0.006</td>
<td>NS</td>
</tr>
</tbody>
</table>

Table 2 reports the loaded epiglottis (median [min, max]).

<table>
<thead>
<tr>
<th>Group</th>
<th>median</th>
<th>min</th>
<th>max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group G</td>
<td>1</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>Group K</td>
<td>2</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>P (Wilcoxon)</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion

According to some authors, novices can more easily identify defects of ergonomics because their lack of experience does not compensate for these defects. The difference in design of the two systems (stylet vs the guide rail) clearly illustrates the discrepancies that were collected:

- The Kingvision is quickly implemented and the glottis is quickly displayed
- With the Glidescope the passage of the tube seams easier and epiglottis is less often loaded.

Conflicts of interest: NO
SESSION 2C
SESSION 3A
Interprofessional educational team to develop communication and gestural skills in Advanced Simulation Center

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Background
Several international studies have shown that laboratory training, particularly through interprofessional learning, is an effective means of developing the communication and gestural skills of healthcare professionals.

Project Goals
The aim of this study was to assess student satisfaction with interprofessional laboratory training and Advanced Simulation Center.

Method
After analyzing the specific aims of the third year medical school curriculum, we identified seven topics for the simulation sessions. All of the 501 students enrolled in the third year of Medical School academic years 2012/2013 e 2013/2014 were invited to participate in the different steps of the seven simulation sessions.

Once all the sessions had taken place, the students were asked to fill out an anonymous questionnaire. All of the 501 students were administered the questionnaire, and 498/501 (99%) completed it and handed it in.

Results
A significant correlation was identified between clear representation in simulations, suitability of the materials and equipment used (p=0.045) and the good conditions of the models and mannequins used (p=0.034). Significant correlations were also found between clear representation in simulations and the communication skills of trainers (p=0.002), and between the intention to use checklists and observation grids as reference in the future and the intention to participate in future clinical skill sessions (p=0.005).

Overall, the third year medical students who participated in the clinical skill laboratory sessions at our Advanced Simulation Center evaluated the experience positively.

Conclusion
The results of our study show that the participating students were very satisfied with the simulation sessions on clinical skills, and were interested in participating in similar activities in the future.

In the future, we aim to extend this interprofessional experience to the entire medical and nursing student population at our University.
The trauma team leader’s non-technical skills and their behavioral markers – Towards an assessment tool for performance in different phases of acute trauma care

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Background
Leadership is considered essential for high clinical team performance, and additional training is recommended. The trauma team leader’s non-technical skills have been studied, however, it is not entirely clear which non-technical skills are required and through which behaviors they can be taught and assessed. In addition, we see a shift towards a mainly coordinating/supervising leadership role in our major trauma incidents. Behavioral marker systems proved helpful in clinical settings, yet skills in the ‘planning’, ‘action’ and ‘reflection’ phases need consideration.

Objective
Identifying non-technical skills and their behavioral markers in each phase of trauma care specialists (surgeons, ED-physicians, anesthetists, nurses) associate with a safe and effective trauma team leader.

Methods
Critical incident interviews (n=28) at 3 teaching hospitals were inductively coded for references to leaders’ behaviors and attitudes. Codes were sorted into general categories, derived from literature review. Then, codes were summarized into representative skills and behavioral markers along the phases of briefing, patient admission, actual care, patient transfer and debriefing. Experts (n=14) rated skills’ relevance in a Delphi-survey. Using videotaped simulation scenarios, 5 CRM-instructors evaluated the skills’ employment in practice (restricted to briefing, patient admission, actual care given practical limitations).

Results
We identified 7 categories: ‘information-coordinating’; ‘action-coordinating’; ‘decision-making’; ‘evaluating’; ‘managing communication’; ‘coaching’; ‘encouraging team climate’. Forty skills were rated relevant along the phases (eg, ‘discussing strategy’ in planning phase, ‘exchanging thoughts/concerns’ in patient transfer). Using videotapes, skills were observable, indicating markers’ appropriateness.

Discussion
Assessment of skills per phase will allow users to evaluate team leader performance at multiple times, and reflect on the consequential relation of performance across phases.

Next, behavioral markers for typical circumstances are needed.

Conclusion
We identified non-technical skills associated with safe and effective leader performance in each phase of trauma care. This helps guide team leaders’ deliberate practice, and the development of an assessment tool.

Conflicts of interest: NO
SESSION 3B
The impact of simulation-based training on residents performance during clinical setting of obstetric anaesthesia emergency

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Background
Simulation has playing an important role in improvement of acquisition in both technical and nontechnical skills in obstetric anaesthesia [1,2]. However, the assessment of these skills is currently done in the simulated environment. This study aims to investigate the transfer of skills and strategies to daily clinical practice following simulation training.

Methods
Twenty-one, second and third-year anesthesiology residents were included the study. Twelve of them trained (Group S) on medium fidelity simulation mannequin performing general anaesthesia (GA) for obstetric emergency scenarios including pre-eclampsia scenario, following presentation of clinical algorithms. Practicing of algorithms, team communication and self-confidence as technical and nontechnical skills were evaluated in performing GA for pre-eclampsia in the clinical setting, in 18 participants. Checklists and a self-assessment questionnaire with a five-point Likert scale on their knowledge, technical skills, and teamwork skills during experienced real-life situations were used during the evaluation.

Results
The checklist scores ranged from 68–86% in Group S versus 44–72% in nine residents not participated a simulation training (Group NS). In Group NS, the most common errors were not calling for help or a difficult airway chart. The participants in Group S gave higher Likert scale answers for the questions on the specific skills than in Group NS. Third-year anesthesiology residents rated the impact of simulation training significantly higher than second-year residents and also reported a better improvement in their knowledge of management guidelines in Group S.

Discussion
In our study; a simulation-based training in obstetrical emergencies for anaesthesiology residents perceived an improvement in their knowledge and skills when witnessing real-life emergencies. Nonetheless, more studies are needed to conclude on whether anesthesia or teamwork skills learned in the simulated environment change behavior and improve outcomes in the clinical setting.

References

Conflicts of interest: NO
Effect of a simulation based training program for French medical residents on technical skills, leadership and stress.

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In French intensive care units, residents are often in first line to manage critical ill patients without specific training required for those situations. Leadership and stress management are some pitfalls challenging them in critical situation.

The aim of this study was to examine if simulation could improve technical skills (TS), leadership and decrease stress in gastroenterological residents (not trained in simulation as often as anesthesiologist’s residents). This was a prospective randomized simulation study performed in France after ethic committee agreement. Residents were evaluated in 3 different scenarios (acute respiratory failure in pancreatitis, hemorrhagic shock and cardiopulmonary resuscitation after bleeding) at baseline (M0), 1 (M1) and 5 month (M5). All residents were evaluated just after simulation in technical skills, stress (NASA task load) and leadership (leader behavior description questionnaire adapted). Each scenario included a team composed with residents, 2 nurses and 1 nurse’s aide working in a Gastroenterology Healthcare. Twelve residents were evaluated in 36 simulations. There were a significant improvement in TS (14.3 at M0 vs 16.3 at M5; p=0.03), leadership (27 at M0 vs 29 at M5; p=0.035), achievement scale (M0 vs M5, p=0.0055 and M1 vs M5; p=0.03) and a significant decrease in frustration scale (M0 vs M5; p=0.032 and M1 vs M5; p=0.045). There were no significant differences in TS, leadership and stress between the 3 scenarios. There was a significant negative correlation between TS and stress at M0 (r=-0.66; p=0.019) but not at M1 (r=-0.13; p=0.68) or M5 (r=0.26; p=0.41). There was a positive and significant correlation between TS and leadership at M5 (r=0.65; p=0.019).

Simulation training improves skills of gastroenterological residents. Improvement in leadership and decrease of stress were linked with improvement in performance. Others medical residents may benefit from simulation training in order to improve the quality and management of critical care in France.

Conflicts of interest: NO
Simulated Kangaroo Care – handling preterm infants right after delivery

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Background

The Kangaroo care method (KC) involves skin-to-skin contact between the mother and the newborn preterm baby right after delivery. The neonatal intensive care unit (NICU) at a university hospital in Norway has offered this method to infants born at 320–346 weeks of gestation. Believing that even earlier preterm infants also would benefit from the same immediate skin-to-skin contact they wanted to offer the same method to infants born at 280–316 weeks of gestation. Before implementation of KC for these preterm infants a teaching session was planned.

Objective

To conduct training for intensive care nurses, midwives and physicians who would take part in the delivery room or operating theatre. To train handling the preterm infant and to carry out KC. Our intention was to use in situ simulation as a method to ensure quality of care.

Methods

Two scenarios were developed, one in the delivery room (Vaginal delivery) and one in the operating theatre (Cesarean section). All participants received a short introduction of the Kangaroo care method followed by in situ simulation. A simulated patient played the mother’s role, the preterm infant was a low fidelity manikin (280–316 weeks of gestation, 1000 g). Focus during simulation and debriefing immediately following each session was on clinical skills, practical issues and patient safety.

Results

A total of 20 simulations were accomplished with 3–4 participants in each team, 74 participants all together. Several potentially hazards to patient safety were revealed during simulation and a need of a checklist securing that all practical tasks were carried out.

Conclusion

In situ simulation ensures the quality of the implementation of KC for preterm infants (280–316 weeks of gestation). In situ simulation may unveil practical adaptations necessary to secure patient safety when introducing new routines.

Conflicts of interest: NO
Just In Time Simulation: Simulation for busy clinicians

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Background

Just in time simulation can be applied within a framework which considers the site of training in-situ or “near in-situ” (workplace, clinical setting, or near proximity) and a short interval with minimal delay either before or after a clinical event. Evidence of the effectiveness of JITS has primarily focused on skills training, and has evolved a relatively clear theme that JITS improves skills performance more consistently in advanced learners or experienced practitioner to a greater extent than novices or less experienced learners. This theme relates primarily to surgical skills studies, and may not be universal, especially when considering non-skills based JITS objectives. JITS is a technique which can be considered for use in a variety of settings and contexts such as morning report, pre procedure performance, shift change, clinical handoffs, and for critical incident review. JITS application requires a fundamental knowledge of JITS techniques and limitations. JITS published experience includes results which documents some unintended consequences, student perceptions, and both educational and clinical outcomes.

Project goals

Attendees will be able to describe three examples of JITS
Attendees will participate in design of a JITS simulation
Attendees will experience a typical JITS simulation

Method

The 90 minute program is comprised of three components arranged in sequential activities; 1) An interactive two part didactic review of extant literature and evidence regarding JITS; 2) A facilitator led participatory JITS session using a simple iPAD simulator, blindfolds, and a worksheet for participants to experience a short JITS session designed to bring a morning report case to life for attendees; and 3) A template enabled small group JITS design session, with strict time constraints.

Results/concepts:

Discussion

This program can be presented as a oral presentation only

Conflicts of interest: NO
SESSION 3C
Healthcare Simulation Credentialing: The Value and the Need

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Society for Simulation in Healthcare

Background
The rapid growth and evolution of healthcare simulation has occurred in a way that has led to a great diversity in concepts and methods. While this has some benefits, there is also a need to create a framework to ensure consistency and quality.

Project goals
SSH Accreditation and Certification have been designed with this consistency and quality in mind. It is important to have Standards in place that are measurable, yet also non-prescriptive to allow for innovation and growth.

Method
The Standards for both were developed collaboratively with other simulation societies (including SESAM). The methodology for evaluation of programs (Accreditation) and individuals (Certification) was created with industry best practices at the forefront. The development process was critical to ensure that the credentialing had value to healthcare simulation, and also was applicable worldwide.

Results/concepts
The value of Accreditation and Certification has become readily apparent as many have applied and successfully demonstrated meeting the Standards for either programs or individuals. Further, there is significant growth in the number of countries where these programs are becoming accepted. This demonstrates that the programs have meaning and value to those who complete them.

Discussion
Many inquire as to the value or applicability of these types of programs compared to others. There are many ways to demonstrate competency, but the need for agreed upon Standards is essential for guiding principles, methods, and processes to have meaning.

Conclusion
Both Accreditation and Certification have value to the healthcare simulation community. The collaborative input and development process has created programs that are meaningful and support strong and appropriate growth of healthcare simulation in the future.

Conflicts of interest: I am the Director of Accreditation and Certification for SSH, receiving a salary. I am presenting on those projects that I oversee. However, I do not receive monetary incentives for volume or any other incentive.
Planning, building and launching a large interdisciplinary simulation centre – Polish experience

Dulawa-Buldak A.\textsuperscript{1,2}, Smigas B.\textsuperscript{1}, Wlaszczuk A.\textsuperscript{1,3}, Lewin-Kowalik J.\textsuperscript{1,3}

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Background
Before 2008 medical simulation was hardly used in undergraduate education in Poland, mostly due to financial constraints. Possibilities given by the European Union structural funds allowed Polish medical schools to apply for funds necessary to open simulation centres. Medical University of Silesia in Katowice has successfully seized this opportunity to introduce a reform of undergraduate education by building a large interdisciplinary Educational and Medical Simulation Centre, fully operational since September 2012.

Objective
to share experience gained from building and launching a large interdisciplinary simulation centre.

Discussion
The aim of the project was to significantly extend the number of practical classes by implementing simulation into curricula at large scale and to improve the quality of undergraduate education at the University. It was decided to reconstruct an existing building in which a large number of simulation facilities would be located. The centre was decided to be an independent organisational entity within the University to be used by three Faculties. It was also decided to combine simulation with ICT infrastructure. The complexity of the project required several issues to be carefully discussed, e.g. rooms layout, equipment and installations required, staff number and profile in order to ensure optimal students flow, classes preparation and maximum flexibility. Another important issue was training of centre personnel and University teachers. Finally, operational procedures and standards had to be worked out and timetables agreed with the Faculties.

Conclusions
The Centre, equipped with 14 high fidelity simulators, ambulance simulator, over 360 manikins and skill trainers and a variety of medical equipment is currently the largest one in Poland. It has proved to be well designed and simulation has been quite smoothly integrated into curricula, though a lot is still to be done. Consistent quality improvement, extending the scope of activities, and research development are our primary goals.

Conflicts of interest: NO
From Concrete to Conference: The Journey of Simulation in Dubai

Ballard I
Khalaf Ahmad Al Habtoor Medical Simulation Centre

Background
After a prolonged gap in establishing the Centre the project was revived in 2012. From a concrete shell that was designed and started in 2008. The presentation will chart the rise of the awareness in Simulation in the UAE through to the 1st UAE Clinical Simulation Conference

Project goals
Apart from showing the evolution of the Centre we will summarise feedback from the courses we have provided so far and look at how collaborations with industry have resourced the Centre. We will also showcase the MBR-AMC as a resource for medical education and conferencing

Method
The presentation will focus on the challenges arising from the set up of the Centre and highlight the growing importance simulation has in relation to medical education around the Gulf region and beyond. It will include the feedback from the Conference that had attendees from 20 different countries around the world and a look forward to future developments both within the Centre and the region as a whole

Conclusion
The Centre is unique in being able to show the entire care pathway from pre hospital to discharge and includes an Emergency Department Operating Rooms ICU for Adult, Paediatrics and Neonates along with ward environments for Maternity and General wards. The presentation will show how the Centre has developed over the two years and how it will help shape simulation and medical education in the region

Conflicts of interest: I am employed by KHMSC as a Technologist
The creation of a Multi Professional Fully Immersive Center in Beverly Hill’s, Los Angeles

Metcalfe-Smith R.
Cedars Sinai Medical Center, Los Angeles

The Women’s Guild Simulation Center for Advanced Clinical Skills opened in October 2013 at Cedars Sinai Medical Center in Los Angeles. The center is an Integrated research and academic center which has invested significant amount of money into making the simulation environment real. The project goal was to replicate the exact environment within the 950 Bedded Medical Center using real medical equipment.

Method
Working groups were setup from all departments and the 10,000 Sq Ft Center was designed which included 2 real operating rooms, an ICU, OBGYN, Trauma Room, NICU/PICU, General Medical and Surgical Bays. To ensure fidelity was present the exact equipment, and exact environment were replicated.

Results
The fidelity of the environment has allowed for the suspension of reality to be reduced, The only staff need to deal with is the simulators. In every other aspect the equipment and clinical environment are exactly the same as they experience on a day to day basis.

Discussion
Immersion in simulation is often a factor which inhibits the candidate from believing the encounter is real. Our experience and feedback from candidates has shown that this realism has further helped in achieving the goal of needing to suspend reality

Conclusion
While some candidates can transition from reality into the simulation environment a significant number struggle with this concept. As an organization investing in patient safety and continuing education we are breaking down the barrier to suspending reality through the use of replicated patient environment using real medical equipment, monitors and clinical tools.

Conflict of interest: NO
SESSION 4B
The impact of stress on medical students in managing mass casualty events during virtual reality simulation scenarios.

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Background
Stress responses in a virtual reality (VR) simulated scenario and the effects of stress on health worker ability to manage mass casualty incidents (MCI) and to perform triage have been rarely studied.

Objective
The aim of this study was to assess medical students’ stress responses and performance during VR MCI high-stress scenario (HS) compared to low-stress scenario (LS).

Methods
Ninety-six medical students were randomized in two groups (GA and GB). The same scenario, a car accident, was identically developed both on HS and on LS. The stressor factors in HS were: low-light, auditory noise, bad climate conditions, pre-determined radio calls from dispatch-center and the arrival of reporters. GA was exposed to HS and GB was exposed to LS aiming at managing the scene and at triage 30 victims in a limited period of time (20’). Heart rate, blood pressure and respiratory rate were recorded before and after the simulations.

Results
There were no significant improvements in heart rate and blood pressure after the simulations in the two groups. Respiratory rate showed an increase after the scenario in GA (p<0.01). The triage accuracy was 83% in GA and 85% in GB. The average time to triage the first victim was 4’33” and 4’83” in GA and in GB, respectively. The average time to evacuate the first patient was 15’00” in GA and 13’6” in GB. While the 25% of victims were not triaged after 20’ in GA, the percentage of not triaged victims in GB was only 14% (p<0.01).

Conclusion
The study revealed that HS had no influence on students’ physiological response to stress. However, it demonstrated that the participants exposed to HS, compared to those exposed to LS, showed impairments in performing triage as revealed by a decrease in speed to evacuate the first victim and to complete triage.

Conflicts of interest: NO
Simulation evaluation by social representations

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Background
This study focuses on what is cognitively anchored after a simulation session in healthcare, using the analysis of social representations (SR).

Project goals
The objective is to analyze the evolution of the SR state of mind for a group of students after education through simulation, its timekeeping performance and success in achieving technical gesture such as intraosseous (IO) line placement in emergency situations.

Materials and methods
This is a prospective, mono-centric, randomized, anonymized study. It has included 76 medical students from the Faculty of Medicine of Strasbourg in their sixth year, divided into 2 groups. The simulation group (SIM) received a simulation session at the end of the shared practical training PT session.

The final evaluation consisted of a practical test within the conditions of a simulation session in front of an examiner/inspector followed by a questionnaire. The analysis of the results comprised the combination of a prototypical analysis, lexical analysis and graph similarity, which has been correlated with success and chronometric performance.

Results
SIM group is more successful (81%>61%) (p=0.04 Khi2 Pearson) and faster than the PT group (194s<229s) (p=0.013 Mann and Whitney). The final polarity is significantly different between SIM and PT group (p=0.027). The education tool produces a change in attitude among students.

SIM students feel “ready”. The technique is “known” and it makes them “confident.” What seems more significant is the feeling of being “reassured” as they were “trained”. For PT students, placing an IO line is “possible” but “with support” because they feel “inexperienced.”

Discussion/ Conclusions
The mixed method, such as social representations, trying to comprise the same phenomenon by comparing the results of the two different methods, is recommended in medical education.

Conflicts of interest: NO
The subjective assessment of the usefulness of medical simulation performed by medical students of Medical University of Silesia

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Background
For medical students and young doctors the lack of self-confidence is discouraging as well as the lack of skills and competence. There is also a growing body of evidence that improving self-confidence may improve performance at some medical skills.

Objective
The aim of the study was to evaluate the students’ self-assessment of their clinical skills, their competence and their personal opinions about the medical simulation impact on mentioned ones.

Methods
The study was designed as the Likert scale questionnaire survey. Students answered questions about their attitudes toward the simulation, assessed their clinical skills, competence and confidence after simulated clinical scenarios. They were also asked if they felt prepared for certain clinical situations they probably encounter as doctors. Students were also asked about their opinions on simulation impact on education process.

Results
118 medical students at clinical years filled out the survey. 56% of students recognized their poor abilities to handle medical equipment and 38% of students or poor clinical skills acquisition. They admitted that simulation helped them point out shortcomings in the learning curve and encouraged them to compensate them. 89% of students found simulation helpful in knowledge consolidation and 82% suggested that it might have changed their way of thinking about learning. The simulation pointed out the shortage of psychological competence among medical students: 33% – found their team communication, 41% – teamwork, 48% – leadership competence and 55% – communication with patients and their families as poor.

Conclusion
Medical students feel confident about their skills if they have opportunity to practice in the safe environment of medical simulation. Students are aware of their limitations in technical skills and communication capabilities. Students considered medical simulation as a very helpful educational tool and were confident that simulation may help to consolidate knowledge and skills better than traditional teaching.

Conflicts of interest: NO
Assessment of human fallibility factors and non-technical skills in critical events management

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Background
Crisis Resource Management (CRM) refers to the set of non-technical and behavioural skills that enable effective teamwork in critical events. Deficiencies in teamwork and communication have often been identified as responsible for the worst outcomes.

Project Goals
The aim was to assess student’s perception regarding the importance of human fallibility factors and non-technical skills, before and after training CRM in high-fidelity simulation environment.

Methods
During CRM in Obstetrics Courses (2012-13), 54 participants (20 anesthesiologists, 25 nurses and 9 obstetricians) were distributed by multidisciplinary teams in order to manage critical events. We analysed anonymous surveys applied before and after the courses, focusing on questions regarding non-technical skills and human fallibility factors. Statistical analysis was performed using SPSS 20.0® through Kolmornorov-Smirnov, Wilcoxon and t-student tests. A p value ≤ 0.05 was considered statistically significant.

Results
The importance attributed to human fallibility factors as fatigue, stress, fixation errors, communication, memory, noise and attention was asked to participants, through a visual numeric scale of 5 points, before and after courses (Table 1).

We also asked about the importance attributed to technical and non-technical skills, before and after the course, respectively (mean ± SD 4.37 ± 1.02 vs 4.12 ± 0.98 and 4.24 ± 0.82 vs. 4.43 ± 0.70). Regarding the importance of the inclusion of non-technical skills training in health care, using a visual numeric scale of 5 points, was obtained an average of 3.72 ± 1.23 preoperatively and 4.24 ± 0.99 postoperatively (p = 0.01).

Discussion/Conclusions
The importance attributed to human fallibility factors increased significantly after the course (Table 1). At the end of the course, trainees changed their initial perspective about the significance of technical and non-technical skills. They also expressed that medical education should include simulation training.
SESSION 4D
SESSION 5A
Telling ‘FIBs’ – how a simulation skills session identified ways to challenge hospital practices responsible for poor pain management in patients with fractured neck of femur

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Background
Fascia Iliaca blocks (FIB) are an under used mode of analgesia for patients sustaining a fractured neck of femur in our hospital. We aimed to implement change in working practice, by providing skills training to selected staff members and by developing a pathway to highlight patients who had a fractured neck of femur.

Rationale
It is often assumed that one way to effect change in systems is to simply provide people with the necessary skills that can then be applied in practice to deliver a service. This fails to consider a plethora of other social and material factors, that can affect long-term sustainability.

Summary of work
We organised a half-day FIB skills session with a multidisciplinary group of 9 practitioners across the patient pathway, including A&E consultants, trauma nurses, anaesthetists, ortho-geriatricians and doctors and nurses from the acute pain team.

We created a training package using part-task simulations, human volunteers, and cadavers. A concluding discussion on transfer to practice was transcribed and emergent themes were identified drawing on theoretical models from Activity Theory.

Summary of Results
Critical factors for service delivery and sustainable change included:
1. Development of a FIB pathway for use on admission
2. An interprofessional approach to service delivery across the patient pathway
3. Essential new tools and material artefacts to sustain cross unit cooperation

Conclusion
Instigating a patient pathway and modifying communication between teams, aids the development of a sustainable FIB service. These changes involve social and material modifications in the workplace.

Take home messages
A social material analysis drawing on Activity Theory was helpful to develop a multi-layered analysis of affordances and constraints in our efforts to design for sustainable change.

Conflicts of interest: Obtained a grant from South London Innovation Award.
Boundless simulation education

Verlangen R., Alewijnse-Spierings C.

Regional Ambulance Service of the Province of Utrecht (RAVU) and University Medical Center Utrecht (UMCU) in co-operation with the METS Center in Bilthoven, the Netherlands

Simulation Education is often given mono-disciplinary and it mainly takes place within the own link in the chain. The pilot that the Regional Ambulance Service of the Province of Utrecht (RAVU) and University Medical Center Utrecht (UMCU) develop, focuses on the moment of transfer between the different links, specifically; between the MKA (dispatch center), Ambulance and Emergency Department. In short, an inter-and multidisciplinary simulation training that exceeds limits within the chain.
We are unique in the Netherlands!
The care of the acutely ill injured patient in the Netherlands is chain care. A fact is that the chain is as strong as the weakest link. In order to supply good chain care it is required to facilitate optimal communication between the links (the partners) in the chain.
The RAVU and emergency department UMC Utrecht have been working together for years on training. Recently it has launched a unique project to provide joint simulation education targeted at non-technical skills (CRM). The key points from CRM, such as communication described above, make optimal and effective care in chain care possible. As an ambulance service you can indeed terribly do your best to get a patient quickly to hospital, but if the process is delayed by a faltering notice, this may have adverse consequences for the patient.
Simulation is often used as a teaching / learning method, but in this simulation, it is also used to observe processes, in other words, as a quality measurement device. In this simulation the main question is, where is the power and where are the gaps in the transfer? There have been a number of different sessions with diverse focusses: traumatology, cardiology (specific resuscitation care).

Conflict of interest: NO
Impact of simulated practice in the development of self-confidence to intervention in emergencies and relation with knowledge and performance

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Background
In emergencies, self-confidence is an important variable, related to lower anxiety levels, higher readiness to start actions and to the patient safety (Buckley & Gordon, 2011). The simulation is a reliable strategy to the development of competences and self-confidence to intervene at emergency situations (Buikx, Kinsman & Cooper, 2011; Griswold et al, 2012; Martins et al, 2012). However, the opinions are divergent about the relation between self-confidence and competence.

Objective
evaluate the impact of the simulated practice to develop self-confidence to intervene at emergency situations and relation between self-confidence and knowledge and competence.

Methods
Quasi experimental study, without control group, with evaluation pre and post 15 hours of simulated practice with 162 nursing students. Medium and high fidelity simulators are used. Instruments: questionnaire with demographic questions, Self-confidence Scale (vp) (Martins et al, 2013) and results of knowledge and practical evaluation.

Results
The students’ self-confidence improves with the simulated practice. The Wilcoxon test shows that the improvement is statistically significant (p<0.001). The correlations between the self-confidence and the knowledge evaluation are not significant. However, we found positive correlations, statistically significant, between the self-confidence and the practical evaluation.

Conclusion
The simulated practice is a good pedagogic strategy that contributes to improve the nursing students’ self-confidence to intervene in emergency situations. The self-confidence has positive correlation with the punctuation obtained at the practical evaluation. More confident students are able to show higher performance levels, with fewer mistakes and were able of a better priority management when they needed to give emergent responses to a person in critical situation.
Dental sedation nurse training in clinical emergencies: simulation centre based versus in-situ experience

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Background
There is evidence to show that simulation can produce improvements in performance in managing medical emergencies. Dental sedation nurses may be involved in managing life threatening emergencies. Adverse changes in cardio-respiratory physiology occur frequently during procedures performed under sedation, in particular hypoxia and myocardial ischaemia (Safe Sedation Practice 2003).

Objectives
Having delivered simulation centre based training to dental sedation nurses in 2010, we initiated in-situ training in 2013. Our teaching objectives in 2010 focussed on identification and assistance in management of emergencies, whilst in-situ they emphasized application of human factors strategies, as well as reviewing clinical knowledge. We were also interested in exploring the system testing element of this simulation modality.

Methods
In simulation centre scenarios reviewed management of vomiting under sedation, over-sedation, hypotension, bronchospasm and complete airway obstruction. The in-situ simulation session allowed practice of management of hypotension, loss of consciousness, asthma and cardiac arrest. In both courses simulation scenarios were followed by team debriefing facilitated by trained and experienced simulation educators which included emphasis on relevant guidelines and algorithms.

Results
Both courses received positive feedback (very good in 2010, excellent in 2013). In simulation centre comments: All participants found this course very useful, particularly as it facilitated review of emergency drills and allowed practice with their usual team. 40% requested in-situ training unprompted. Nurses who attended the in-situ course found it particularly beneficial to practise in their own environment. Also a number of safety issues were identified during the course: need to exchange flowmeters during crisis, limited availability of self-inflatable ventilation devices and salbutamol vials for nebulisation and mismatch between available salbutamol inhalers and “spacer”. All these issues were resolved promptly.

Conclusion
In situ simulation offers benefits in relevance and contextualisation of learning experience as well as objective patient benefits related to environment and system testing.

Conflicts of interest: NO
SESSION 5B
Does the level of anxiety depend on the individual strategies of coping with stress?

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Background
Doctor’s practice is inherently accompanied by stress. Dealing with stress is an important skill affecting the quality of doctor-patient relationships, patients safety and protecting doctors against the burnout syndrome. Personal predispositions determine ways of coping with stress. There are known task-oriented coping, emotional-oriented coping and avoidance-oriented coping strategies. During medical simulation students experience anxiety and reveal individual coping strategies that help or hinder to solve the problem.

Objective
The aim of the study was to assess the influence of personal strategies for coping with stress on the level of perceived anxiety among students before and after medical simulation.

Methods
We surveyed 101 medical students with tests: Questionnaire CISS-Endler, Parker and Inventory STAI – D. Spielberger. This survey of strategies for coping with stress was performed before simulated clinical situation. The level of anxiety was evaluated both before and after the participation in the simulation.

Results
Task strategies appear in 46% of students, emotional strategies – in 24%, avoidance strategies – in 30%. The level of anxiety in the task-group was 5.12± 2.5 before simulation vs 5.35± 2.41 after simulation and in the emotional-group 7.12± 1.98 and 6.75± 1.7 respectively. The anxiety level was higher for the emotional-group than in task-group before (p<0.05) and after the simulation (p<0.05).

Conclusion
The individual strategies of coping with stress influence on the level of anxiety. This difference is observed before and after simulated clinical situation. In the contrary to the emotional-group, in task-group level of anxiety after was not significantly higher then before simulation. It might be the interesting area for future investigation.

We would like also point out that medical study curriculum lacks professional competence training focused on mastering of stress. It might be useful to introduce this course to future doctors.

Conflicts of interest: NO
Four Models of In Situ Simulation: Challenges and promises in different approaches to on the job-training

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Introduction
In situ simulation is characterized by being situated in the clinical environment as opposed to the simulation laboratory. But in situ simulation bears a family resemblance to other types of on the job training. We explore a typology of in situ simulation and suggest that there are four fruitful approaches to in situ simulation: (1) In situ simulation informed by reported critical incidents and adverse events from emergency departments (ED) in which team training is about to be conducted to write scenarios. (2) In situ simulation through ethnographic studies at the ED. (3) Using prewritten scenarios from the simulation lab and transferring them to in situ simulation. (4) Action research – insider or participant action research to obtain in-depth understanding of team processes to guide scenario design.

We evaluate the approach relying on Marks’ et al. taxonomy that posits the following processes: Transition processes, Action processes and Interpersonal processes.

Design and purpose
This abstract suggests four approaches to in situ simulation. A pilot study will evaluate the different approaches in two emergency departments in the Central Region of Denmark.

Methods
The typology will be illustrated with reference to an empirical pilot project, which has a triple strategy: 1) Literature study 2) Patient safety data analysis 3) Observational study on interprofessional emergency teams, and 4) In situ simulation intervention study with evaluation of interprofessional team training.

Perspective and relevance
Empirical and theoretical research is needed to develop in situ simulation and to theorize and experiment with how we best take reported critical incidents and adverse events back to the clinic. In situ simulation offers a unique way to study team interactions there are widely different approaches to team intervention and philosophies informing what good situated learning research is. This study generates system knowledge that might inform scenario development for in situ simulation.

Conflicts of interest: NO
Ethics teaching in the simulator – a study of reflective learning on ethical issues

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**BACKGROUND**
Ethics is abstract and a complex area of knowledge. Ethical competence and self-awareness are founded on sensitivity, conscious choices, decision-making and actions. Theory-based ethics education is difficult for undergraduate nurse paramedic students to apply in practice. (Davis et al., 2009; Rest, 1999; Sandman & Nordmark, 2006; Smith et al., 2012) Since 2007 Arcada University of Applied Sciences, Finland has developed a new way of teaching ethics by practicing ethics and ethical dilemmas in the simulation theater.

**OBJECTIVE**
The goal in this study was to explore: What learning content and knowledge acquisition arise from scenario experiences in the simulation theater.

**METHODS**
Participants in the study (N=24) were 3rd year undergraduate students who completed one prehospital case scenario in small groups of 2-3 students, and observed 9 other scenarios in total. Students provided written feedback two weeks after the simulation experience (T1) and three months post-course (T2) via open-ended questions on their learning experience of scenario reflection. The qualitative data was analyzed using content analysis.

**RESULTS**
Students responded unanimously that learning ethics and ethical dilemmas by scenario experience was an innovative method to raise ethical awareness in everybody’s mind. The range of responses and amount of detail were greater at T1 than T2. The main categories of learning content (T1) were: 1) professional ethics and decision-making 2) self-awareness and personal qualities and 3) caring ethics: responsibility, dignity, self-determination and integrity. The most apparent categories (T2) were: 1) the good and varied discussions afterward and 2) learning how to recognize ethical dilemmas.

**CONCLUSIONS**
After course completion students knew how to relate ethical theories to practical knowledge (T1). Students recognized ethical dilemmas in the workplace and applied learning content from simulation scenarios (T2). This study supports wider use of simulating ethics as a pedagogical method in ethics education and research.

**Conflicts of interest:** NO
Retention of knowledge, skills, and confidence after simulation-based training in obstetric care

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Background
Helping Mothers Survive Bleeding After Birth (HMSBAB) is a simulation-based training programme in basic delivery care and treatment of postpartum haemorrhage for health care workers in low-resource settings.

Project goals
The aim of this study was to measure the level of knowledge, skills and confidence before, immediately after, and nine months after training in order to understand the impact of training on these components.

Methods
An educational intervention study was carried out from March to December 2012 at a rural referral hospital in Northern Tanzania. Thirty-eight health care workers of different cadres were trained in HMSBAB. Knowledge, skills, and confidence were tested before, immediately after, and nine months after training. Knowledge was tested by completing a written 26-item multiple-choice questionnaire. Skills were tested in two simulated scenarios “basic delivery” and “management of postpartum haemorrhage”. Confidence was assessed using a written 5-item questionnaire.

Results
Mean knowledge scores increased immediately after training from 70% to 77%, but decreased to pre-training levels at nine-month follow-up (72%). The mean score in basic delivery skills increased after training from 43% to 51%, and was 49% after nine months. Mean scores of management of postpartum haemorrhage increased from 39% to 51% and were sustained at 50% at nine months. Confidence increased immediately after training, and confidence in management of postpartum haemorrhage and bimanual uterine compression was retained at nine-month follow-up.

Conclusion
Training resulted in an immediate increase of knowledge and confidence; while knowledge decayed after nine months, confidence was retained. Poor self-assessment could bring patient safety at risk when confidence outweighs ability. Skills were largely retained despite declining knowledge scores. Formal knowledge assessment through tests may not capture the expertise that is gained through simulation-based training. Therefore, written knowledge tests and self-assessment of confidence may be insufficient to assess the effect of simulation-based training.

Conflict of interest: EN received an unconditional stipend from the Laerdal Foundation for Acute Medicine. HE holds a post doc position at the Stavanger University Hospital, which is financed by an unrestricted grant from the Laerdal Foundation for Acute Medicine.
Health professionals’ perceptions of their learning processes during remotely facilitated simulation and simulation training facilitated face to face for management of the deteriorating patient

Duch Christensen M., Rieger K., Oestergaard D., Dieckmann P., Watterson L.
Sydney Clinical Skills and Simulation Centre

Background
Studies evaluating videoconference-enabled remotely facilitated simulation (RFS) have employed mainly quantitative outcome measures. While generally positive some participants report discomfort suggesting learning processes are not well understood.

Project goals
To investigate health professionals’ perceptions during RFS compared to locally facilitated simulation (LFS).

Method
After their completion of a course addressing the management of the deteriorating patient 30 newly graduated doctors or nurses representing a cross section of 129 course participants were invited to participate in a semi-structured telephone interview addressing their perceptions of LFS and RFS. The course, delivered under standardised conditions, employed two hours of simulation as four “pause and discuss” style scenarios. Three scenarios was delivered as LFS and one as RFS. The interviews were transcribed and analysed by two of the authors using Malterud’s method for systematic text condensation.

Results
Nineteen participants completed interviews. When asked about their impression of the two approaches all replied that the training was valuable although fifteen replied that they preferred LFS. Their impressions appeared to be explained by their perceptions of their learning processes which varied for some between the two modalities. We identified three interdependent themes: (P1) Psychological effects including motivation, normality, comfort, belonging and autonomy (P2) Cognitive workload including mental effort and (P3) Engagement including task focus and surveillance. Their perceptions were influenced by pre-existing learner attributes and “enabling” factors related to the training delivery: (E1) Instructional design (E2) Learning environment (E3) Technical quality and (E4) Human interaction facilitated by the instructor.

Discussion
Health professionals perceive learning processes that affect them negatively and positively. For some these vary between RFS and LFS.

Conclusion
Participants’ perceptions of learning can vary between RFS and LFS and may influence its effectiveness. Consideration of pre-existing learner attributes and adjustments made to abovementioned enabling factors may optimise the learning process.

Conflicts of interest: This study was supported by Laerdal Foundation for Acute Medicine by a personal grant to Margrethe Christensen.
How interprofessional, obstetric simulation may impact clinical outcomes

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Background
In 2010 Stavanger University Hospital implemented a one-day training course to accommodate all maternity midwives, doctors and assistants. The simulation training comprised of lectures/discussion on local guidelines on postpartum hemorrhage (PPH), scenario with role play and debrief. The facilitator challenged the participants on their experiences and choices of actions, aiming at reflection and self evaluation.

Project goals
To determine whether interprofessional simulation training on PPH was associated with reduction of blood loss after birth

Method
Retrospective identification of 534/546 mothers giving birth in 2009/2011 (before/after training) with blood loss >500ml, using the birth registry and electronic patient record system. Maternal characteristics in addition to explanatory factors like mode of delivery, analgesia and complications were sampled.

Results/concepts
Totally 11.1% of the mothers in 2009 vs. 11.2% in 2011 had an estimated blood loss >500 ml. Nevertheless, data collected from Department of Immunology and Transfusion Medicine showed a decrease in blood transfusion rate after birth from 2009 till 2011 by 40% (p<0.01) and significant reduction in uterine embolization was observed (n=10 before vs n=1 after training). Maternal characteristics and interventions like epidural analgesia and operative deliveries remained unchanged, as well as mean Hb-level at discharge (9.6 vs 9.7 g/dl; p=0.74). oxytocin augmentation was significantly lower in 2011 (29 vs 21%).

Discussion
Retrospectively we cannot prove the cause of reduced number of transfusions in 2011. The 2 groups are similar except for oxytocin augmentation which is significantly reduced. To a certain extent the lower rate of oxytocin augmentation may explain the lesser need for transfusions.

Likewise simulation training including debriefing by good judgment challenging the participants on their frames of understanding, might have strengthened level of self efficacy and the handling of PPH.

Conclusion
Interprofessional simulation training on PPH may be associated with a decreased need for blood transfusion after birth.

Conflicts of interest: NO
SESSION 5C
WORKSHOPS
Debriefing Olympics – Basic Procedures

Dieckmann P.1, Qvindesland S.2, Larsen A.1, Helsø A.1, Lippert A.1

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Background
Debriefing is a challenge for ensuring deep learning in simulation. The workshop provides a tested concept to facilitate reflection of debriefings. This version will work with “regular” debriefings. We will find the role players, judges and debriefers from the conference participants.

Goals:
Participants in the workshop will:

– Reflect on debriefing and different debriefing styles and their effect
– Reflect on possible ways to assess debriefings and to provide feedback
– Adapt their debriefing practice according to the reflections

Concept
The idea is to show a simple scenario video that shows three role players in a medical treatment situation. The learning goals for the scenario will be defined in writing. The team in the scenario performs well in many ways but also has challenges in the performance - like in real simulations and the clinical world. The video lasts about 3-4 minutes.

Debriefers (single) are selected for debriefing the team after seeing the video and getting information about specific learning goals. The debriefers do know the learning goals beforehand, but not the concrete scenario. The teams can pick one or two out of three to four learning goals and will announce according to which they work. The roles seen in the video will be played by trained people. The debriefers have 15 mins to debrief the team according to the learning goals that they have chosen. Then judges, who observe the debriefing provide constructive (!) feedback on the debriefing. There are two rounds, with a new debriefer each time. The role players just act similar each case and react to the debriefers questions. After each round, the debriefers have one minute to explain, what they did and wanted to achieve and will then get feedback from the judges.

After the second round and feedback from the role players, the audience will shortly discuss their observations with direct neighbours and then vote for the best debriefing (e.g. by using an audience response system - if we have one) or by holding up coloured pieces of paper on the individual basis.

Finally a group of facilitators spreads into the audience to reflect on the experience in a discussion in smaller groups.

Timeline
10 min Introduction and explaining the concept
5 min Video
15 min Debriefing 1
10 min Feedback 1
15 min Debriefing 2
10 min Feedback 2
5 min Feedback by role players
20 min Concluding discussion
90 min Sum

Discussion/Conclusion
The concept was tested in several conferences. We developed it further and adapted it, so that it is also interesting for audience that might have seen it before.

Conflicts of interest: My institution (DIMS) has a collaboration agreement with Laerdal. In the name of my institution, I head the EuSim group, providing instructor courses. Other members of the workshop team have been involved in EuSim courses.
A simple way to preprogram scenarios in SimMan Essential for research and for a systematic approach to training

Westfelt P.
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Many centers within the community of simulation are users of Laerdal SimMan 3G or Essential, without using the possibility to preprogram well thought out scenarios. The latest simulators from Laerdal have so many features and possibilities to use in scenarios. This makes it hard to manage when running scenarios in real time, and at the same time use the simulator’s voice in a realistic way. Preprogramming scenarios makes it much easier to operate SimMan and at the same time creating emotional fidelity of simulation.

Standardized, properly made scenarios are the prerequisite for a systematic approach to training and for the scientific evaluation of simulation.

CAMST – the Center for Advanced Medical Simulation have experience of using preprogrammed scenarios in Laerdal and METI-simulators for more than ten years. This workshop (90 minutes) developed at the Center for Advanced Medical Simulation and Training at Karolinska University Hospital in Stockholm Sweden, offers a simple and structured way to create standardized and reproducible scenarios using the clever software from Laerdal.

This workshop starts with a short basic lecture, followed by hands on training during 60-90 minutes. After this workshop all participants, using this simple method, will be able to produce their own well-made scenarios that will be easy to run for all operators at their centers. The participants must have basic knowledge of running the SimMan and need to bring their own laptops containing SimMan 3G/Essential software.

Conflicts of interest: NO
**Designing Human Factors Outcomes into Clinical Scenarios**

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**BACKGROUND**
Healthcare Simulation-Based Education is a well-established modality for training. From the very beginning the learning outcomes of simulated scenarios included Non-Technical Skills as well as opportunities to rehearse and practice clinical management.

Using video clips and facilitated discussion groups we will support attendees in:

**LEARNING OBJECTIVES**
2. Discussing the learning objectives to be met in the debrief of a recorded scenario, including those from the perspective of Human Factors.
3. Planning a new scenario to deliver Human Factors outcomes.
4. Testing the scenario with the scrutiny of the workshop.
5. Gathering a set of Learning Outcomes from the workshop.

**EXPECTED AUDIENCE**
The workshop will provide a rewarding and engaging learning experience for newcomers to simulation as well as those experienced in skills/drills type learning where clinical and procedural objectives predominate. The workshop will benefit from the participation of, and provide interesting challenges to, those experienced in Non Technical Skills and Team Resource Management training who have not yet looked beyond the personal interaction aspect of Ergonomics.

**REQUIREMENTS/SPECIFIC NEEDS**
Café layout. Powerpoint presentation resources including A/V for replay of videos within powerpoint. 2 Flipcharts, paper and pens.

**DESCRIPTION OF THE SESSION**
Following an introduction and icebreaker event a video of a resuscitation scenario will be shown and the attendees will engage in small group work to agree the learning outcomes for the debrief.

Faculty will challenge the outcomes with their interpretation from a Human factors Point of View. This will be followed with a brief didactic discussion on definitions of Non-Technical Skills, Team Resource Management (strategies and applications of Non-Technical Skills) and Ergonomics and Human Factors.

A second video scenario will provide an opportunity to consider learning outcomes using this new knowledge, then the groups will be tasked to design their own scenario to deliver Human Factors learning outcomes formed around a clinical challenge for their chosen group of learners. The designs will be critiqued in open discussion. The workshop will conclude with the collection of key take home messages and suggestions for further work and possible networking and collaboration.

*Conflicts of interest: NO*
Standardizing the Unknown – Training Simulated/Standardized Patients to respond similarly to unscripted questions

Wallace A., Lyman L., West T., Woolard A., Gliva-McConvey G.
Sentara Center for Simulation and Immersive Learning, Eastern Virginia Medical School, Norfolk, Virginia, United States, 23501

Background
When designing a case, case authors develop the case content (HPI, PMH, SH, FH), presentation (affect), and other critical items in the patient profile. However, it is difficult to anticipate and train for all questions the student may ask the patient. Therefore, SPs need tools to ad lib these answers and minimize impact to the overall patient portrayal.

A technique/method has been developed that looks at the psychological/psychosocial characteristics of the patient. This builds consistency in case portrayal in a way that allows several SPs trained on one case to respond similarly to unscripted questions. In addition, other attributes that impact student performance such as non-verbal cues, response to the student’s conversational style, and pacing of information become standardized as well. These methods/techniques can be particularly useful in balancing the strategic pacing of information as well as maintaining integrity of cases in which similarity among SPs is important.

Learning Objectives
Participants will identify attributes of a technique that allows them to standardize the unknown or soft attributes of a case.
Participants will develop a global patient profile from an SP case and apply the technique to this profile.
Participants will identify the time saving aspects of this method.

Expected Audience
Those interested in SP training – any level of experience

Requirements/Specific Needs
Projector, projection screen, HGi/VGA cable. Tables for small groups

Description of the session
Large group – presenters will demonstrate a training method that identifies and standardizes the core personality and attributes of a patient that may not be discussed in traditional training.
Large group – presenters will provide a case and train participants using the method.
Small groups – participants will answer questions regarding areas of the case not discussed in the written materials.

Conflicts of interest: NO
A workshop for directors of simulation centres
“How to implement simulation-based training in the curriculum and in the organisation?”

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Danish Institute for Medical Simulation, Capital Region of Denmark SAFER, Stavanger, Norway Vrije University, Amsterdam, The Netherlands

Background
Developing and conducting successful simulation-based training are the core business for a simulation centre. The challenge is, based on the positive experiences and research activities, to change existing educational activities in a given specialist training program – to stop doing the things that do not work and integrate simulation based activities in the curriculum.

Many organisations are aware of the need for team training not only the emergency teams but also the teams in the ward in order to increase staffs attention and understanding of human factors and non-technical skills. The challenge is to make these initiatives mandatory for new team members and to have plan for how to retrain the team. The implementation phase is challenging and needs skilled leaders with strategic, communicative and collaborative skills.

Goal of the workshop:
1) Participants are able to identify the main challenges in implementing simulation-based training in the curriculum for at given profession (individual skills)
2) Participants are able to identify the main challenges in implementing simulation-based team training in the organisation curriculum for at given profession (individual skills)
3) Participants will gain ideas/tools to overcome their main challenges by using strategic, communicative and collaborative skills.

Content of the workshop
The workshop will be based on cases. Challenges in implementation processes will be discussed and suggestions for how to overcome these challenges will be discussed. The facilitators will help bridge the gap – bases on best evidence.

Potential questions to be discussed:
– What are the main challenges?
– Who should I involve in the scientific societies and in the organisation?
– How long is the time frame – milestones?
– How to evaluate the progression?
– Financial issues?

Flow of the workshop
5 min Introduction of the workshop and the faculty in plenum
10 min Short introduction of participants (30 sec per participant)
20 min A case – how to proceed if implementation in curriculum is my goal (Participants will be divided into four groups)
10 min Faculty facilitate and pick four main points
20 min A case – how to proceed if implementation in the organisation is my goal.
10 min Faculty facilitate and pick four main points
10 min Prepare you plan for future implementation projects
5 min Closing discussion – take home messages

Maximum number of participants: 20 (to be partly distributed into smaller groups)

Conflicts of interest: NO
Bringing Crisis Resource Management (CRM) to Life with Non-Crisis Situations

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In this description we follow the guidelines in the author guidelines, not the headings on this page.

BACKGROUND
Using CRM often is focussed on the management aspect of crisis situations. CRM also has a preventive aspect and is in principle applicable in every situation of some complexity.

LEARNING OBJECTIVES
The idea of the “Bringing CRM to life series” is to alienate the context of application for the CRM principles to generate cognitive friction with the principles. After the workshop, participants are able to design simulation scenarios that enable participants to apply the preventive aspects of CRM. Participants are able to recognize CRM aspects that help in preventing crisis situations from occurring.

EXPECTED AUDIENCE
Simulation facilitators across the different expertise levels. Maximum number of participant: 36

REQUIREMENTS
We would need a room in which tables and chair can be moved flexibly and the possibility for audio-/video projection.

DESCRIPTION
This workshop uses non-crisis situations within and outside of healthcare to help participants form an improved understanding of the CRM principles and their application in simulations and debriefings. These situations will be presented by video, in role plays and case studies. Participants will rotate through the different stations and summarize their learning in the end. Faculty will lead the different stations. Participants will watch videos and discuss them, they will interact with each other and the facilitators in role play vignettes and will read texts and discuss them.

Time plan
10 min introduction to the faculty, the workshop and CRM
20 min first rotation (movie, role play, case discussion)
20 min second rotation (movie, role play, case discussion)
20 min third rotation (movie, role play, case discussion)
20 min closing discussion with take home messages
If needed, we can adapt to a 60 min slot, but would definitely prefer a 90 min slot.

Conflicts of interest: DIMS has a collaboration agreement with Laerdal. Dieckmann heads the EuSim group, a group providing instructor courses. All authors were involved in one or more instructor course by the EuSim group and potentially other courses.
Interprofessional In Situ Simulation with Failure Mode and Effects Analysis: Using Simulation for Quality Improvement
Feldman M., Brock E., Bodamer C., Baker B.
Virginia Commonwealth University

BACKGROUND
Failure Mode and Effects Analysis (FMEA) is a prospective risk assessment tool for identifying and mitigating threats before an adverse outcome occurs. It focuses on work processes, not events. In situ simulation challenges participants in their normal work environments and thus involves interprofessional teams and work processes. In situ simulation can enhance FMEA process of proactively identifying and assessing risks. We present the steps for conducting a FMEA process, designing in situ simulations for the purpose of uncovering latent threats in a work process, and using the simulation enhanced FMEA (S-FMEA) results to prioritize organizational resource allocation for work process improvement. We present the use of S-FMEA in our institution to prepare for a significant change in workflow process on a clinical unit, and discuss ways in which simulation made the FMEA process more robust and contributed to the ability to significantly change workflow without a decrement in quality outcome indicators. Participants in the workshop will plan the design and implementation of a S-FMEA project to address a workflow process of their choice.

LEARNING OBJECTIVES
1. Describe the major steps for conducting S-FMEA
2. Discuss the benefits and challenges of using in-situ simulation as an adjunct to Failure Mode and Effects Analysis for identifying and mitigating risk
3. Develop a project that employs a S-FMEA approach at the participant’s institution

EXPECTED AUDIENCE
Physicians, Nurses, Healthcare Administrators, Educators, Human Factors and Organizational Psychologists

REQUIREMENTS/SPECIFIC NEEDS
50 participants maximum
Power point
Space to accommodate participants working in small groups of 8-10 people

DESCRIPTION OF THE SESSION
Introduction and Disclosures
Presentation of background on the FMEA process and discussion of a project using FMEA combined with In Situ Simulation (15 min)
Participants engage in group activity to consider a work process scenario, and identify failure modes. Groups will design In Situ Simulation(s) to test or identify failure modes (15 min total)
Presentation and discussion of risk priority ranking process (10 min)
Participants return to group activity to assign risk priority scores based on failure modes identified in previous small group activity(15 min)
Discussion of developing action plans from risk priority rankings (10 min)
Group activity to develop action plans based on FMEA results (15 min)
Summary discussion, strategies for accountability, evaluation and follow up (10 min)

Conflicts of interest: NO
How To Find Out If An SP Applicant Will Be A Cultural Fit To Your Institution

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Background
No matter how small or large a Simulated/Standardized Patient (SP) program may be, the common challenge SP Educators have is the correct selection of applicants. Every program hopes for a new SP who will be realistic in portrayal, accurate in scoring, and has effective communication skills when delivering feedback.
How can we predict these goals will be reached when meeting a prospective SP for the first time?
This session will introduce strategies to enhance the interview process by gaining stronger insight into an applicant’s concentration, communication skills, memory, and ability to ‘take direction’.
The advantages of this method can result in quality educational experiences for our learners, increased credibility with faculty, less training time, and decreased need for SP remediation.

Learning Objectives
By assessing traits with the use of behavior-based questions, hypothetical situations, and principles based on the methodology used in SP training; institutions can increase the probability of choosing applicants who will be a good fit and thereby cost-effective.
Participants will be introduced to strategies that incorporate methods making it highly adaptable to most programs.

Expected Audience
Simulation Center Administrators, SP Educators, Medical Educators

Requirements/Specific Needs
Projector and speakers for video review

Description of the Session
Participants will be introduced to interview format, behavior-based questions, predictive indicators, correlation of standard SP training techniques, and adaptation strategies to apply this format to most programs.
Participants will engage in an interactive discussion on the techniques used during this process. Participants will watch a group interview and discuss observations. The presenters will familiarize the participants with the techniques, supply applicant biographies for discussion, and provide opportunities to apply techniques with simulated applicants. Participants will also discuss methods to create a similar model to be used at varying institutions.

Conflicts of interest: NO
ROI: Proving the Benefits of Simulation in Healthcare to Administrators

Metcalfe-Smith R.
Cedars Sinai Medical Center, Los Angeles

Simulation in Healthcare is often new to both educators and administrators across the globe. While varying levels of simulation have been in existence for decades the increased availability of technology has allowed a greater realism to be achieved. The need to improve patient safety and the growing acceptance of simulation as an effective learning tool come at a significant cost. This workshop hopes to create an environment where options for achieving return of income (ROI) can be discussed and ideas presented which will help the simulation community to discuss ideas associated with income generation in simulation.

Depreciation of simulation equipment and the need to keep current.

ROI: Not just income generation but process improvement?

This workshop will allow the sharing of information and allow administrators to look at additional options associated with education in healthcare associated with simulation in the healthcare environment.

Conflict of interest: NO
Training a Realistic Role Portrayal in less than 30 minutes

Gliva-McConvey G., Lyman L., West T., Wallace A., Woolard A.
Eastern Virginia Medical School

Background
The quality of role portrayal by simulated family members, confederates, team members (or any simulated role), has immediate and specific impact on the fidelity of the simulation and the outcome of the experience for the learners. If a goal in simulation is to achieve the level of realism to allow the learner to carry out the required tasks, perform to their highest ability and to be fully engaged, all participants in the simulation must be properly prepared or trained. Yet it may be challenging to train those who are assisting in the simulation as family members, confederates or team members when there are time constraints. There is an established methodology for training Standardized Patients that has proven to produce very realistic and standardized portrayals. This pre-simulation training which is usually days before a simulation is thorough and has proven efficacy. However, in some situations, it is necessary to recruit and prepare people for a simulation quickly (and shortly) before the simulation starts. These roles do not require intensive in-depth training, but realism and reproducibility are still an important feature to maintain the integrity of the total simulation.

The Goal of the workshop is to provide participants an opportunity to develop quick training skills and to practice techniques required to train realistic portrayals for roles used in healthcare simulations in a short period of time.

Method of workshop instruction
Short didactics, recorded demonstrations and small group practice

This workshop compresses the well-established SP Methodology and training techniques into a thirty minute training system for situations that require realistic affect portrayals in pain and highly emotional affects such as panic, anxiety and grief. Using SP techniques and standardized scales, a person can be trained to realistically and repetitively portray the affect needed to complete and enhance the simulation.

Conflicts of interest: NO
Assessment of Team Performance in Simulation

Salzman D.
Northwestern University

Background
Effective teamwork is critical in the delivery of high quality patient care. This hands-on workshop will review evidence of successful teamwork within medicine and describe several existing team assessment tools. This interactive session will teach participants how to structure and execute assessments of educational interventions that enhance the effectiveness of teams’ ability to work effectively to improve patient safety. This will be done with a non-clinical simulated activity with half of the group involved as active participants and the other half of the participants will utilize an electronic data collection device to assess learners engaged in a team activity. This exercise consistently elicits the themes of team composition, leadership, communications, shared situational awareness, and dynamic goal setting. At the end of the session, the entire workshop group will debrief and identify steps for application of the assessment of team performance at their institution.

Learning Objectives
At the end of the workshop, participants will be able to:
1. Describe need for effective assessment system of team performance to improve patient safety.
2. Identify existing team performance tools.
3. Adopt methods for assessing team performance in one’s home environment.
4. Describe using technology for enhanced assessment.

Expected Audience
Simulation faculty and educators who teach or assess teamwork skills.

Requirements/ Specific Needs
1. Internet connection
2. Room set up with tables in a workshop fashion
3. White flipboard for writing

Description of the Session (90 minutes)
Introduction – 5 minutes
Teamwork and patient safety discussion 5 minutes
Presentation of published teamwork tools 20 minutes
Exercise prep time – breaking groups into teams and observers and explaining tools and expectations for participation – 5 minutes
Teamwork exercise with debriefing 45 minutes
Questions, discussion, and wrap-up 10 minutes

Conflicts of interest: NO
Creating Simulated Patient Accessible Checklists

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**Background**
Medical educators have lists of things that learners should consider while taking a history and physical. Because many Simulated Patients do not have a medical background, it requires more extensive training to have them assess the clinical skills of learners. By creating a checklist that is tailored to the perspective of the patient, Simulated Patients may be trained more quickly and still maintain reliability in documenting and reporting demonstrated clinical skills.

**Learning Objectives**
Participants will:
- Determine the difference between documentable and non-documentable expectations
- Create observable, documentable behaviors from non-documentable expectations
- Create a checklist that can be easily scored by a Simulated Patient

**Expected Audience**
Simulation Center Administration, Simulated Patient Educators, Medical Educators

**Requirements/Specific needs**
Projector, projection screen, HDMI/VGA cable

**Description of the Session**
Participants will be introduced to the concepts that make up a strong checklist for use by Simulated Patients. They will see an example of a checklist that faculty might normally fill out be adapted for use by Simulated Patients. Participants will be given a second checklist that might normally be filled out by faculty. They will work in small groups to adapt it for use by Simulated Patients. The entire group of participants will then discuss what the small groups created. The session will end with questions and answers.

**Conflicts of interest:** NO
Ethical challenges in healthcare – using simulation

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BACKGROUND
Healthcare curriculums contain theory and skill development for clinical work, bio-medical-psychological fields, care, communication with patients and clinical experience. A common challenge that is seldom addressed in schools or mentoring is the ethical cases that meet healthcare professionals regularly.

OBJECTIVE
The aim of this workshop is to introduce ethical challenges as a learning goal and gain a better understanding of the phenomenon of ethical challenges in healthcare.

METHODS
The authors will facilitate a discussion on what kind of ethical challenges are met in clinical practice (different context, multi-professional). The participants will discuss and reflect different approaches to use simulation to address ethical dilemmas in healthcare and share possible solutions.

RESULTS
Participants will be able to recognize and work with ethical challenges and better understand how these can be addressed and simulated.

REQUIREMENTS
A normal room equipped with papers and pencils flip-over and pens; Time needed for this WS would be 60 – 90 minutes (exact pedagogical method will be decided accordingly).

Conflicts of interest: NO
Obstetrics in emergency medicine

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**Background**
In emergency medicine, obstetrical cases are rather rare. For this reason, the learned theoretical knowledge about delivering a baby and the most typical emergencies is not present and they do not have a routine in the handling of obstetric cases.

**Project goals**
This project gives paramedics and emergency physicians the possibility to deepen their knowledge and skills about obstetric emergencies.

**Methode**
To verify the established thesis and to demonstrate the possibly resulting need for simulation training we interviewed employees of prehospital services. They were asked what about their thoughts and feelings when they read the keyword “incipient birth” in their display and if they see need for more training in this special area. The most frequently mentioned responses were
- Lack of routine in dealing with the birth and newborn care
- Emotional stress because of the two people which they are responsible for
- How do I recognize complications and how can I treat them
- Examine a maternal health passport, where are the important informations

**Concepts**
The respondents would welcome the opportunity of training, as this can reduced fears and routine could be obtained.

Considering all the given answers a special course concept has been developed. This course contains both, a theoretical part to refresh the knowledge, as well as a practical part to deepen the knowledge. In the practical part we use a hybrid simulation for realizing the delivery scenarios. Following the scenario, a video-based debriefing takes place, in which we focus on the medical an technical specialties of obstetric cases as well on the non-technical skills of the individuals and the team. The video-based debriefing allows participants have a self-reflective learning experience.

**Discussion**
A big point is the fact, how to implement such a course concept in the paramedic’s curriculum in Germany.

**Conclusion**
Obstetric simulation for pre-hospital teams in our opinion is a tool which helps them to acquire routine, to overcome inhibitions and fears, and to increasing patient safety. We are planning a re-evaluation after the obstetrical training of the participants. This will give us better data about the acceptance and to improve the course concept.

**Conflicts of interest:** NO
SESSION 6A
Increasing the volume and rate of blood loss in a Post-partum Haemorrhage (PPH) scenario

Rudnicki-Bayne S.1, Stewart A.1, Patrick K.2, Moneypenny M.1

1 Scottish Centre for Simulation and Clinical Human Factors; 2 Forth Valley Royal Hospital

Background
Feedback after running an emergency post-partum haemorrhage (PPH) scenario suggested a larger volume of blood loss at a faster rate would have been more realistic to learners.

Project goals
Develop a way of increasing both volume and rate of bleeding per vagina (PV) to increase fidelity of emergency scenario.

Methods
1) Identify desired volume and rate of blood loss
2) Identify a route of delivery of blood
3) Build and test prototype

Results/concepts
Desired properties of major PPH
1) Expert obstetric advice suggested that 2-3 litres would be an appropriate amount to lose over a 20-minute period
2) Discrete and easy access and flow for blood into vagina
3) Re-usable
4) Inexpensive
A 3-litre bag of sterile water for irrigation was coloured with red food-colouring to replicate blood. The rate of flow through the software driven pump was felt to be too slow. This was therefore bypassed and a shortened blood giving set was fed around the uterus and into the vagina. The bag is hidden in the pillow and compressed by the scenario “confederate” to gush the blood into the vagina and create the desired illusion of major PPH.

Discussion
Being manually controlled, the PPH is controlled by the “confederate”, however this also means the confederate must remain in the scenario and not move. A means of automating the process, by applying and maintaining pressure on the bag would facilitate this.

Conclusion
The desired rate and volume of blood loss has been achieved, making for a convincing major PPH scenario. This system is easy and inexpensive to replicate and could be used anywhere a simulated major haemorrhage is required.

Conflict of interest: NO
Developing a pulsatile mass to enhance an Abdominal Aortic Aneurysm simulation scenario

Rudnicki-Bayne S., Moneypenny M.
Scottish Centre for Simulation and Clinical Human Factors

Background
Currently we run Abdominal Aortic Aneurysm (AAA) scenarios. The mannequin we use (SimMan Essential) does not produce his own pulsatile abdominal mass. When the learners perform an abdominal examination, the “confederate” in the scenario tells them they can feel a pulsatile central abdominal mass.

Project Goals
To develop a pulsatile mass that the learners would discover on examination and so enhance the fidelity of the simulation.

Method
1. Identify desired properties of equipment.
2. Design and build a prototype which provides an accurate physical representation of a central pulsatile abdominal mass.

Results/concepts
The desired properties were identified as:
1. Provide accurate physical and tactile sensation to enable learners to find a central pulsatile mass
2. Easy to use and control
3. Re-usable
4. Inexpensive
A neonatal blood pressure cuff was thought to be representative of size for the central mass, as well as being inflatable and therefore possibly pulsatile. A bulb from a sphygmomanometer was used to manually fill the neonatal cuff. This was attached via the giving set from a fluid bag. The circuit was closed, which allowed the cuff to “pulsate” in time with the applied pressure and release of the bulb. Once inserted into the abdomen of SimMan, we covered the cuff with foam to make pulsing a little more diffuse as well as providing bulk, and the prototype was tested.

Discussion
The current prototype has been informally tested by our faculty and thought to feel realistic. Learner ability to discover the pulsatile mass will determine if fidelity has improved. If successful the next step will be to automate the system with a small 100rpm motor and a pulse width modulator to control the pulse rate.

Conclusion
This prototype is simple to re-create, install and could be used/developed by simulation suites everywhere.
Developing an alternative difficult intubation device for HPS which avoids tongue puncture

Rudnicki-Bayne S., Stewart A., Moneypenny M.
Scottish Centre for Simulation and Clinical Human Factors

Background
Tongue inflation/swelling is an element of running a difficult intubation scenario on CAE Healthcare’s HPS Human Patient Simulator. However, we have found that it appears all too common for learners to puncture the swollen tongue by applying too much pressure with the laryngoscope. The delay in obtaining a replacement impacts on the ability to run the scenario for subsequent courses.

Project Goals
1. To develop an alternative method of making the HPS airway difficult to intubate.
2. Identify required properties and functionality of airway occluder
3. Design and build a prototype which allows us to run a difficult intubation scenario whilst minimising risk of damaging the manikin

Method
The desired properties were identified as:
1. Provide accurate appearance of at best a grade 2 view
2. Make the manikin difficult to intubate (along with laryngospasm)
3. Easy to install and use
4. Re-usable
5. Inexpensive

Results/concepts
We decided to occlude the airway from above the larynx. A 30mm bouncy ball was found to be the right size and firmness to provide the occlusion whilst minimising risk of damage to the manikin. A hole was drilled through the centre of the ball and an 80mm size M5 bolt inserted. A second 100mm size M6 bolt was positioned behind the metal neck plate and the two bolts tethered with cable ties to apply pressure to the airway

Discussion
We plan to validity test this system during our difficult intubation scenario and modify where required. We need to observe for degradation of HPS airway and whether the lack of tongue swelling prevents the tongue from being punctured.

Conclusion
The current prototype is simple yet robust, easy to install/uninstall, re-usable, inexpensive and effective, providing a grade 3 view. The device can be easily replicated for use in simulation suites everywhere.
New Frontiers: Simulated Patients (SPs) in Electronic Technology Simulations

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Background
Telehealth. Telemedicine. Distance Health. Technology today successfully helps solve problems of medical availability to remote patients. Telecommunication is changing healthcare in unprecedented ways, and as interprofessional training in this area grows, so does the use of SPs in effective training scenarios. Creating scenarios and training SPs to simulate patients (and often their caregivers) in electronic technology modalities reveal new challenges and rewards.


Objective
The objectives of the study are to:
- Identify specific challenges for setting up and training electronic technology modality simulations
- Explore ways of managing the challenges
- Identify the rewards and benefits of new considerations in SP training
- Consider training approaches to optimize SP contributions to electronic scenarios

Methods:
The technology itself dictates new contexts and discourse:
- Definition of terms- how telehealth and telemedicine might differ;
- Cameras and camera angles—how patients and health professionals interact with a camera
- Audio realism
- Providing a realistic setting in a simulation of long distance interactions
- SP ownership of case specifics

Results
Terms were defined for SPs and interprofessionals alike
Within the electronic context, SPs and health professionals learned to work together to explore the medical, social, cultural and economic dimensions of the technology

Conclusions
As the field of internet-delivered healthcare grows in breadth and scope of complexity, there will be increasing needs for effective training scenarios using SPs. New technologies will dictate new responses on the part of interprofessional healthcare teams as well as SPs.

Conflicts of interest: NO
SESSION 6B
The effect of briefing videos in medical simulation-based education: a randomised controlled trial

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BACKGROUND
Dieckmann et al. deepened the theoretical foundations about realism and engagement to improve the main goal of learning in medical simulation. Yadav and Koehler showed that video versions of stories led to higher levels of engagement, affection, and recall of particular information compared with textual versions. This is the first time these methods are used for briefing in medical simulation.

OBJECTIVE
The aim of this study is to compare the effects of an affective briefing video with a textual briefing on cognitive appraisal (threat or challenge response). It is hypothesized that briefing videos will cause a threat response, which is associated with increase in cortisol and memory consolidation.

METHODS
Randomised controlled trial in which 18 years old students were asked to participate in a simulation experiment. The students were randomly assigned to an experimental group (video) or a control group (text), both followed by performing surgery on LapSim® (Surgical Science Ltd., Gothenburg, Sweden). Cognitive appraisal was measured by the method of Tomaka. Secondary outcomes are engagement (game engagement questionnaire), performance (mean percentage of two levels), anxiety (State-Trait Anxiety Inventory), physiological stress (saliva cortisol in males), and motivation (Intrinsic Motivation Inventory).

RESULTS
Cognitive appraisal was M(SD) 1.21(0.30) in the experimental group (N=17) and 0.95(0.24) in the control group (N=22), p<0.05. No difference was found between the groups in engagement, performance, anxiety, cortisol change, and motivation.

CONCLUSIONS
Briefing videos in medical simulation cause a threat response, while textual briefing results in a challenge response. No difference has been found in performance, but theoretically the threat response may result in increased memory consolidation. This will be the topic of future research.

Conflicts of interest: NO
Simulation based learning to improve higher cognitive functions

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Background:
The revised United States Medical College Admission Test (MCAT) debuts in 2015 with several important improvements. Beyond the traditional focus on basic science knowledge, MCAT2015 introduces the notion that processes or habits of mind, i.e. how we think, are an important component in building a better doctor. Anticipating large variation in incoming medical students’ abilities in this area, it is critical to develop robust techniques for ongoing assessment and development of these skills. This project uses a simulation-based technique to assess and develop these skills in preclinical medical students.

Objective:
The purposes of this study are to: (1) generate baseline data on higher cognitive skills in preclinical medical students and (2) determine the effectiveness of Strategic Management Simulations (SMS) cognitive training to improve medical students’ performance.

Method:
A large cohort of preclinical medical students completed an SMS assessment. A targeted group of underperforming medical students will be engaged in intensive cognitive training. We will compare students’ performance before and after the training.

SMS is a computerized, objective, validated assessment and training tool that provides feedback on individual and team decision-making capacities. SMS scenarios expose participants to the uncertainty of the real world and are independent of knowledge, thereby providing a pure evaluation of how an individual thinks.

Discussions:
Several prior research studies have shown that training cognitive process skills enables better performance and enhanced decision-making. We believe that introduction of such methodology early in medical school will enable deeper formative learning and enrich the medical curriculum.

Conclusions:
Enabling a better process of thinking is critical to developing clinical reasoning skills. Cognitive simulations provide an attractive option to assess and improve medical students’ higher cognitive skills. Data will be presented to demonstrate this model of assessing and training.

Conflict of interest: NO
Toward improved critical thinking: Process and Content components

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Background
A competent physician must have a base of acquired knowledge, and the ability to apply this knowledge in complex, ambiguous, and volatile task settings. Acquired knowledge and application of the same require strong critical thinking skills.

Background
Cognitive errors in clinical reasoning have emphasized that clinicians need effective information-processing and critical thinking skills to engage successfully in medical decision-making, especially in complex and ambiguous situations. In surgical disciplines, structured tests as well as ongoing evaluation by faculty are used for evaluating resident competency. Although structured tests evaluate content knowledge, faculty ratings are a better measure of how that knowledge is applied to real world problems.

Project goals
In this study, we sought to explore the performance of surgical residents in the Strategic Management Simulations (SMS) and compare this performance to traditional measures (faculty ratings and test scores).

Methods
We used the Strategic Management Simulations (SMS) a validated and reliable evaluation and training tool. Scores obtained were compared with the scores obtained on the American Board of Surgery In-Training Examination (ABSITE).

Results
Multivariate analysis of variance technique was employed to study intercorrelations between SMS scores and resident performance. Data on 12 independent measurements of functioning in complex professional settings were obtained (example, diversity of action, use of strategy, information management).

Discussion
The real-world oriented decision-making parameters on SMS did not correlate as well with traditional test scores but did correlate with faculty evaluation (based on in depth knowledge of resident). This emphasized the need to incorporate “process” elements of decision making in training programs.

Conclusions
The evaluation of thought process and information management skills can demonstrate areas for improvement in individual residents. Further, this technique is useful as an evaluation tool to uncover important competency deficits not evaluated through traditional resident evaluation techniques.

Conflict of interest: NO
Decision making in nursing students: Process vs Content

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Background
The American Association of Colleges of Nursing (AACN) has defined the attributes essential for newly graduated registered nurses to deliver care in a safe and effective manner. The AACN describes the generalist nurse as being a provider, manager and coordinator of care. This demanding charge requires an ability to have sound clinical judgment when making decisions that lead to optimum outcomes for patients. The variability of clinical performance by the new graduate implored us to examine a reliable and objective test that could predict real world clinical performance (for example, breadth, planning, strategy).

Project goals
This study aimed to understand the relationship between critical decision making parameters and standard test and interview scores to help us better define our standard parameters of evaluation.

Method
We used the Strategic management simulations (SMS) an objective methodology, that has been utilized in a variety of fields to assess cognitive ability in terms of critical thinking skills. Since SMS evaluates the underlying processes of thinking it can be used to train individuals to improve areas of deficit. Effective problem solving depends on effective critical thinking and SMS correlates well with real world functioning in variety of domains. The participant’s SMS scores were compared with their scores of academic success, pre-admission grade point average (GPA), interview score, test scores and faculty rankings.

Results
Scores obtained on the “real world” performance as measured by the SMS correlated with end of training faculty scores but not with other content based scores.

Discussion: The data emphasizes the need to train “critical thinking” variables using cognitive simulations and highlights the gaps in our routine evaluation techniques.

Conclusion: The outcome of this study could lead to emphasis on assessment and training to improve decision-making ability, a critical skill in nursing using an objective, repeatable and reliable methodology.

Conflict of interest: NO
SESSION 6C
SESSION 6D
Plateau effects in the learning curves of a proficiency based laparoscopic skills simulator training

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Background
Surgical trainees do not acquire laparoscopic skills at the same rate. Early identification of trainees who will need additional training is necessary.

Objective
We investigated the learning curve of trainees who did reach expert level of a proficiency based laparoscopic skills training and those who did not.

Methods
98 laparoscopic novices followed a training consisting of 6 sessions maximum. Duration of task, damage to tissue and efficiency of movement were measured on a LapSim simulator. Expert levels were previously validated. A mixed model analysis was performed with session and exam status as fixed factors and participants as a random factor.

Results
36 participants (37%) did not reach expert levels within 6 sessions. 2 participants reached expert level at session 4, 31 at session 5, 29 at session 6. Participants who did not reach expert level scored significantly lower on duration (p < .001), damage (p < .001) and efficiency of movement (p < .001). These differences were present at the first session for duration (t(93)=2.487, p=.015) and efficiency of movement (t(93)=3.021, p=.003), but not for damage (t(93)=1.770, p=.08). Overall, the plateau phase occurred at session 5 for duration, session 3 for damage and session 2 for efficiency of movement. For participants who did not reach expert level, the plateau phase occurred at session 3 for duration, session 1 for damage and session 2 for motion efficiency. For participants who did reach expert level, the plateau phase occurred at session 3 for duration and damage and session 2 for efficiency of movement.

Conclusions
This study showed that learning curves levelled off at different rates for duration of the task, damage to tissue and efficiency of movement on a laparoscopic simulator. Also, trainees who did not reach expert level during training consistently performed worse, right from the start of the training.

Conflict of interest: NO
Objective assessment of endoscopic skills

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BACKGROUND
High professionalism in endosurgery together with knowledge includes a certain level of practical skills, communication techniques, ability to manage a team in crisis situations and under stress. Faculty has to provide young surgeons with adequate conditions for the skill training and proficiency level evaluation.

GOAL
Evaluate the situation with training and assessment of basic laparoscopy skills in Russia.

METHOD
Five questions on endoscopic training were surveyed in December 2013 among 14 leading Russian teaching experts in endosurgery.

RESULTS
1. What methods and techniques do you use for endoscopic training in your University?
87% use box-trainers, virtual reality simulators and practice skills by assisting in the OR.
2. Which methods and techniques are the most efficient and can be recommended for laparoscopy skills training?
BT 100%, VR 87%. DeadLab and OR were recommended by 25% only.
3. Do you use validated and internationally approved FLS course?
Only 25%.
4. Is there in your University assessment of laparoscopy proficiency?
13% evaluate proficiency in the OR, 37% on the BT or VR. 50% of Universities do not assess laparoscopy skills.
5. What is the most effective technique for laparoscopy skill assessment?
BT 67%; VR 67%, Assistance OR 50%, DeadLab, WetLab and Surgery were not recommended.

CONCLUSION
There are no accepted and approved standards for endoscopic training in Russia. No internationally validated courses are used as well. The majority of the Universities do not test the level of laparoscopy skills objectively. Those assessments that are done on BT or VR are not standardized, not validated and vary between institutions.

The system of endoscopic training in Russia needs improvement and standardization. Before commencing independent endosurgery novices should attend standardized basic laparoscopy skills course and been objectively assessed to be able to continue further training in OR under senior supervision.

Conflicts of interest: NO
Does Instruction Modified to VARK® Questionnaire Learning Style Affect Psychomotor Training in da Vinci Si® Robotic Trainees?

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Objectives
We hypothesize that administering instructional education for da Vinci Si® robotic trainees based upon their learning style as defined by the validated VARK® learning style questionnaire (visual, auditory, reading/writing, kinesthetic, or multimodal) will result in significant improvement in performance metrics on the da Vinci® Skills Simulator. Our primary aim is to test this hypothesis and our secondary aims include designing curricula based upon VARK® learning style, and to identify attributes that predict a successful learner.

Methods
Fifty volunteer medical students and surgical residents were recruited. They completed the VARK® questionnaire to determine their learning style, and a novel questionnaire asking demographic information and experience in exercises requiring manual dexterity. Next, they completed 3 exercises representative of robotic surgery on the da Vinci® skills simulator: Ring Walk 2, Energy and Dissection 2, and Tubes. The participants were randomized to 2 groups: one with an educational intervention matched to their Vark® learning style, and one with a randomized intervention unmatched to their learning style. Next, they completed the same 3 exercises on the da Vinci® skills simulator. Performance metrics were recorded pre and post intervention. The overall score (OS) and the critical errors (CE) score were analyzed using logistic regression models.

Results
Regression analysis showed that for Overall Score (OS), musical instrument experience was predictive of improved performance (OR: 0.431, 95% CI 0.2−0.9). For the regression specific to the Critical Errors (CE), receiving matched intervention and experience with a musical instrument was predictive for outcome: Matched VARK® OR: 7.25, (95% CI 0.95−55.2) and musical experience OR: 0.939, (95% CI 0.168−0.918).

Conclusions
Preliminary results reveal that an educational intervention matched to VARK® learning style reduces Critical Errors (CE) on the da Vinci® skills simulator. In addition, CE is significantly reduced and OS is significantly improved in individuals with experience with musical instruments.

Conflicts of interest: Financial Disclosure: Study was funded in part by Intuitive Surgical, Inc.
Core Surgical Trainees Immersive Simulation

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Background
Building on the Core Surgical Trainees (CSTs) course created from scratch in 2013 we have further developed immersive surgical simulation to aid transition from CST to Registrar using high-fidelity simulated surgical scenarios. It is well known Surgeons are working in busier environments with the European Working Time Directive increasing variety and unfamiliarity amongst team members with frequent handovers and less training opportunities. It is also recognised that outcomes improve in high pressure situations with more experience and that simulation is a bridge to this where training hours are reduced.

Project goals
To utilise an immersive simulated surgical environment to develop clinical decision making, communication and leadership in dynamic high hazard scenarios. Objectives tailored to Intercollegiate Surgical Curriculum Program enabling delegates to recognise limits of their own professional competence; recognise and respect the skills and expertise of others; to lead resuscitation and early management of the acutely ill surgical patient or multiply injured patient and demonstrate clinical decision making, team working and planning.

Method
Course developed specifically for candidates in Core Surgical training (CT1/CT2) to push them to the limits of their knowledge and expertise with diagnostic uncertainty, deterioration; multiple responsibilities and distractors. Simultaneously utilising technical surgical skills (such as surgical airway requirements or chest drain insertion) within a fully immersive surgical scenario.

Results/concepts
The concept was proved in 2013 and with the same strong faculty and technical staff we expect improved results. Scenarios have been augmented with more interactive surgical skills and dynamism. We also shall have real time assessments logged from the trainees themselves via Turning Point.

Discussion and Conclusion
This is an exciting second iteration of Core Surgical Immersive Simulation Training. Scenarios are designed to create learning opportunities in perception, situation awareness, teamwork and leadership; with command and control, delegation and culture all being addressed.
Superficial electromyography in laparoscopic trainee education: is the muscle relaxation a way to improve surgical technique?

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Background
Utilization of different devices, which simulate conditions similar to those in the operating theater was proved to be a safe and effective way to familiarize a trainee with basics of laparoscopy. Acquiring a proper surgical technique is associated with decreased muscular tension, which leads to increased level of precision. We believe that a perfect way to estimate muscle relaxation is superficial electromyographic examination.

Project Goals
To assess muscle tension before and after training in laparoscopic trainee.

Method
A group of 11 Medical Students from our Faculty of Medicine with no experience in laparoscopic surgery was enrolled to the study. The task was to tie as many surgical knots as possible in 15 minutes using a laparoscopic simulator. Superficial electromyographic examination was performed including following muscle groups: flexor pollicis longus, abductor pollicis brevis, flexor carpi ulnaris, palmaris longus muscle, deltoid muscle, trapezius muscle bilaterally. Students were then educated and trained with standardized set of exercises and retested using the same exercise.

Results/concepts
Before training session highest muscular activity was registered in deltoid muscles and thenar muscles. After training all muscle activities noticeably decreased, with statistical significance for thenar muscles (p<0,05). In post training measurements highest muscle activities were registered for flexor carpi ulnaris muscles. The correlation between muscle activity and number of tied knots reached significance for left deltoid muscle (p<0,05).

Discussion
Muscle activity stays in correspondence with increasing skills level of a trainee. Feedback is essential for improvement. Continuous electrographic examination is a useful tool during laparoscopic training which provides feedback and thus helps to decrease muscular tension and improve surgical technique.

Conclusion
Superficial electromyography is an efficient method to give feedback to a surgical apprentice.

Conflicts of interest: NO
SESSION 7A
One part Technology, Four parts Realism

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BACKGROUND
New technology and the methodology of healthcare simulation continues to rapidly expand across the globe. The need to develop and support technology involved with healthcare simulation sessions is becoming more evident.

PROJECT GOAL
To improve and/or increase realism in simulation.

METHOD
To give an insight on the use of technology to add further elements of realism to simulation sessions.

CONCEPT
Simulation supporting technology - the past, the present, the future.

DISCUSSION
WHAT we currently use at Bristol Medical Simulation Centre and HOW we currently use it.

CONCLUSION
How we are working towards developing existing technology and ideas on further improvements.

Conflict of interest: NO
Time matters – Realism in resuscitation training

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Background
The advanced life support guidelines recommend two minutes of cardiopulmonary resuscitation (CPR) and minimal hands-off time to ensure sufficient cardiac and cerebral perfusion. We have observed doctors who shorten the CPR intervals during resuscitation attempts. During simulation-based resuscitation training, the recommended two-minute intervals of CPR are often deliberately decreased in order to increase the number of scenarios. The aim of this study was to test if keeping two-minute intervals of CPR during resuscitation training ensures better adherence to time during resuscitation in a simulated setting.

Methods
This study was designed as a randomised control trial. Fifty-four 4th-year medical students with no prior advanced resuscitation training participated in an extra-curricular one-day advanced life support course. Participants were either randomised to simulation-based training using real-time (120 seconds) or fake-time with shortened intervals (30-45 seconds instead of 120 seconds) in the scenarios. Adherence to time was measured using the European Resuscitation Council’s Cardiac Arrest Simulation Test (CASTest) in retention tests conducted one and 12 weeks after the course.

Results
The intervention group (real-time) adhered significantly better to the recommended two-minute intervals (mean 13; standard derivation (SD) 8) than the control group (fake-time) (mean 45; SD 19) when tested (p < 0.001). The hands-off time for the fake-time group was increased by 30% compared with that of the real-time group.

The individual variation in average CPR time intervals and a statistically significantly shorter CPR time interval at return of spontaneous circulation (ROSC) was more outspoken among participants in the control group than among participants in the intervention group where the phenomenon was found to be statistically significant larger (p <0.001).

Conclusion
This study indicates that time is an important part of fidelity. Variables critical for performance, like adherence to time in resuscitation, should therefore be kept realistic during training to optimize outcome.

Conflicts of interest: NO
Is a human simulator useful for a scenario-based learning? – A comparison with a tabletop exercise in short-term retention of knowledge for emergency medicine

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Background
Scenario-based learning is one of methods for obtaining knowledge using a simulated episode memory. We investigated whether a human simulator is useful or not for a scenario-based learning to acquire knowledge of neural emergencies.

Methods
Seventy fifth-year medical students were divided into two groups: thirty-eight (group A) for training with 3G human simulator and thirty-two (group B) for training with a tabletop exercise with imaging. We employed five training scenarios of emergency treatments for patients with acute impaired consciousness: (1) hemorrhagic stroke, (2) status epilepticus, (3) heat stroke, (4) bacterial infection and (5) diabetic ketoacidosis. All the scenarios were designed on a clinical map possessing a two-dimensional fashion with a treatment algorithm named ACEC (Acute Coma Evaluation and Care) by JSEM. All the students took a same examination consisting of 10 multiple choice questions (MCQ) before and after their training. We compared increase in scores of the MCQ after the training between group A and group B.

Results
Average scores of the MCQ of group A before and after the training were 4.13 (CI: 1.32 – 6.95) and 7.42 (CI: 4.98 – 9.86). Those of group B were 4.41 (CI: 1.26 – 7.55), and 6.56 (CI: 3.66 – 9.46). Average of increases in scores of group A was 3.29 (CI: -0.18 – 6.76) and that of group B was 2.16 (CI: -0.96 – 5.27). A significant difference was observed in these two averages (p < 0.05).

Discussions
A significant increase in average scores of group A might show a significant advantage of a scenario-based learning with a human simulator for short-term memory of emergency medicine in comparison with a tabletop exercise.

Conclusion
It is possible that a human simulator is useful for a scenario-based learning in comparison with a tabletop exercise in short-term retention of knowledge for neural emergencies.

Conflicts of interest: NO
High fidelity and hybrid simulation: a comparison between perceived realism by nurses training in emergency care

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Background
Hybrid simulation (HS) is an increasing concept: in particular it provides the interaction of a simulated patient combined with a task trainer and/or high fidelity simulation (HFS) manikins’ monitoring. HS should improve realism in comparison with HFS as described by students during birthing simulation (1, Okupniak) but realism is a complex concept that includes several subjective dimensions (physical, semantic and phenomenal) difficult to quantify (2, D. Gaba)

Projects goals
The main goal of this study is to compare the perceived realism and relevance of the scenario between HS and HFS with full body manikin in the same high fidelity environment and emblematic situation.

Method
It is a monocentric-randomized study. Population is a class of nurses training in emergency care randomized in two groups:
Group 1 (HS, n = 15, simulated patient with Gaumard™ monitoring and fake intravenous task trainer forearm): support for chest discomfort in the presence of a standardized facilitator
Group 2 (HF, n = 15): support for chest discomfort (Gaumard™ Hal 3201) in the presence of the same standardized facilitator.
Hardware and the environment is the same. Both groups will have benefited from a briefing before simulation. Each simulation will be video recorded.
A satisfaction questionnaire adapted from HAEME (Health Assessment Educational Modality assessment) will assess self-evaluation of realism and performance.
Procedural and semantic performances will be evaluated with a grid of attitudes expected by three neutral evaluators.

Results
Definitive results from video recording analysis will be presented during the congress.

Conclusion
Both simulated patients (SP) simulation and HFS are limited to produce realism: SP can’t reproduce all physical and vital signs and HFS can’t reach the appearance and interactions’ real patient. HS is cost effective and tents to solve those problems by increasing realism but it must be demonstrated by comparative studies in different areas of application.

Conflicts of interest: NO
SESSION 7B
Development and evaluation of simulation based neurosurgery curriculum. Pilot study at the Poznan University of Medical Sciences

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Background
High error rates with serious consequences are most likely to occur in emergency departments. It is especially important for neurosurgical patients where urgent operations performed within few hours of onset of the disease have much better prognosis compared to mortality if surgery is delayed.

Objective
To determine whether neuroscience simulation curriculum improves student ability to recognize neurosurgical emergencies.

Methods
26 students of fifth and sixth year of medical studies attended simulation in neurosurgery. Those students were exposed to scenarios covering neurosurgical emergencies. Students were assessed before and after the course by filling Likert type questionnaire. Wilcoxon’s test was used for the statistical analysis.

Results
Students felt that failure during the simulation improved their ability to remember neurosurgical knowledge Z=-1.9, p<0.05. There was an improvement in dealing with arrogant people rho(24)=0.4, p<0.05. There was negative correlation between the level of self confidence and stress control during simulation rho(24)=-0.4, p<0.05. There was negative correlation between the level of self confidence and perception of simulation as a real situation rho(24)=-0.4, p<0.05. Simulations improved self confidence and decision making process rho(24)=0.5, p=0.01. Students felt that simulations improved their confidence therefore they would be better prepared to recognise alternations of neurological condition of the patient rho(24)=0.63, p<0.01.

Conclusion
Students who attend neurosurgical simulations improve their ability to recognize neurosurgical emergencies. The level of stress related to simulation is important factor of the education process and should be reduced to improve students’ development. This is the first simulation course reported in the literature which covers purely neurosurgical emergencies.

Conflicts of interest: NO
Evolution of Nursing Simulation at a Poznan University of Medical Sciences in Poland

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Background
The Faculty of Health Sciences, at Poznan University of Medical Sciences (PUMS) in Poznan, Poland was created in 1975 and included the Department of Nursing. Prior to this time, the training of nurses in Poland was conducted at technical schools and master’s level training was not available. However, in order to meet the growing demand for education specialists in the field of public health (health promotion, health systems management, and health policy), PUMS transformed the Department of Nursing into the Faculty of Nursing and Health Sciences in 1993, and then into the Faculty of Health Sciences (WNoZ) in 1998.

Objectives
Healthcare simulation is a new technology in Poland. Our experience in the first multidisciplinary simulation center in the country is described. Over the course of the past 4 years the curriculum has been enhanced incorporating more deliberate practice and high fidelity simulations to prepare more competent healthcare providers.

Methods
The first pilot classes in the Simulation Lab were launched in the 2010/2011 academic year for the following faculties: paramedics, midwives and public health.

Results
The courses of nurses have validated the students’ theoretical knowledge of procedures and standards but demonstrated deficiencies in their ability to use equipment such as a defibrillator. The concept of team dynamics and medical staff – patient relationship was also lacking. Therefore, using real scenarios with the capability to reflect on one’s own performance via audio visual recordings provided insight in to their own actions.

Conclusions
In the nursing programs the simulations began with practicing examination of a healthy patient. This helped reinforce their history and physical skills as well as adding a level of comfort with working on a human patient simulator. The acute medical scenarios performed in the sim lab allowed the students to reinforce their theoretical knowledge and practice.

Conflicts of interest: NO
Method for verification and validation of simulation models

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BACKGROUND
The main purpose of the simulation engine of medical training simulators is to produce evolving clinical signs and monitored signals and make them respond to therapeutic interventions. Physiologic models in these engines may be invalid for the conditions in which they are used, or their code implementation may contain errors.

OBJECTIVES
To develop a method for verification and validation of simulation models and to illustrate its use on a model contained in a commercially available simulator.

METHODS
Our method takes as a starting point the conceptual model of the system under study. This model and its inputs may be simplified to focus on certain aspects of model behavior. A mathematical model is derived from this conceptual model and implemented in test code. Test code is verified by comparing selected simulated responses to analytical solutions of model equations, if available. The verified test code is then used to validate selected model responses by comparing them to target data or submitting them to experts. Finally, responses of the verified and validated simulation model are used to verify the product code implementation of the model. This method is being applied to the model for pulmonary gas exchange included in the Müse software (CAE Healthcare).

RESULTS
A mathematical model was derived for a unilateral conceptual lung model and implemented in Matlab (Mathworks). The code implementation was verified using an analytical solution. This model is currently undergoing validation for different ventilation-perfusion ratios.

CONCLUSION
We presented a method for verification and validation of simulation models that is rigorous and practical. The test code is less complex, and therefore easier to verify and manipulate than product code. Integrated model responses continue to be validated using product code.

Conflict of interest: Study funded in part by CAE Healthcare, Montreal, Canada and the Florida High Tech Corridor Council.
SESSION 7C
Strategic management simulations: 
Assessment and training for critical thinking 
in healthcare professionals

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Background
Health care today is characterized by VUCAD conditions: volatility, uncertainty, complexity, ambiguity, and delayed feedback. Strategic management simulation (SMS) modules can be specifically designed for health care education to enhance evaluation and training in decision making and leadership in less than optimal conditions. SMS provides an immersive experience which creates an opportunity to gain insights into “how” a trainee thinks and to assess decision making under VUCAD conditions. Team-based SMS modules have also been created.

Goals
To familiarize participants with SMS, including its extensive use within and outside medicine, and create opportunities for participants to use this technique in their own work as educators.

Method
This will be an interactive panel which includes didactic and non-didactic components and a demonstration of existing SMS modules. Panelists have worked to create and use SMS modules in medical education, residency education, and nursing education, as well as in a variety of other settings (industry, military, medical research, etc). Approximately half the session will involve hands on use of SMS and large and small group discussion about how SMS might be used in participants’ current work.

Anticipated Results
Participants will understand the elements of thinking involved in critical decision making under both emergent and non-emergent conditions. They will have the opportunity to see how SMS can provide performance analysis which can be used for formative feedback, and to hear how SMS has been used in both physician and nurse education at different levels.

Conclusion
This panel will introduce participants to a novel and well-validated form of simulation which holds great potential for use across a variety of health care professions at many developmental levels. Networking and the opportunity to propose new uses of SMS will result.

Conflicts of interest: NO
SESSION 8A
The Use of Language in Simulated Scenarios: Terminology causing human error and patient harm

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Background
Human error is multi-factorial in origin and more likely to occur in the intensive care, operating room and emergency department setting (Kohn L et al., 2000). There has been research into exploring the cause of human error with a focus on system and cognitive errors (Reason J., 2003). However, there is a paucity of evidence around the type of language and terminology used by healthcare professionals in emergency situations and the effect on human error and patient safety.

Objectives
We seek to explore the relation between the language, terminology and phrases used in simulated scenarios and human error and patient harm. We run multi-professional simulation courses mimicking a busy birth centre, replicating emergencies in high pressured situations where patients are often awake with anxious relatives nearby. Participants are from different disciplines – midwifery, obstetric, anaesthetic, nursing and operating department practitioners.

We aim to Identify:
- non-interchangeable terminology
- terminology leading to error, harm or potential harm
- error recovery
- look at practical alternatives to this terminology

Methods
Video analysis of scenarios and debriefing sessions used to:
1. Identify and classify terminology
2. Look at effects
   - Created confusion
   - “Fell on deaf ears”
   - Delayed treatment
   - Unintended or absence of action
   - Directly resulted in harm to the patient

Results
Interim analysis shows terminology (abbreviations and phrases) used by one participant does not always have the same impact or meaning to another participant. All five of the above affects were identified.

Conclusion
Medical terminology can be “lost in translation” even amongst medical professionals working in the same team and environment. The subsequent effect can be profound on teamwork creating an opportunity for human error and patient harm. This research highlights the risk in communication during high-pressured medical emergencies and the need to develop phrases/terminology which minimises errors.

Conflicts of interest: NO
An innovative approach for Simulation Quality Assurance And Development

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In Kent, Sussex, Surrey (KSS) a simulation experience is mandatory for all Foundation Year 1 doctors and strongly recommended for Foundation Year 2 doctors. The KSS local education and training body (LETB) has distributed funding to all local education providers (LEPs) in the region to support the provision of this training. The Simulation Quality Assurance and Development (SQUAD) process was designed by the KSS academic education department for the purposes of quality assurance and to support the exchange of good practice.

The process aims to facilitate the development of high quality educational simulation experiences for healthcare professionals in training which can demonstrate good value for money.

Each LEP receives an annual visit from the SQUAD visiting team. This includes observation of all phases of a simulation event, followed by reflective professional conversation between the simulation faculty and visitors. The visitors produce a written narrative of the event which can be used by the faculty to trigger reflective evaluation and planning for improvement. In the final step of the process the visiting team share reports and experiences for wider regional dissemination.

The SQUAD reports provide a narrative of progress and development across the region. For example, increased awareness of the value of simulation in supporting learning about human factors in clinical practice, greater use of learner-centric debriefing approaches; the design of curriculum-led scenarios.

The visiting team is comprised of KSS simulation faculty members, clinical colleagues from outside the region and educationalists from within the KSS education department. This mix of clinical and academic colleagues has informed the process from different perspectives.

The SQUAD process has facilitated the development of local simulation faculty groups and a shared ethos across the region. Practice across the region is more consistent with educational simulation experiences an embedded aspect of much healthcare professional training.

Conflicts of interest: NO
Preparing staff for the operationalisation of a Safe High Acuity Adult Retrieval Programme (SHAARP) in Qatar through simulation

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Background
Interfacility transfers of high acuity patients present significant risks, especially when undertaken by staff unfamiliar with the pre-hospital environment and ambulance transport, or ambulance staff who are unfamiliar with the medication and invasive monitoring of critical patients.

Project goals
The aim of the 2-day SHAARP interprofessional training course is to develop teamwork between Intensive Care physicians, Ambulance Paramedics, and Critical Care Paramedics in the appropriate decision making, preparation, and safe transfer of high acuity patients.

Method
A skills and simulation-based training programme was created to train the staff before the launch of the service in November 2013. It promoted the SHAARP team cohesion, enabled physicians to familiarize themselves with the ambulance equipment, and the ambulance staff to familiarize themselves with the intensive care equipment. A multi-method teaching approach was used covering didactic, interactive, visually enhanced mental modelling, and simulation-based learning enabling participants to experience all aspects of a SHAARP transfer from receiving a patient transfer request (with documentation), clinical decision making to transport based on bed-side re-assessment, through to handing over a patient at the receiving facility.

Results/concepts
In 4 months 28 ground and 2 helicopter interfacility transfers have taken place without incident and 2 transfers were cancelled due to patient condition.

Discussion
Crisis Resource Management and Human Factors are among the key principles and concepts presented to course participants and discussed in the debriefings. Every component of the course builds on the previous one, but allowing participants to ultimately go through the full process with a patient profile, an interactive patient simulator, a simulated referring and receiving environment, and an ambulance, really helps participants become aware of the risks associated with SHAARP transfers.

Conclusion
The course has prepared staff for this process and improved safety in transferring high acuity patients between hospitals. It has fostered better teamwork within the multiprofessional environment of the SHAARP system.

Conflicts of interest: NO
Enhancing Patient Safety Through Simulated Complaints

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Background
Recent independent UK inquiries highlighted issues with patient safety, communication and the exploration of complaints, emphasising the interplay between each in securing the optimum patients’ journey through the NHS (Francis 2013, Keogh 2013). The University of Derby in delivering pre-registration nursing education utilise simulation to explore these facets in order to facilitate realism and currency, ensuring that practice and commissioning partners are involved in the delivery process.

Project Goals:
1. Gain awareness of potential failures of Adult Nursing practice, the complaints process, and initiate a response pathway.
2. Present and negotiate the case for an identified enhancement of Adult Nursing practice related to a specific service user group.

Method
Simulated experience: examining the reasons for complaints; impacts upon service users; lessons for health professionals; means of address preventing repetition of similar incidents; enhancements for nursing practice and organisations.
Students’ simulate three phases: root cause analysis; response letter; practice enhancement. These are explored via a simulated Boardroom experience.
This consists of a panel of allocated ‘experts’ to which the students’ present their findings and recommendations to enhance potential future service user experience and safety. Robust exploration of students’ thought processes and actions are incorporated within this experience via questioning, observation and reflections of the panel.
As part of this process the inclusion and effects of Human Factors are explored from the inception of the experience.

Result/concepts
Resulting from this simulation, students developed key transferrable skills: critical thinking; team working; leadership; knowledge of systems and processes; communication; customer care; quality assurance, governance and promoting patient safety.

Discussion
Effectiveness of simulated complaints to enhance patient safety.

Conclusion
Learning from service user complaints is high on the agendas of commissioners and healthcare providers. This simulated experience has the potential to be transferred in to any healthcare professional’s pre-registration education and continued professional development.

Conflicts of interest: NO
Developing a human factors training programme to address the learning and development needs of Nurses and Junior doctors related to medication errors.

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Background
Human error is an extremely common cause of inadvertent patient harm and incidents involving medication errors. The complexity of patient care, coupled with the inherent limitations of human performance, make it critically important that clinical staff work in environment where individuals can express concerns, alerting team members to unsafe situations.

Project goals
Review of Incidents identified key staff groups where there had been a significant incidence of ‘medication errors’. Human Factors training could help staff manage stressors more effectively, avoiding errors in the administering of medications.

Method
Medication errors that occurred were reviewed and amalgamated into common themes. For each event we considered what went wrong and the causes that led to it. Evidence suggested a lot of errors in practice were related to human factors. A needs assessment identified didactic and simulation elements to be developed in order to address the performance deficits. Training was developed to address the learning and development needs of nurses and doctors relating to incidents involving medication errors.

Human factors training was attended by registered nurses, nursing assistants and junior doctors. The course programme included an introductory interactive lecture, paper exercise and 2 Simulated Clinical Experiences.

Results
Feedback suggests that healthcare professionals acquired patient safety competencies in an interprofessional context. We predict this will result in improved patient care and work flow processes. Feedback and discussion points made during the debriefing of the scenarios will be collated for the development team and action plan against this.

Discussion/conclusion
Incidents involving medication errors will be compared against previous incidents to measure the effect the training has had on reducing medications errors. Staff that attended the training days will complete a 3 months post course questionnaire for their perceptions on whether human factors training has allowed them to manage stressors more effectively, thus improving patient safety.

Conflicts of interest: NO
SESSION 8B
System of education for Polish Paramedic.
Using medical simulation to teach students
Paramedic Program in Karol Marcinkowski
Poznan University of Medical Sciences

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Backgrounds
In 2001–2006, paramedic’s training at Poznan University
of Medical Sciences (PUMS) was as one of the specialties in
the public health field and addressed only to the students
who were graduates of two-year post-secondary medical
school. Since 2006, paramedic’s training transformed into
an autonomous field of the Faculty of Health Sciences
and started admitting students who were graduates of
two-year post-secondary medical school. A graduate of
the paramedic’s training at the PUMS level has the ability
to conduct independently advanced medical procedures
listed in the Regulation of the Minister of Health of
29 December 2006 on detailed scope of advanced
medical procedures that can be taken by a paramedic
(Dz.U.07.4.33).

Objective
Poznan University of Medical Sciences (PUMS) is first
and actually only one university in Poland which provide
Paramedic Program using simulation in SimLab.

Methods
Study showed new PUMS (Poznan University of Medical
Sciences) Paramedic Program which started in 2010.
4 years of new teaching experience notes that during
paramedics training is very important prepare” the best
to the worst”. The best way to do it, is use simulation.
In 2010, the PUMS, implemented the first training of
medical students at the Sim Lab Center via Qualified First
Aid (QFA). In the next semester, future paramedics had an
opportunity to learn advanced medical procedures in Sim
Lab Center. The curriculum of AMP included international
guidelines such as: Basic Life Support (BLS), Advanced
Life Support (ALS), Pediatric Life Support (PALS), Newborn Life
Support (NLS) Trauma Life Support (ITLS) and Prehospital
Trauma Life Support (PHTLS).

Results
Correctly study program, good prepared teachers staff,
simulation and frequent students evaluation due to
increasing patients safety in prehospital care.

Conclusions
Future in teaching Paramedic Program in Poland is to
create national uniform paramedic program and national
exam based on simulation.

Conflicts of interest: NO
Development of a high-fidelity simulation education program for a university-based emergency medical service unit

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Background
The university emergency medical service (EMS) unit is responsible for all emergency pre-hospital care and transport of ill and injured persons at the university campus. All emergency medical technicians at the university EMS are licensed volunteers who respond to a wide range of emergency calls including difficulty breathing, traumatic body injury, cardiac events and drug and alcohol intoxication. To recognize and manage commonly encountered conditions, all EMS volunteers participate in ongoing education. We designed a high-fidelity simulation education program that test the EMS provider’s ability to manage complex medical conditions that may be encountered in the university setting.

Project Goals
Develop a high-fidelity simulation-based education program for our university emergency medical service unit. Assess the participant’s clinical knowledge, skill and teamwork and their perception of the exercise.

Method
Each scenario, MDMA intoxication, cardiac arrest and multiple trauma was researched and developed for use in the study. University EMS teams participate in three simulation scenarios followed by immediate debriefing. To facilitate successful debriefing and review of skill assessment, all simulation exercises are recorded via Learning Space™. Following the study, participants were asked to complete a self-reflective questionnaire designed to measure confidence in clinical knowledge, clinical skills and team building.

Results/Concepts
We will present participant and video data collected during the pilot program. We will share challenges and opportunities that have materialized from this pilot program.

Discussion
A well-designed simulation education program for university-based EMS units will provide vital exposure and review of complex medical problems that are routinely encountered on a university campus.

Conclusion
The development of a simulation-based EMS training program is a wise investment that will lead to long-term benefits for both the EMS participants and greater university community.

Conflicts of interest: NO
Simulating Pre-Hospital Clinical Experiences Using Immersive Virtual Environments: Guidance for Deployment

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Background
A key issue in simulating pre-hospital clinical experiences is context. In other words, making the pre-hospital simulated experience feel real. Immersive virtual environments are now mainstream tools used in a wide range professional contexts for individual and team education in many complex real-world contexts such as the oil and gas industry, the military, and the fire and police services. Increasingly this technology is being used in clinical situations. The reasons for this are increased learning performance and lower costs. The deployment of immersive virtual environments however, are seen as beyond the experience and capabilities of most clinical educational professionals and are therefore often not considered. It seemed therefore that some professional guidance on the deployment of this technology to overcome perceived barriers was perhaps a pre-requisite for its wider deployment in clinical situations?

Objective
To develop a set of metrics for the deployment of immersive virtual environments in pre-hospital situations to provide guidance for their deployment.

Methods
Using a mix of actual case-based studies – ambulance/EMT transition, mass casualty and battlefield - plus background literature research, a set of metrics were developed that were then further crafted into a set of clinically relevant guidance suggestions for the deployment of immersive virtual environments in pre-hospital situations.

Results
Due to the fact that most clinical professionals have no experience of these ‘computer game like’ environments it was shown that this lack of understanding and experience acted as a barrier to deploying immersive virtual environments. A set of guidance suggestions that were tailored for the clinical educator to help improve understanding and aid deployment.

Conclusion
That more complex and realistic pre-hospital clinical experiences can be realised by the deployment of immersive virtual environments provided that medical education professionals have some (validated) guidance for deployment.

Conflicts of interest: Ambient Performance is the distributor of immersive virtual environments in Europe including Clinispace; Prof Wm. L. Heinrichs and Dr Parvati Dev are the founders of Innovation in Learning the developers of the Clinispace immersive virtual environment.
Pre-hospital training and simulation initiative

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Background
The pre-hospital process is a complex one involving aspects such as medical skills as well as care taking, team performance, inter-organizational cooperation and communication. This calls for novel training methods and technology support. Our review of literature (covering the areas of pre-hospital care, training simulator technologies and methods and process modelling) indicates that the different aspects are typically trained in isolation, e.g. medical skills using patient simulators.

Objective
The pre-hospital training center project addresses the overall complexity of the pre-hospital process by taking all of the aspects into account when designing scenarios and technology support for training the complete pre-hospital process (covering alarm, on-scene activities, transportation and hand-over). This is indeed a challenging task as we need to develop both training methods and technology support for a very complex training situation.

Methods
The project will develop a prototype scenario along with technology support to enact it. The training scenario will involve many of the aspects listed above and will be tested in a field experiment with ambulance personnel.

Results
The expected outcome of the project is a platform for establishing a pre-hospital simulation and training center. The initial technologies, research results and experiences will be used to form a consortium for further work and development.

Conclusions
We have identified a need for a pre-hospital training center with the unique and ambitious idea of covering the entire pre-hospital process as well as its many interacting aspects. To the best of our knowledge this approach is not at all common and we expect the complexity to be so high that it is a challenging enough research area that can only be addressed if we have a well-designed simulation and training center in place with all the different areas of knowledge represented, i.e. pre-hospital medicine as well as simulation and visualization technology.

Conflict of interest: NO
High Fidelity Simulation Training in Pre-Hospital Care

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Background
Continuing professional development is an essential and increasingly scrutinised part of medical practice. This is commonly provided by simulation training within healthcare and commercial settings. Providing high-fidelity simulation training in the pre-hospital environment is challenging for many reasons however overcoming these allows the provision of quality training.

Our Exercise
A multiagency exercise was developed using a crashed light aircraft with 4 injured parties on a remote airfield in North Yorkshire. The exercise allowed multiagency working in a realistic environment using high-fidelity simulators alongside actors. The exercise was filmed and photographed to allow detailed analysis and feedback.

The Outcomes
The exercise met all the learning outcomes set out and the participants felt the detailed debrief after the event was useful. The weather provided a significant challenge on the day as North Yorkshire was hit by a storm. The quantity of rainfall meant that the simulators had to be protected from the worst of the rain and some of the wireless technology failed as the exercise progressed, however the simulation team overcame these challenges to allow the exercise to continue with a high level of realism.

Conclusion
This exercise allowed a multi-disciplinary team to train together in a realistic and hostile environment maximising the training potential for all involved. The feedback was positive from all teams and the objectives were met. Difficult conditions and the use of high-fidelity simulators maximise the learning potential and although these exercises are labour intensive to develop their use is recommended to other pre-hospital teams.

Conflict of interest: NO
SESSION 8C
Integration of high-fidelity simulation in an Ambulance Service: To whom, why, what, when, where, and How?

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Background
Ambulance Services have generally a geographically distributed workforce and operate on a shift rota basis. The planning of educational interventions can be challenging due to working hours restrictions, response targets, and other operational requirements that usually precede training activities.

Project goals
This panel aims to bring together individuals who will share their experiences and open the floor for questions and input from the audience. The goal is to promote and facilitate relevant training activities to frontline staff with minimal disruption to a Service.

Method
As per the title of this session, each panel member will have a few minutes to discuss their simulation-based training activities and related outcomes.

Results/concepts
Various strategies have been derived, employing various means and resources. It may involve taking the training to the staff or vice versa, doing it a purposed-made facility or in the pre-hospital care setting, using simulated patient or mannequins of various degrees of sophistication.

Discussion
The best way of integrating simulation-based training activities in an Ambulance Service will depend on the context. In some places, adopting the same approach as the one used in a hospital might work, while in other places a totally different approach may need to be adopted. In all cases the aims of such training activities should be to address on a regular basis key learning objectives (related to technical and non-technical skills), often linked to an identified need or deficiency, to ultimately improve patient care. The balance in the focus and type of simulation activities will vary depending on the workforce demographics, geographical location of operation, socio-economical context, and resources available.

Conclusion
Every Ambulance Service is unique in many respects and as such the best solution in one region may not be appropriate somewhere else. The panel will discuss their challenges and success stories.

Conflict of interest: NO
SESSION 8D
SESSION 8E
SESSION 9A
Developing Simulation Educators: The Performance Feedback in Simulation Course at VCU School of Medicine

Brock E., Carter T., Bodamer C., Grossman C., Feldman M., Walton D.
Virginia Commonwealth University School of Medicine

BACKGROUND
In order to develop proficiency as educators in courses utilizing simulation, faculty need exposure to the theoretical underpinnings of simulation based education, performance feedback and reflective practice. Faculty also need their own opportunities to practice simulation design and debriefing skills prior to using these as instructional methods.

The Performance Feedback in Simulation module of Virginia Commonwealth University’s Teaching in Medical Education (TiME) program was developed with these needs in mind, and with the goal of recruiting additional faculty to our simulation center’s group of core simulation educators.

OBJECTIVE
To develop and implement a curriculum that supports the development of academic leaders in simulation education within our institution.

METHODS
The curriculum was developed over the course of approximately six months through a series of collaborative meetings involving professionals from the Education, Medicine, Technology and Simulation disciplines. The final curriculum is delivered in ten 2.5-hour weekly sessions, with timing chosen in accordance with faculty availability.

RESULTS/OUTCOMES
The curriculum includes the following sessions:
- Teaching and Learning in the Simulation Environment
- Scenario Design – building scenarios to optimize learner engagement
- Facilitated Debriefing – theory and practice of debriefing in simulation
- Evaluation and Assessment in Simulation
- Performance Observation and Rater Training
- Existing and Emerging Technologies in Simulation
- Teaching with Standardized Patients
- Teamwork Training

Simulation to Enhance Quality Improvement
The Performance Feedback in Simulation Curriculum is at its midpoint currently, with positive feedback from faculty participants, and with plans to offer it periodically to faculty within our institution and to regional faculty.

CONCLUSIONS

A curriculum for faculty development was designed and implemented at our institution on a schedule that accommodates busy faculty. Feedback to date has been positive, and the first faculty participants are actively developing specific plans for incorporating simulation into their instructional strategies.

Conflicts of interest: NO
Using a Curriculum Submission and Evaluation Process as a Faculty Development and Mentorship Opportunity in Simulation-Based Education

Salzman D., Haseley H.
Northwestern University

Background
There has been a recent expansion of simulation-based educational activities, particularly with the rise in mandates from residency review committees and specialty boards requiring simulation. This increasing need must be balanced with the finite time and monetary support available.

Project Goals
Our goal was to develop a simulation-based curriculum submission and assessment process to allow for allocation of limited resources to the highest quality curricula. In addition to addressing financial constraints, we wanted to develop a more transparent process that would ensure the identification of courses that might benefit from mentorship to ensure the delivery of high quality simulation-based educational sessions.

Method
The curriculum submission forms and rubric for assessment were developed by group consensus of expert simulation faculty and administrative staff. Analysis of the final submissions with regard to overall score, author, and role within simulation was completed retrospectively.

Results/concepts
We received a total of 26 applications from 17 unique faculty. There was a significant difference in the quality between the proposals submitted by experienced simulation faculty versus novice simulation faculty, providing the opportunity to assign mentorship from simulation leadership to novice faculty to encourage improvement and enhance the probability of funding. As a result of the mentorship and revision process, all of the curricula were found to be at a caliber deserving of funding.

Discussion
A structured curriculum submission and evaluation process based on the principles of curriculum development as outlined by Kern can result in better curricula, increased mentorship, faculty development, and improved utilization of simulation resources.

Conclusion
Further revision to the intake form and process are necessary for future iterations, as well as the implementation of a formal program evaluation for each of the funded curricula. Also, this process can serve as a generalizable template for other types of curricula.

Conflicts of interest: NO
The Development and Retention of Simulation Faculty in the College of Anaesthetists in Ireland

Gilhooly D., Grover A., Kelly L., Hayes N., Rochford M., Doherty E., Burlacu C.
College of Anaesthetists Simulation Training Centre, Dublin, Ireland

Background
Development and retention of Simulation Faculty represents a major strategic objective. Two first Train the Trainer (TTT) courses were externally-taught by overseas guest trainers in 2009 and 2011. In 2012 we developed our internally-taught TTT course delivered by local trainers. Due to the increased demand, we also allowed “on the fly” training despite no specialized TTT.

Project Goals
1. Evaluate the quality of internally-taught TTT courses.
2. Audit the participation of TTT and non-TTT anaesthetic Faculty in teaching, and assess whether TTT anaesthetists are more likely to attend to teaching than non-TTT anaesthetists.

Methods
We audited TTT feedback forms, reviewed faculty TTT status and attendance at teaching.

Results
93 Faculty underwent TTT training. 87 were trained in Ireland on externally-taught TTT courses (for 27 participants - all anaesthetists) and internally-taught TTT courses (for 60 participants of which 29 anaesthetists and 31 other specialties). Six Faculty (4 anaesthetists, 1 psychologist and 1 emergency physician) underwent training outside Ireland. The mean score for each component of the internally-taught TTT courses scored greater than 4 on a 1-5 Likert scale.

Of the TTT anaesthetic Faculty, 36/60 went on to participate in teaching on an average of 8.8 occasions (median 5). Of the non-TTT anaesthetic Faculty, 39 acquired their facilitating skills “on the fly”. The non-TTT anaesthetists participated in teaching on average 2.47 times (median 1).

Discussion
The feedback for the internally-taught TTT courses was very positive. Our audit showed that 60% (36/60) of the TTT anaesthetists contributed to teaching. The number of anaesthetists participating in teaching was similar regardless of their TTT or non-TTT status (36 vs. 39); however, TTT anaesthetists participated in teaching almost four times more than non-TTT anaesthetists (8.8 vs. 2.47).

Conclusion
TTT can increase the confidence in instructing skills and encourage Faculty to attend to teaching more frequently.

Conflict of interest: NO
Inter-professional teamwork in emergency care: pedagogical use of video in post-simulation debriefings

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¹ Department of education, communication and learning at the University of Gothenburg; ² Simulator Centre West

Background
The use of video for feedback in debriefings is widespread and considered to be essential for the effective use of simulations. However, empirical studies that focus on how video can be optimized as a pedagogical means in debriefings are still rare.

Objective
The study aims to investigate how video can be used to encourage reflection and discussion on scenarios in subsequent debriefings.

Method
The data consists of forty video recorded debriefings following interprofessional team training scenarios for medical and nursing students. First, a number of video sequences were selected from the debriefings in which the facilitators used video-clips from the scenario as a basis for discussion. These represented a variation of the ways in which video clips were introduced. The video sequences then served as basis for a focus group interview with three facilitators. The interview explored the variation in introducing the video clips and what implications this had for subsequent discussions.

Results
Different strategies for introducing video clips were identified, ranging from very specific to very open-ended. Whilst the specific ones were characterized by detailed information about the situation and what parts of the clip to focus on, the open-ended introductions were characterized by brief information about the situation without instructions for what aspects to focus on. The interview resulted in a model involving four interrelated factors - moment of time in training, complexity of the situation, group characteristics and purpose - that are important to take into account when choosing between open-ended versus specific introductions.

Conclusion
The proposed model provides a conceptual tool for discussing and planning successful use of video recordings for feedback purposes in post-simulation debriefings. It can also be used to increase awareness of how the selection and introduction of video clips affect subsequent discussions.
A mathematical model for simulating pediatric cardiovascular physiology in scenario-based training

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1 University of Twente, the Netherlands; 2 Erasmus Medical Center, the Netherlands

BACKGROUND
Cardiovascular physiology of neonates and children changes through continuous development and maturation of the cardiovascular system, complicating the understanding and interpreting of the (patho) physiological processes.

OBJECTIVE
In order to improve the understanding of medical students and professionals regarding the principles of cardiovascular physiology, when changed by maturation and influenced by disease or trauma, a widely applicable mathematical model of the cardiovascular system in children of different ages was developed in this study.

METHODS
A controlled 10-compartment representation of the cardiovascular system was created, in which 5 sets of 38 new parameters were conducted in order to simulate 5 different age groups. Parameters were estimated using newly acquired data from the ICU of Erasmus MC – Sophia Children’s Hospital and from literature.

RESULTS
Evaluation of the model showed stability, physiologically correct behavior, intuitive responses and acceptable hemodynamic output variables for simulation of three common training scenarios in advanced pediatric life support.

CONCLUSION
The model has proven to be adequate in simulating specific patients and settings in order to be used as a monitor during scenario based training sessions. This study describes a novel widely applicable mathematical model that can play a powerful role in simulating pediatric cardiovascular physiology in scenario-based training.

Conflict of interest: NO
SESSION 9B
Implementation of a weekly Objective Structured Clinical Examination (OSCE) as part of an Ambulance Service educational programme

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See above
1 Hamad Medical Corporation Ambulance Service, Doha, Qatar; 2 University of Hertfordshire, Hatfield, UK

Background
An OSCE allows for the objective and rapid assessment of a wide array of participants’ cognitive/practical skills. OSCEs are commonly used in the academic context with students but, to our knowledge, very rarely with qualified staff. Our Ambulance Service recruits healthcare professionals from various countries and with varying pre-hospital care experience which creates challenges to ensure standardisation of patient care.

Project goals
Our OSCE programme has been designed to formatively assess staff on the implementation of our Clinical Practice Guidelines (CPG), but also to drive learning and highlight training needs.

Method
New staff go through a 6-week training programme followed by a preceptorship period on the road before becoming Ambulance Paramedics (AP) in Qatar. A weekly OSCE is organised involving AP educators as examiners and with some stations changing to cover newly presented topics or skills. Feedback is provided station by station to staff at the end of the session. Some practical stations are skill-oriented while others are in the form of mini scenarios, or engage candidates in problem-based exercises. Theoretical stations are based on key CPGs or cover important aspects of communication, drug therapy, and clinical reasoning.

Results/concepts
Since October 2013 the OSCE has complemented our summative skills assessment process at the end of the training programme and enabled educators to better assess the level of competence of over 100 new staff on a weekly basis using on average 15 stations per sessions over 2 hours. A pool of 50 stations has been created.

Discussion
This is a resource intensive practice highly appreciated by staff and educators as it is an effective way of assessing many aspects of clinical competence at once and highlights areas where more practice or studying is required.

Conclusion
It is a developmental process for all involved, including the AP educators. OSCEs are being rolled out to other continuing development programmes of the Ambulance Service.

Conflicts of interest: NO
Using simulation to assess the Special Forces operators at the VI All-Polish Competition and Workshop Paramedic Tactical Medicine 2013

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Background
Contemporary medical activity in tactical conditions is burdened with major stress and won’t leave the space for the margin of error. Operators of special units providing first aid to casualties e.g.: of gunshot wounds or the improvised explosion of explosive charges – IED, are exposed to the enemy fire and injuring’s themselves.

Objective
A proper background for developing in oneself applicable habits is a heavy long-lasting training in these units. At the time of widely understood terrorism war cooperation of military and civil units is a must. The medical simulation reflecting such real situations of the contemporary operations theatre is bringing a lot of technical and medical challenges and requires use of various equipment.

Method
In order to achieve maximum realism during Paramedyk Challenge used a different kind of equipment. The assessment of preparedness of SFO in simulated conditions was based on analysis of 8 daily task and 2 night task. 21 four-man teams of the Polish army and military units, the Government security office and Alfa Security of prison Service competed with each other in the ability of acting in tactical and medical tricky situations. For assessment we used checklist with maximum 100 points (first part of checklist was for safety and tactics and second for medical protocol).

Results
Most of problems in scenarios was – incorrect: safety, control bleeding and using tourniquets and dressings, difficulties with airway management, tactical patient assessment with many problems.

Conclusions
We need create always for SF Operators good environments for professional training and for experience exchange. In our opinion SFO must have more training and often repeat simple procedures. Differences of the performance in tactical medicine are mainly due to the pressure of a dangerous environment. Tactical environment puts at risk of injury or death operators and requires varied directory of procedures.

Conflicts of interest: NO
A revision of the Danish Emergency Medical Technician education integrating simulation in training and examination

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¹ Coursedirector, Danish Institute for Medical Simulation (DIMS); ² Deputy Director, Danish Institute for Medical Simulation (DIMS)

Background
Since 2008 we have conducted the Danish Emergency Medical Technician (EMT) course for Eastern Denmark and from 2012 a new set of rules were introduced with the aim of increasing the transfer of learning to daily practice.

Objectives
The aim was obtained by:
- integrating simulations into the training followed by a debriefing to facilitate reflection
- increasing the complexity of the simulations throughout the entire course
- making examinations more fair and practice related

Method
The new EMT course lasts 14 weeks, 8 weeks of E-learning, 17 days in 4 modules, combining theory, skill training and simulations.
In between “theory” modules, participants engage in supervised practice in ambulances and hospitals.
Participants on the course are Emergency Medical Assistants with at least 1½ year of practical experience in the ambulance service.
All days are built up with short presentations of theory and cases during the morning, finishing with an exit poll performed via our Audience Response System. The teachers are physicians, nurses, midwives or experienced paramedics all educated facilitators.
After lunch the 16 participants on each course are divided into 4 groups rotating between full-scale simulations, skills practice and pharmacology theory.
Each day has its own focus; airway-breathing, cardiovascular, etc. the course finishes off with an Objective Structured Clinical Examination, comprising 16 stations of 8 minutes each, either as simulation, practical skills or written multiple choice tests.
In this way almost the entire curriculum is covered.

Results
Looking at the participants’ evaluations since 2013, a high level of satisfaction both on the overall composition of the course and on the examination method is perceived. The examination results show a low level of participants who fail.

Conclusion
A very successful new course for EMT’s has been implemented in Denmark, where simulation is a large proportion of education as well as the examination.

Conflicts of interest: NO
Using simulation to assess disaster readiness

Audet S.1, Plantive R., Dionne M.P.
Montfort Hospital, Ottawa, Ontario, Canada

Background
Our hospital is located in a city with many potential risks for CBRN (Chemical, Biological, Radiologic and Nuclear) incidents: chemical spills, biological contamination through our many research centers, farming industries and chemical plants, as well as terrorist attacks.
We have plans, do they work?

Objective
Evaluate our disaster plans, test the effectiveness of the hospital's response to a CBRN situation, including the layout and equipment, using in-situ simulation. More specifically, observing the interaction between the first receivers at the hospital and first responders in the community, the decontamination process and flow of casualties in the emergency department garage. We measured the safe and successful execution of our plans.

Methods
A large scale in-situ simulation was conducted in our emergency department with the expertise of our newly accredited simulation Lab. The hospital's CBRN interprofessional response team (registered nurses, orderlies, health care professionals, physicians and maintenance staff) was mobilized. The community response team partnered with our simulation (paramedics, students and specialists from other hospitals). After many consultations, the scenario was developed and after weeks of preparation we were ready to go...

Results
The simulation and debriefing session provided a wealth of findings. We faced many challenges, some identified were quick fixes, e.g.: The paramedics had different hazmat suits and the team was unclear how to decontaminate and doff the suits.
Some were more challenging and required committee meetings (e.g.: The setup of the emergency department).

Conclusions
This simulation was a great learning experience at many levels in the organization. We would like to share how simulation has allowed us to improve our CBRN disaster plans. A documented disaster plan is mandatory, but putting it in motion through simulation has proven to be a key element for its effectiveness.

Conflicts of interest: NO
What could we learn by the use of eye tracking first-person-video perspective?

Dieckmann P.¹, Lorentzen H.², Nyström P.³, Laakso J.P.¹

¹ DIMS, Copenhagen, Denmark; ² SAFER, Stavanger, Norway; ³ APSLC, Helsinki, Finland

BACKGROUND

Often studies are made under the topics of Human Factors and Patient Safety in the simulator with different approaches and methods, such as questionnaires and video analysis. During debriefings often discussions of what participants should have been monitoring or why they did not monitor are present. What we as facilitators and the participants lack is knowledge of what they actually did monitor visually. The hypothesis is that we by the use of the eye tracker and first-person-video perspective could achieve quantitative data that otherwise would not be possible and that this data would help us to better understand what participants really are looking for/at in a simulator. This data could help facilitators to better enhance patient safety behaviors.

OBJECTIVE

The goal is to identify what we might achieve by the use of eye tracking and first-person-video perspective in simulator setting. At least three different approaches are possible:

1) Study simulation as a tool of enhancing learning (study learning)
2) Study real life in the simulator (how and what we do)
3) Study the manikin and environment in the simulator (how we react to the simulator setting)

Participants are able to take part in the discussion and help facilitate reasonable research areas.

METHODS

In the introduction, the authors will discuss different approaches, advantages and possible disadvantages of the use of eye tracking and first-person-video perspective in the simulator setting could have. The authors will also present a video example of the use of eye-tracking in a scenario. A discussion will be facilitated with the audience.

RESULTS

Participants will get ideas of how to use the eye-tracking and first-person-video perspective as a tool for enhancing learning, changing/studying behavior and the simulator setting.

REQUIREMENTS

A normal room equipped with audio-video projection and the time needed for this panel would be 60 minutes.
SESSION 9D
Overview of Assessment in Healthcare Simulation

Huffman J.1, Eisenberg O.2, Eppich W.3

1 University of Calgary, Canada; 2 National Institute for Testing & Evaluation (NITE), Jerusalem, Israel and Israel Center for Medical Simulation (MSR); 3 Northwestern University, Feinberg School of Medicine, Chicago, USA

Objectives

By the end of the session, participants will:

1. Outline the scope of assessment as currently used in healthcare simulation.
2. Discuss the educational theory and evidence supporting assessment in the domains of team performance and clinical skills and how simulation can be used to assess these areas.
3. Explain how debriefing can be assessed and be able to describe one of the tools used for this purpose.

Expected Audience

This session is intended for educators interested in understanding how and why simulation can be used for assessment, or who want to implement an assessment program of their own. Simulation education scholars interested in learning more about the general field of assessment will also benefit from this session.

Requirements/Specific Needs

Audiovisual projection equipment. Microphones for four individuals.

Description of the Session

This panel will provide an introduction and overview of assessment in healthcare simulation. The panel will consist of three individuals: an expert in team performance assessments (TBD), an expert in clinical skills assessments (Dr. Orit Eisenberg) and an expert on the assessment of debriefing (Dr. Walter Eppich). Each will provide an overview of how their respective domain can be assessed using simulation as well as some educational theory and evidence supporting how those assessments are made.

Orit Eisenberg, PhD is the Head of Measurement & Assessment Unit, MSR - Israel Center for Medical Simulation on behalf of the National Institute for Testing & Evaluation (NITE), Jerusalem, Israel. For the past 10 years, she has focused on the development and application of simulation-based performance assessment tools.

Walter Eppich, MD, MEd is a pediatric emergency medicine physician at the Ann & Robert H. Lurie Children’s Hospital of Chicago and the Northwestern University Feinberg School of Medicine, where he is Director of Faculty Development for the Center for Education in Medicine.

Conflicts of interest: Dr. Walter Eppich: – Salary support from the Center for Medical Simulation to teach on simulation educator courses; – Per diem honoraria from PAEDSIM to teach on simulation educator courses; – Member, Board of Directors, Society for Simulation in Healthc...
WORKSHOPS
Simulation-based model in teaching anatomy – an approach to improve students skills during clinical rotation

Torres A.1,2, Staśkiewicz G.1,3, Torres K.1,4

1 Chair and Department of Human Anatomy, Medical University of Lublin, Jacezkiewiego 4, 20-090, Lublin, Poland; 2 III Chair and Department of Gynecology, Medical University of Lublin, Jacezkiewiego 8, Lublin, Poland; 3 Chair and Department of Radiology, Medical University of Lublin, Jacezkiewiego 8, 20-090, Lublin, Poland; 4 General and Oncologic Surgery Department, Lublin County Specialist Hospital, 20-718, Al. Krasnicka 100, Lublin, Poland

Background

Simulation in basic science has become a new emerging tool in medical education. It promotes clinical thinking during basic science courses and shortens the lag between entering medical school and exposure to clinically oriented concepts and patients.

Learning objectives

1. Curriculum development of the simulation based basic science course
2. How to prepare and choose faculty
3. Tools available for simulation based basic science course
4. How to obtain funds in low-resource conditions

EXPECTED AUDIENCE

Academicians involved in basic science teaching with interest in implementation of simulation in their courses

REQUIREMENTS/SPECIFIC NEEDS,

Optional but not essential: ultrasound training equipment (e.g. SonoSim) or any ultrasound system (e.g. Voluson, GE)

DESCRIPTION OF THE SESSION

In our institution we developed and introduced a small group, hands-on teaching model in radiological anatomy, which was achievable using little resourcing and only three faculty members. The course integrates clinical skills and basic science during a simulation based experience, which engages students to the greater extent in comparison to traditional ways of teaching.

During workshop we plan to present the process of curriculum development along with detailed description of this novel method to teach sectional anatomy with special application to ultrasonography and computed tomography. We will also suggest ways to incorporate elements of medical simulation into the course curriculum. We plan to share our experience regarding choosing and training faculty members as well as ways to obtain funds for course introduction. We will present simulation tools (equipment, case-studies) that can be used during such course. Participants will be encouraged to develop their own scenarios to be used during similar radiological anatomy course or other basic science simulation-based courses. They will be encouraged to visualize structures necessary to perform the course (e.g. typical anatomical structures visualized during abdominal and pelvic ultrasound scan).

Brief description of the radiological anatomy course, which we plan to present to the audience:

The course consisted of four 3-hours sessions with two sessions dedicated to ultrasonography and the other two to computed tomography. Students attended the course in groups of 4 to 5. Each session consisted of the 30-min lecture and hands-on practical part lasting for 105 minutes. Each session ended with the short multiple choice question test, which encompassed theoretical and practical knowledge. The practical US part was performed using professional US system (VolusonE6, GE). Students worked in pairs and used each other as living anatomi cal models. Students’ task was to visualize and identify organs of the abdominal and pelvic cavities utilizing scans routinely performed during standard diagnostic ultrasonographic examination. Each student had to perform a number of standard scans, including those used during FAST exam and was asked to identify a number of specific anatomical structures.

Practical part of the CT sessions was conducted using OsiriX 4.0 DICOM processing software. Students were seated each at their own iMac workstation. Practical part included identification of the certain structures in three different anonymized CT datasets. Use of full datasets, instead of selected images only, aimed at better visualization of spatial relationships of the structures.

Conflicts of interest: NO
Activating Passive Observers During Simulation-Based Education

Salzman D.
Northwestern University

Background
One of the greatest benefits of simulation based activities is that it allows the educator to observe the performance of those who are actively engaged in the scenario and provide feedback based expectations established prior to the session. As educators, we have become relatively adept at identifying the learning gaps of the learners in the “hot seat” or those who are actively simulating. We have specific objectives or their behaviors, knowledge, and attitudes, and then the learners fail to meet these objectives there is a target for teaching and improvement.

At our institution we are facing a challenge of having a huge demand for simulation-based learning and a limitation on the ability to deliver extensive individual simulation time. When traditional approaches to learner engagement fail to meet the needs we turned to technology to devise a new method to provide the learners who traditionally were sitting passively in a room watching a video of a simulation and provide them with an opportunity to be active in the learning process. Additionally, we wanted to be able to identify the learning gaps of all of the learners, not just those who were actively engaging with the mannequin.

To do this, half of the group is actively simulating a scenario while the other half of the group watches and rates a live video stream of the simulation using an electronic rating tool specific to each scenario. The electronic feedback is available in real time and integrated with the facilitator’s observations. This allows the facilitator to debrief the entire group and close learning gaps in the previously passive observers.

During this presentation, the educational rationale to support activating passive learners during simulations will be explored, the technique will be demonstrated, and several examples from previous simulations will be used to highlight the powerful nature of this technique to identify performance gaps of the learners.

Learning Objectives:
At the end of the workshop, participants will be able to:
1. Describe a rationale and an approach for activating passive observers in simulation-based education
2. Explain why this an effective strategy and when it is indicated
3. Discuss advantages and disadvantages of this approach
4. Characterize this educational strategy in terms of learner driven or instructor driven approaches analyzing and closing performance gaps

Expected Audience
The expected audience will include faculty and educators who are trying to develop strategies to more actively engage learners in simulation environments.

Requirements/Specific Needs
1. Internet connection
2. Room set up with tables in a workshop fashion
3. White flipboard for writing

Description of the Session
0-5 Minutes – Introduction of Faculty
5-20 minutes – Theoretical Basis for methods to activate passive learners
20-45 minutes – Demonstration of technique and specific examples
45-50 minutes – Lessons learned
50-55 minutes - Questions

Conflicts of interest: NO
Communication Matters: integrating simulated patients/participants to enhance simulation curricula

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¹Standardized Patient Program, Faculty of Medicine, University of Toronto, Toronto, ON Canada; ²University of Health Sciences, Lausanne, CHE, Suisse; ³Northwestern University Feinberg School of Medicine, Ann & Robert H. Lurie Children’s Hospital of Chicago, Division of Emergency Medicine, Chicago, IL, USA

BACKGROUND
Communication is at the very heart of effective clinical practice. Working in healthcare has its own unique communication demands. And failing to communicate effectively with patients, family members and other health professionals underlies many complaints from clients and patients as well as threats to patient safety. Yet how much practice do trainees have in coping with patients’ emotions, anxieties or questions (or indeed their own) while performing clinical tasks? Effective communication is the foundation for all of standardized patient (SP)-based learning activities. Engaging SPs and clinical simulation modalities can contribute to the depth of clinical learning across a spectrum of skills, knowledge and behaviour. This workshop is specifically geared to integrating simulated patients into simulation activities – a hybrid approach. We will explore ways to enhance communication skills teaching and learning in the context of patient interactions and inter-disciplinary teamwork. Participants will be invited to reflect on factors influencing effective implementation of simulation modalities and SP methodology. Technical expertise and communication skills for interacting with the patient, family and health care team will be investigated.

LEARNING OBJECTIVES
After the session, participants will be able to:
1. Discuss conceptual frameworks that support simulation as an education methodology
2. Identify the benefits and challenges in implementing SP-based hybrid simulation activities
3. Integrate SP methodology in the form of hybrid simulations
4. Feel empowered to use more than one simulation modality

EXPECTED AUDIENCE
Simulation educators with an interest in the human dimension in simulation

REQUIREMENTS/SPECIFIC NEEDS
Computer
Internet access

DESCRIPTION OF THE SESSION
This workshop will draw upon leader and participant experiences in designing and implementing simulation based inter-professional education (IPE) and SP-based education in healthcare. The principles that will be identified and explored will be directly applicable to researchers and educators interested IPE, experiential learning, and the enhancement of existing simulation curricula at their institutions. Through facilitated discussion, this workshop will focus on developing ideas and strategies to advance the effective integration of simulated patients with simulation activities in participants’ own context.

Workshop Working Agenda:
20 minutes Introductions, Goal Setting, Ice-breaking (Participant experiences re simulation; experiences re SPs)
7 minutes Powerpoint: SP/IPE background, review key definitions
15 minutes Brainstorming: (Think/Pair/Share)
18 minutes Facilitated Discussion – Ideas emerging from Brainstorming
20 minutes Reflection (individual then group)
10 minutes Group Debrief & Evaluation

Conflicts of interest: NO
Implementing your program into clinical practice - keys to success

Lorentzen H.¹, Madla I.²

¹ SAFER (Stavanger Acute medicine Foundation for Education and Research); ² Stavanger University Hospital

Background
Potentially great projects does not change practice as expected due to lacks in the implementation process. Organisational science presents knowledge on successful implementation, based on studies on both those who succeed and those who fail. We have translated this knowledge into simulation in healthcare.

Learning objectives:
1. Attendants should know the importance of bridging simulation and clinical practice through the implementation process
2. Attendants should know and be able to discuss the seven key factors for successful implementation of simulation programs into practice
3. Attendants should after the workshop be able to better bridge the gap between simulation and practice.

Expected audience:
Curriculum developers, center managers, course directors of all levels of experience.

Requirements/specific needs
Computer and projector

Description of the session
10 min - introduction. Presenting authors and background
30 min - presentation of the seven key elements
20 min - presentation of a project
25 min - plenary discussion to identify and discuss the key factors
5 min - summing up and closing

Conflict of interest: NO
Debriefing Olympics – The challenging Debriefing

Dieckmann P.¹, Qvindesland S.², Larsen A.¹, Helsø A.¹, Lippert A.¹

¹ Danish Institute for Medical Simulation (DIMS), Center for Human Relations, Capital Region of Denmark, Herlev Hospital, Herlev, Denmark; ² Stavanger Acute Medicine Foundation for Education and Research (SAFER), Stavanger, Norway

Background
This concept introduces challenges during the debriefing into the session. We will find the relevant role players, debriefers and judges from the audience.

Goals
Participants in the workshop will:
- Reflect on debriefing and different debriefing styles and their effect
- Reflect on possible ways to assess debriefings and to provide feedback
- Adapt their debriefing practice according to the reflections

Concept
The idea is to show a simple scenario video that shows three role players in a medical treatment situation. The learning goals for the scenario will be defined in writing. The team in the scenario performs well in many ways but also has challenges in the performance – like in real simulations and the clinical world. The video lasts about 3-4 minutes.

Debriefers (single) are selected for debriefing the team after seeing the video and getting information about specific learning goals. The debriefers do know the learning goals beforehand, but not the concrete scenario. The teams can pick one or two out of three to four learning goals and will announce according to which they work. The roles seen in the video will be played by trained people. The debriefers have 15 mins to debrief the team according to the learning goals that they have chosen. Then judges, who observe the debriefing provide constructive (!) feedback on the debriefing. There are two rounds, with a new debriefer each time. The role players just act similar each case and react to the debriefers questions. After each round, the debriefers have one minute to explain, what they did and wanted to achieve and will then get feedback from the judges.

After the second round and feedback from the role players, the audience will shortly discuss their observations with direct neighbours and then vote for the best debriefing (e.g. by using an audience response system – if we have one) or by holding up coloured pieces of paper on the individual basis.

Finally a group of facilitators spreads into the audience to reflect on the experience in a discussion in smaller groups.

Timeline
10 min Introduction and explaining the concept
5 min Video
15 min Debriefing 1
10 min Feedback 1
15 min Debriefing 2
10 min Feedback 2
5 min Feedback by role players
20 min Concluding discussion
90 min Sum

Discussion/Conclusion
The concept was run several times highly successful. Further developments and new focus areas make it interesting also for people who might have seen it before.

Conflicts of interest: My institution (DIMS) has a collaboration agreement with Laerdal. In the name of my institution I head the EuSim group, providing instructor courses. Members of the workshop group have been involved in EuSim courses.
Simulator based teaching of physiology for treatment of critically ill patients

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Background
Knowledge of physiological processes especially in critically ill patients is of uppermost importance for quick and adequate treatment. Patients in shock, i.e. due to blood loss, need fluid. However, extensive fluid administration can harm the patients as well. Knowledge of physiological principles and laws like the Starling curve is essential in understanding and adequate clinical treatment. Simulation and modeling improve understanding of these relevant physiological principles. At the Experimental Center for Technical Medicine at the University of Twente we have combined high fidelity simulators with simplified mathematical models in teaching physiological processes for 8 years.

Learning objectives:
Present and discus innovative methods to teach cardiovascular physiology using mathematical models and high fidelity simulators

Expected Audience:
Health care professionals, managers and educators of any level of experience.

Requirements/Specific needs:
Human patient simulator/MetiMan
Computer/data projector facilities for playing audiovisual material.

Description of the session:
In this workshop, we will show how to use simulation to provide an interactive physiology course and most important, how to incorporate theory into (simulated) clinical practice. Physiological principles as vascular elastance and compliance in health and disease will serve as examples. Subsequently, these concepts will be used in a practical simulation scenario using the Human Patient Simulator. This presentation will demonstrate how we use the HPS at the University of Twente and show that simulation leads to better understanding of physiology.

Conflict of interest: NO
Flipped classroom as a didactic method combined with full scale simulations

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Skogster Annika
Arcada – University of Applied Science

BACKGROUND
Flipped classroom is a didactic method where the students get prepared before coming to class by watching recorded lectures and/or educational videos and reading material as an assignment. During the class the students complete their assignments, labs and tests and get to discuss and bounce their knowledge with the teacher and other students. After the class the students get a follow up assignment that deepens the understanding about the topic.

Is it possible to use this didactic method in full scale simulation? How do we prepare the preparatory material to correspond the competence and learning level of the nursing students and at the same time be interesting for them? As students are different learners this didactic method permits students to distribute time and extent of content to their level and needs. How do we meet up to the different levels and learners in the preparatory material? To fulfill the learning of the students the flipped classroom allows for an extending assignment to deepen the competence.

In Arcada we have found that simulation as a didactic method combined with flipped classroom has been both efficient and challenging for the students. For the teacher this method is effective in many ways as it is both cost and resource effective as teachers can focused on doing full scale simulations instead of lecturing in class. The challenge for the teacher is to find the most efficient preparatory material to prepare the simulation to enhance the knowledge and competence of the students. This will enable an extending assignment that prepares for the next class.

LEARNING OBJECTIVES
To plan a class with a specific learning outcome using flipped classroom combined with full scale simulations ending in an extended assignment or a project leading to the next class.

EXPECTED AUDIENCE
Educators who use simulations in their teaching. The workshop is meant for teachers who teach paramedics, nurses and medical staff.

REQUIREMENTS/SPECIFIC NEEDS
Computer with video projector, white paper, pens, whiteboard or flip chart with pens.
Preferably small round tables for group discussions instead of chairs in a row.

DESCRIPTION OF THE SESSION
The workshop will take 60 minutes.
The session starts with an introductory lesson about flipped classroom.
After the introduction the audience is divided into small groups and they will be given a topic within a theme to discuss different points of view.
The groups will discuss advantages and disadvantages with flipped classroom and full scale simulations.
Group discussions will be concluded by the facilitators and the audience will be encouraged to use this didactic method in simulation.

Conflicts of interest: NO
Mix It Up! – Developing Strategies for Incorporating Blended-Learning to Improve Effectiveness and Efficiency of Simulation Based Activities

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Background
Blended-learning has been described as the “thoughtful integration of classroom face-to-face learning experiences with online learning experiences.” Additionally, “there is evidence that blended-learning has the potential to be more effective and efficient when compared to a traditional classroom model.” A more deliberate approach to including blended-learning into the context of simulation and the ever-growing demands on simulation space, equipment, and faculty to teach the sessions, may help to improve the efficiency and associated educational outcomes associated with simulation.

The course begins with a brief introduction of the faculty and a definition of the relevant terms. Then, each participant will participate in a “pre-simulation” learning module and actively answer questions using an audience response system to gain the perspective of a student preparing for an educational session. Following this experience, the rationale for blended-learning activities will be explained, and the different modalities available for implementation will be presented. Next, we will transition to the workshop where faculty will guide the participants through an active process of creating an outline for an educational module to be used in a simulated scenario. Finally, we will provide an overview of concepts relevant to the implementation from an institutional and programmatic perspective. The session will end with a question and answer period and a summary of lessons learned.

Learning Objectives
At the end of the workshop, participants will be able to:
1. Apply educational theory principles to determine when blended-learning strategies are an effective complement to simulation or other didactic presentations.
2. Identify educational and technological tools available to implement a blended-learning curriculum.
3. Discuss resources needed to implement blended-learning at their own institution.

Expected Audience
Simulation faculty, educators, technical support staff, who are considering creating blended learning modules to simulation activities.

Requirements/Specific Needs
1. Internet connection
2. Room set up with tables in a workshop fashion
3. White flipboard for writing

Description of the Session
0–5 min Introduction of faculty and basic concepts of blended-learning theory
5–20 min Blended Learning Introduction
20–35 min Pre-simulation blended learning module and subsequent discussion
35–45 min Debriefing the module
45–55 min Workshop development of an outline for a module
55–70 min Discussion and sharing of the outlines that the groups have created
70–80 min Discussion of technology and programmatic implementation concerns
80–90 min Final questions and closure

Conflicts of interest: NO
TIME Learning Platform – an Approach for Designing a Web-Based 3d Learning Portal for Pre-med Students

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University of Texas at Dallas

BACKGROUND
The TIME (Transformation In Medical Education) Initiative is a student-centered, clinically focused program to increase medical education effectiveness while shortening its duration. The TIME Learning Platform is a 3D game-based simulation portal which supports TIME Initiative Program. Currently, the TIME Learning Platform’s focus is to research the effectiveness of interactive gameplay for teaching communication skills and electronic professionalism to the premed students under the TIME Initiative Program. Game-based simulations like the TIME Learning Platform offer opportunities for students to master important skills in a shortened amount of time to meet educational curriculum requirements.

LEARNING OBJECTIVES
The TIME Learning Platform includes three simulation episodes: a video that introduces students to the game and the educational concepts covered, and two interactive gameplay scenarios that teach portions of a communication skills and electronic professionalism curriculum. The communications episode is designed to allow students to practice demonstrating rapport, empathy and active listening during a medical interview with a virtual patient and his wife. Students must gather information about the virtual patient’s medical condition – a mild stroke – and then summarize the information back to the patient and prepare a report for an attending physician. The professionalism episode covers behavior in electronic communications through a fake social media site, and simulates potential harmful consequences to patient privacy due to social media postings. Both interactive episodes are designed for asynchronous, individual gameplay but are also linked to a web-based discussion board that facilitates team interaction and reflection. Students receive in-game educational feedback on their gameplay decisions through a variety of mechanisms, such as text tips, interaction points and badges.

EXPECTED AUDIENCE
One of the audiences for The TIME Learning Platform is premed students. However, physicians, nurses, medical students, and other medical professionals can learn about the advantages of using a 3D Learning Platform for medical related education for both students and professionals through the workshop.

REQUIREMENTS/SPECIFIC NEEDS
We need 12 computer stations and the following software installed: latest version of Google Chrome browser, Unity plugin for Google Chrome. We are communicating with the organizing committee, and have learned from Dr. Lukasz Gasiorowski that we may be able to rent laptops from the convention center.

DESCRIPTION OF THE SESSION
Total runtime: 90 minutes. The TIME Learning Platform is complete and fully functional. After login and registration, workshop participants will choose a male or female avatar, and get assigned into teams. Each workshop participant will play a total of 3 episodes (1 video and 2 interactive), earn numerous interaction points and badges, monitor their own and teammates’ progress, and discuss the medical interview on the discussion board with their teammates. Participants will be assessed on how well they can: 1) greet the patient; 2) establish a relationship; 3) utilize active listening, 4) respond with empathy and gather information about the patient’s symptoms. We will provide an opportunity for game assessment through the use of the built-in discussion board, and the Q&A session on the importance of using 3D Online Educational Learning Portals in the medical community.

Conflicts of interest: NO
Simulation for Surgical Trainees

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1 Nottingham University Hospitals; 2 Trent Simulation and Clinical Skills Centre

Background
Surgeons are working in ever busier environments with the European Working Time Directive providing fewer training opportunities. The Association of Surgeons in Training (ASiT) in the UK released a document on the benefits of Simulation. The Joint Committee on Surgical Training (JCST) agreed to integrate simulation into the Intercollegiate Surgical Curriculum Program (ISCP) from 2012. Simulation is becoming more integrated into surgery albeit slowly. Surgical Trainees are keen to seek out new opportunities but often do not know how to create new opportunities to practice. As a Research and Teaching Fellow at the Trent Simulation and Clinical Skills Centre I have helped create and establish new courses for Core Surgical Trainees that have been funded by the Deanery and incorporated into the Regional Education program.

Project goals
By the end of this workshop delegates will have learnt how to go about creating a surgical simulation course for their own area. They will have developed a personal action plan with a list of contacts or planned contacts to enable them to put into practice what they have learnt in the session. They will have been encouraged by the visible success of seeing projects that have been achieved in another Deanery and will be able to start on the road towards their personal destination of surgical simulation success.

Method
This workshop charts the journey of setting up new courses in surgical simulation to fill a gap in educational need for surgical trainees. It will lead Trainees along the pathway that led to courses becoming established and highlight the pitfalls to avoid and the doors to keep open. It will describe and show useful tips to assist making sure that events happen. There will be interaction throughout the session. A mixture of an initial didactic style of presentation and then small group work will operate in conjunction with the opportunity for individual work that can be written down and then used for self reflection by the learner both within the workshop and at a later date. Individual vocal participation will be encouraged but not essential for the success of this workshop.

Results/concepts
Participants will identify their surgical learning needs and build a plan that can be taken away with them. This workshop will benefit all those interested in Surgery and Simulation especially those who would like to learn how to set up a course that they wish they had in their area. Ideas will be generated so that perhaps delegates can return to present their work at a future SESAM conference.

Conclusion
This workshop will benefit all those interested in surgery and simulation. Particularly trainees interested in optimising the time to utilise facilities available to them for simulation or trainees wishing to understand better how to go about creating those opportunities that they wished they had available to them.

Conflicts of interest: NO
How to Develop a Scenario for a Simulation Based Test in Nursing and Stay Alive to Teach It

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Background
Simulation based testing (SBT) is increasingly employed in medical education for admission, certification and licensing exams. Designing a good scenario for SBT in nursing is different from designing a scenario for training, because an SBT should meet strict psychometric standards.

The workshop aims to teach principles and methods of designing a nursing scenario for SBT.

The need to evaluate advanced nurses’ clinical competence using national objective standards and the increased recognition of the validity of medical simulation as an assessment tool led the Ministry of Health to begin a process of incorporating OSCE as an accreditation tool. Our institution together with the National Institute for Testing and Evaluation (NITE) and the Division of Nursing of the Ministry of Health have been conducting simulation based registration exams for all advanced nursing specialties for the last six years.

Developing a good scenario for SBT is quite different from designing a scenario for training purposes. In order to meet psychometric standards (measurement reliability, validity and fairness) the scenario’s structure, content and scoring criteria must adhere to several principles. For example, a scenario for SBT should give a good enough sample of the skills and knowledge that examinees should present; it should capture a multidimensional medical event in a way that allows reliable scoring by human raters; it should allow examinees to perform well enough within a restricted time frame; and it should include a pre-defined description of potential pitfalls that might lead the examinee to undesired directions.

The aim of the proposed workshop is to introduce the principles and methods of designing a good scenario for a summative SBT for nurses.

The workshop will include theoretical background on the principals of developing scenarios for SBT, an overview of a typical accreditation nursing examination; hands-on practice of developing and improving a checklist based scenario for SBT and scoring of this scenario.

Learning Objectives
1. Recognize the main principles guiding the development of a checklist based scenario for SBT.
2. Be familiar with the challenges faced by the developer of an SBT for Nursing
3. Identify common flaws in a nursing scenario for SBT and correct them in order to make the scenario reliable, valid and fair.

Expected Audience
Medical and nursing educators and clinical practitioners who are involved in medical simulation.

Requirements\Specific Needs
A room big enough to accommodate up to 4 working groups seated around 4 tables (max 8 participants in a group), computer and projector, handouts for participants

Description of the Session
1. Preliminary exercise: A short video-based exercise will be conducted as a trigger to raise the participant’s awareness to errors or flaws that may occur while designing a scenario and the challenges that the developer faces.
2. Presentation of background and theory: The major principles of developing SBT will be reviewed, along with issues the developer should consider when designing the scenarios and the assessment methods.
3. Hands-on practice of developing and improving a checklist based scenario for SBT for nursing. This will be the main part of the workshop. Participants will be presented with a scenario and a checklist based scoring sheet in a preliminary state and will have to identify the flaws and correct them. The work will be done in small groups under the guidance of our faculty.
4. Viewing and scoring the scenario and wrap-up: Participants will view the video of the scenario they worked on and will score it. Observation of the scenario will be used to highlight key elements and major flaws that were corrected in the hands-on practice.

Conflict of interest: NO
SESSION 10A
CPR e-learning module – is it an interesting alternative in refreshing CPR competence?

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Background
A sudden cardiac arrest is an important cause of deaths in Europe. Cardiopulmonary resuscitation proved to be effective in decreasing of mortality rate. Acquisition and retention of skills in CPR is very important so newer training methods should be tested and implemented. Retention time of CPR knowledge is about 6 to 24 months and the training should be repeated regularly.

Project goals
to determine if e-learning cardiopulmonary resuscitation programme is a reasonable alternative to traditional training of instructors in refreshing resuscitation skills.

Method
A group of first year medical students (group I) took traditional CPR training. They attended a theoretical lecture by instructors and a practical part of training. The second group of students took refreshing course at 6th year of studying with e-learning CPR programme completed with a 2 hours instructor based module (group II). The primary outcome measures were initiation of BLS. Secondary outcome measures were the time steps in performing resuscitation: time to start chest compressions (TSCC), time to first defibrillation (TFD) and parameters of CPR quality as: time without chest compression (TWCC) mean chest compressions depth (MCD) and mean chest compressions frequency (MCF).

Results
There were 396 students in group I and 36 students in group II tested. There were no statistical differences between groups in tested time steps and parameters. TSCC(s) group I 29.33±22.28 vs group II 22.02±9.23, p>0.05; TFD(s) 88.86±71.73 vs 83.17±50.47, p>0.05; TWCC(s) 107.68±28.1 vs 107.5±21.16, p>0.05; MCD(mm) 47.60 ± 7.05 vs 46.17 ± 5.77, p>0.05; MCF(min-1) 107.55 ± 9.59 vs 110.08 ± 7.20, p>0.05.

Conclusion
The CPR e-learning programme seems to be a reasonable equivalent to a full instructors based training in refreshing CPR skills. It might be considered as effective, easily accessible and interactive training technique.
Bigger but not faster is better in CPR.
The study with feedback device application

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Background
Recent research and ERC/AHA 2010 guidelines indicate the quality of CPR components: rate >100/min, 5–6 cm depth of chest compressions and full recoil. It is also pointed out that mentioned factors are crucial for the survival. There is limited piece of information available regarding influence of anthropometric features of rescuers and their training in High School on the quality of CPR.

Objective
The aim of the study was to investigate the impact of anthropometric parameters and previous education of the rescuer on quality of CPR with some feedback devices, introduced into existing training equipment.

Method
107 medical students (mean age 21.7±1.9 years) were surveyed during the CPR course. Trainees we asked to answer the questions about: body mass, height, self-assessment of CPR skills and previous CPR education. The parameters of CPR quality (chest compression rate and depth and percentage of recoil) were assessed with TrueCPR [Physio-Control USA].

Results
The responders mean body mass was 63.8 ± 12.6kg. The body mass correlated with chest compression (r=0.63 p<0.05) but not with recoil p>0.05. There is negative correlation between chest compression frequency and recoil (r=-0.45 p<0.05). Students, who declared 5 and more previous CPR training sessions compressed the chest more effective than the rest, p<0.05. There was no correlation between self-assessment and CPR quality parameters.

Conclusions
The anthropometric features of rescuers and previous CPR training influence the CPR quality. The chest compressions with high rate are correlated with worse recoil.
Self-assessment of CPR does not correspond with objective quality parameters. It suggests that the feedback devices should be included in CPR training.

Conflicts of interest: NO
What is the most difficult aspect of CPR training? Preliminary report

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Background
CPR is one of the most basic and important procedure for every member of medical staff. The efficiency of training may also depend on adjustment the training to the purpose. The participants feedback on application to specific participants needs may be crucial in training planning.

Objective
The aim of the study was to determine difficulties encountered during the simulation-based CPR training of medical staff members. The rating of difficulties based on participants self-assessment. The application of study is to improve CPR training.

Method
The study was designed as post-intervention study on volunteers recruited from doctors, nurses and dentists attended the CPR training. Participants were asked to assess difficulty of technical and non-technical skills in 5-point Likert scale (1 – the easiest, 5 – the most difficult). They rated following technical skills: opening the airway, breathing assessment, pulse assessment, rescue breaths, BVM ventilation, chest compressions, AED defibrillation and manual defibrillation and soft competence – self-confidence in leadership.

Results
184 participants were enrolled in the study (98 doctors, 21 nurses and 65 dentists). In every group chest compressions and AED defibrillation were the easiest skill, mean rate: 2.1±0.82 doctors, 2.1±0.82 nurses and 2.2±0.77 dentist, no difference between groups, p>0.05 and 2.2±0.81, 2.2±0.81, 2.0±0.89, p>0.05 respectively. Both for doctors and dentists the most difficult part was competence of leadership 3.9±0.93 doctor and 3.9±0.85 dentist. For nurses the most difficult was the manual defibrillation 3.06±0.95, p<0.05.

Conclusions
Despite differences in doctors and dentist professional experience the most difficult aspect of CPR is leadership. As its influence on the CPR efficiency is proven, training program should focus on soft competence enhancing as well as technical skills practicing. Among technical skills the manual defibrillation was the most difficult, especially in the nurses group.

Conflicts of interest: NO
SESAM PH-SIG CPR Quality Study - Can competition and real time feedback during training improve CPR quality?

Kranz K,\(^1\), Lindner T,\(^2\), Smart J,\(^3\)

\(^1\) Swiss Institute of Emergency Medicine; \(^2\) Norwegian Air Ambulance; \(^3\) Laerdal Medical

BACKGROUND

The quality of CPR (chest compressions and ventilation) has been shown to be important for the survival of every victim of a cardiac arrest [1]. There is evidence that scenario training and CPR feedback improves CPR quality amongst healthcare providers [2,3]. To find out if real time feedback during CPR training using simulation can improve CPR quality amongst pre-hospital care providers a research project is currently being co-ordinated by the Pre-Hospital Special Interest Group (PH-SIG) for SESAM. This competition based project will involve 11 different ambulance services around Europe.

OBJECTIVE

- To objectively assess the CPR performance of professional responders using a standardised protocol and using manikins to simulate an adult and a paediatric out of hospital cardiac arrest (OHCA) scenario.
- To objectively re-assess the CPR performance following a period of time when manikin real time CPR feedback training has been made available. Determine which ambulance service improved the most.

METHODS

This is a ‘before-after’ study of simulated adult and pediatric out-of-hospital cardiac arrest. Data will be obtained by manikins recording CPR quality metrics such as compression depth, compression rate, incomplete compression release, hands on time, hand position, ventilation volume and ventilation rate.

Stage 1 (April-July 2014): At each ambulance site, undertake adult and pediatric simulated OHCA with 10 crews (2 person) and record key CPR metrics but without real time feedback. At the end of Stage 1, the manikins will be left at each of the ambulance sites and crews will be instructed and encouraged to practice with real time feedback switched on. Stage 2 (October-December 2014): Repeat Stage 1 using the same crews where possible or other crews who have had the opportunity to practice the scenarios since end of Stage 1. Compare the difference in mean performances by each ambulance site.

RESULTS and CONCLUSIONS

Not available yet.

Conflicts of interest: Jonathan Smart is an employee of Laerdal Medical. The PH-SIG Quality Study will be carried out with financial and organizational support (e.g. travel bursaries, manikins, etc.) from Laerdal Medical.
Emergency medical technicians’ long term retention following cardiopulmonary resuscitation training: a follow up study

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Background
Effective management of emergency critical situations in pre-hospital setting has a vital importance, since it is directly associated with mortality and morbidity rates of these patients. To increase cardiopulmonary arrest survival, The Ministry Health of Turkey developed Advanced Cardiac Life Support (ACLS) courses that expose 112 Ambulance Service crew to realistic learning situations.

Project goals
The aim was to evaluate knowledge and resuscitation skills retention one year following of ACLS course and the factors can have an effect on retention of emergency medical technicians (EMTs).

Methods
The course included lecture, skill training, team-based practice with 14 simulated arrest scenarios. First evaluation (FE) was performed during course. After one year (retention evaluation) all participants performed the same scenarios (Second evaluation - SE). Resuscitation skills were assessed with a check list. Participants knowledge was evaluated with multiple choice questionnaire (MCQ) before, at the end of the course (MCQ1, MCQ2) and during retention evaluation (MCQ3).

Results
42 EMTs participated in this study. SE score was significantly higher in 46% EMTs, was similar or higher (not significant) in 27% EMTs than FE score. Correct answer percentage was 49.3% MCQ1, 71.5% MCQ2 and 67.8% MCQ3. Sixty nine percent of the participants with higher SE score were experienced 2-5 years (versus experienced < 2 years) and 68% of them having an average number of 150-175 arrest patients in a year (versus <150 arrest patients/year).

Discussion
The results of this study showed that; knowledge and skill retention after ACLS course including simulated scenarios achieved almost in 2/3 of the participants in a satisfactory ratio. Being more experienced than 2 years and having more than 150 arrest patients in a year seem to have a positive effect on this long-term retention.

Conclusion
We concluded that; a simulation based training programme can help to provide ongoing knowledge and skill retention for EMTs.

Conflicts of interest: NO
SESSION 10B
The content and form of take home messages in simulation debriefings for young physicians in Denmark

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Background
There is little research concerning debriefings. Take Home Messages (THM) can be interpreted as intentions for actions. Research in prospective memory supports the assumption that intentions are implemented more often, if formulated in more detail.

Research questions
What is the content of THM in debriefings for young Danish doctors? Which form do THM take in these courses?

Methods
38 debriefings, by 10 facilitators were recorded. The debriefings were structured according to Steinwachs’ three phases. The application phases, were transcribed. THM were extracted from transcripts and paraphrased. Paraphrases were content analysed. THM form was analysed by assigning a score between 0 and 3 to the specificity of the content of the intention (what), the definition of the window of opportunity to execute the intention (when) and to the definition of who would execute the intention (who).

Results
165 THM were analyzed. The content of the debriefings focussed on a systematic approach to the patient (ABCDE structure, use of cognitive aids), improvements in communication (SBAR, closed loops), redefining roles (leadership and taking the initiative) and in few cases on medical issues (dose of medications).

In terms of the form of the THM, in a preliminary analysis (finished before the conference) we found few that scored high on all three dimensions. There were many THM that either were clear on “who” OR “what”. The window of opportunity was not defined clearly in most cases.

Discussion
THM content matched the learning goals to a large extend. The (often incomplete) form of the THM indicates challenges in implementing intentions. Missing pieces can sensitize facilitators to better help participants form intentions.

Conclusion
THM in simulation courses relate to learning goals in terms of content, but seem weak, when compared against well formed intentions for behaviour change.

Acknowledgements
The study was funded by the Laedal Foundation

Conflicts of interest: Our institution (DIMS) has a collaboration agreement with Laerdal. Dieckmann is head of the EuSim group, providing instructor courses. All authors were faculty in EuSim courses.
Qualitative analysis debriefing nursing school
Chile

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The background in the development of simulation as a learning methodology, indicates that one of its 7 phases is the Debriefing method. Diekmann (2009). We understand this as, after the simulation experience oral discussion between students and teachers which persecute reflect on practice and learning. (Lederman, 1984). Regarding learning is necessary to identify Cognitive frames, also called schemas and mental models, indicating how people do not passively perceive reality, filtered actively creating and giving meaning to their environment.

Accordingly, the purpose of our research was to explore the discursive elements that maintain and promote the schemes and mental models that students and facilitators workshop participants simulation in nursing school UDLA – Chile have on development of attention health. To do this we focus a qualitative methodology with an emergent design and use techniques of observation and interviews, the results obtained from an interpretive analysis model following the approach of Parker (2011).

The results indicate that the discursive u / or cognitive schemas elements represent three social worlds: gender, generational, and one linked to the type of health system, in this case the public system. Consequently, recognizing these social worlds that appear from the schemes and mental models allows us to determine how these are linked to the learning of students and teachers. These results will help us to further specify the ways in which they conducted the debriefing, considering that learning should be a thawing of these mental models for learning is developed, and the resulting simulation experience a learning methodology concerned the learning context.

Conflicts of interest: NO
Assessing and comparing novice doctors’ reflection in debriefings
Kihlgren P., Spanager L., Dieckmann P.
Danish Institute of Medical Simulation

Assessing and comparing novice doctors’ reflection in debriefings.

Background
Debriefing is vital to the simulation learning process(1). Reflection, which debriefing aims to foster, is a corner stone of experiential learning(2). In spite of its importance, essential aspects of debriefing are still left to understand(3), and there are indications that some debriefings are not as efficient as they ideally should be(4).

Objective
To investigate reflection in debriefings by assessing participants’ reflection levels in discussions of leader/follower-ship or role distribution, and compare occurrences of high reflection to those of lower.

Methods
The data consisted of recorded video material from 38 debriefings with ten different instructors. An adaptation of Fleck’s(5) framework of reflection levels was used for the analysis. A comparison was done between debriefers’ utterances across occurrences of higher and lower reflection.

Results
Only lower reflection levels were reached by participants. The second of the levels was the most frequently reached and the third the highest reached. No salient difference in debriefers’ utterances across occurrences of higher and lower reflection was found.

Conclusion
The reflection levels reached might not be too low for the requirements of the course included in this study. Time pressure and the focus on concrete action plans are perhaps hindering reflection on higher levels. Debriefers can ask questions in line with the higher levels of Fleck’s framework in order to foster higher reflection. Further research is needed in systematically analyzing reflection in debriefings.


Conflict of interest: D is heading the EuSim Group, providing faculty development courses. DIMS has a collaboration agreement with Laerdal, a manufacturer of simulators. PK and LS report no declarations of interest.
SimObserver - A mixed method study on self directed learning from patient simulation observations

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Introduction
Patient simulation supports experiential learning and is widely used in medical education. Due to limited resources not all students of a group can actively participate at all scenarios within a course. Audio-video links allow real-time observation of the scenario, but it remains unclear if and how learning processes occur in the observer group.

Methods:
A mixed-method research design was used to analyze a total of 81 healthcare professionals who participated at a one-day interprofessional simulation course. Observers of the scenarios were videotaped during the scenarios and qualitative content analysis was applied to analyze the videos. Two independent raters used a 22-item coding-system to identify learning-supportive behavior. Additionally statistical analysis of an 18-item questionnaire based on Kember’s (2010) validated “questionnaire for reflective thinking” was used to measure reflective thinking.

Results
Video analysis revealed that observers are highly concentrated during scenarios: They use metacognitive strategies such as resource- and monitoring strategies while observing. Furthermore, observers use short discussions as cognitive strategies to overcome inert knowledge. In contrast, distractions or inobservance occur rarely, they cover only 1.6% of the time spend observing. Sequence measures show direct observable learning behavior in 19% of the observations. Analysis of the questionnaire support qualitative data: Scores for reflection and critical reflection on the 1-5 scale show mean values of 4.04 ± .47SD (reflection) and 3.98 ± .60SD (critical reflection) respectively. Reflection and critical reflection levels are independent from training level, professional experience and profession. Students rate observations as valuable for their learning process, (mean 4.36 ± .75SD), most students agree (86.4%) that the observation of the scenario is equally important than the action itself.

Discussion and Conclusion:
Not only active participation in simulation scenarios, but also active observation of scenarios support learning processes. Healthcare professionals use cognitive and metacognitive strategies to foster learning while observing others.

Conflict of interest: NO
SESSION 10C
“To be or not to be” – Using simulation to assess the US Combat Medic Operators

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Background
The fatal incidents on a battlefield occur every day, in many places around the world. Most of the deaths, as much as 80% is not possible to reverse. Conditions primarily determine the success of the operations and performer activities that increase the chances of survival of casualty. Life of casualties in combat environments depends on simple protocols. Examination of casualty in tactical environment is performed on 3 levels according to danger zones. The first level – Care Under Fire (CUF) is the care of the injured under fire which consists of self-examination and self-diagnosis. Second Phase – Tactical Field Care (TFC) is a care of injured in combat environment based on the extended posttrauma assessment taking into account the most common injuries in tactical environment. During the examination it is recommended to follow the scheme MARCHE (each letter represents steps and the criterion of conduct). Posttrauma assessment must take into account the spectrum of disciplines which limit realization (light, sound, equipment, time, etc.). TACEVAC - the third zone, which is tactical evacuation allows to perform a complete examination based on the standard PHTLS or ITLS during evacuation (MEDEVAC or CASEVAC) to the hospital or trauma ambulatory.

Objective
Evaluation of practical skills and procedures during tactical and civilian scenarios prepared special for tactical and non-tactical environments.

Method
Sim lab consist of SimMan 3G audio/video recording with checklist for two scenarios

Results
Evaluated teams – special operations combat medic provide very good assessment and management of patient during tactical and civilian situation. The SOCM are very good prepared to gives help in real tactical environments after SOCM Training.

Conclusions
During work in SIM LAB study showed high level of motivation and engagement, they are the result of difficulty work environment always dangerous for rescuers life.

Conflicts of interest: NO
Maintaining the airway of patients after Mass Casualty Incident – evaluation of medical students

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Background
In 2010 Medical Simulation Center in Poznan University of Medical Sciences started to provide practical exercises for medical students. In 2011 Rescue and Disaster Medicine Department used simulation to learn Disaster Medicine issue for medical students. Education program was divided into two parts first consist of using simple task trainers and second part used full simulation in environment during Mass Casualty Incident.

Objective
Evaluation of medical students about maintaining the airway of patients after Mass Casualty Incident

Method
It was conducted 4 simulated scenarios. Patients were after Mass Casualty Incident with serious injuries, first patient with tension pneumothorax, second with increased ICP (Intracranial Pressure), third with hypovolemic shock (internal bleeding) and fourth with cardiac arrest. Evaluated group consist on 146 4th year medical doctor students divided into groups of 4–5 team members. Study based on SimMan 3G manikin with audio-video recording. During scenario sessions 2 instructors evaluated students using check-list. After every scenario session every check-list was double checked again. During study student’s evaluation focused on used methods of airway management. Students knew and trained before sessions what kind of airway management method can they use during critical situations.

Results
Everyone group of students remembered about basic airway management methods (jaw trust) and everyone group attempted to advanced airway management (LT, LMA). The quality of provided ventilation after airway assessing wasn’t properly in every situation. Common problems resulted from knowing the details of equipment.

Conclusions
Study showed very important aspect about medical students preparation to airway management. The knowledge when is necessary airway protection isn’t enough to safe patient life in critical environment. Frequent training of practical skills is very important to provide certainty medical procedures.
Experiences of simulation in prehospital emergency care settings, the paramedic and ambulance nurses’ point of view

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Background

Prehospital emergency staff must be able to assess the accident scene and the patient within seconds of their arrival [1, 3]. For correct assessment and decision-making regarding what should be done immediately and what can wait, they must have sound medical knowledge and strong technical skills to adapt to rapid changes in the patient’s clinical condition [1-3]. Therefore, regular practice is needed to both establish and maintain the skills. However, given the complexity of an accident scene, training of prehospital staff is a complex task. Simulation is one effective way to prepare prehospital staff for future scenarios and situations [3].

Objective

To provide an overview of how ambulance nurses and paramedics experience learning when participation in simulation exercises.

Methods

An integrative literature review.

Results

Performing simulation hands-on was perceived as a meaningful method of learning. The intensity of the experience contributed to an increased level of realism. Simulation contributed to improved problem solving abilities. Both manikins and live actors were perceived as effective for cognitive development as well as the learning of practical skills. Feedback was experienced as important given that personal strengths and weaknesses were identified by means of input from others. The accuracy of the manikins’ anatomy contributed to the learning experience, while the possibility to have two-way communication with the manikin during simulation was described as positive.

Conclusions

Continuous training by means of simulation exercises, including feedback, enables the ambulance nurse and the paramedic to apply their medical and technical skills in a safe and realistic environment. In turn, there is no need for trying out new skills on patients subjected to severe high-energy trauma. The use of simulation should therefore be prioritized in the planning of ongoing education of ambulance staff.

1. Bredmose et al 2010
2. Benner et al 1999
3. Abelsson Lindwall 2012

Conflicts of interest: NO
ER and EMS training together in actual work environment for better patient care

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**Background**
The ambulance company Gooi and Vechtstreek is a small company in the centre of the Netherlands. Based in Hilversum, the EMS service RAV Gooi en Vechtstreek covers an area of 26,950 hectares (269 sq km) and services 243,000 residents. In the region is a regional middle-size hospital which has a first aid department on 2 locations.

**Project goals**
Through simulation training achieve improvement in communication, collaboration, transfer and reception of the patient between EMS and ER staff.
Getting more respect from each other’s working methods and material.

**Method**
The training takes place nearby and in the regional hospital, it consist a preclinical and clinical stage. Subjects are, resuscitation, pediatric or traumatology cases. The crew trained with standard equipment in their regular work environment. The ER staff gets the possibility to watch the training from the EMS staff and vice versa
The training ends with a collective evaluation.

**Results**
We have developed a protocol which described the responsibility’s, communication and work method at the transfer from the patient to the ER.
There are clear agreements on the use and return of EMS material.

**Discussion**
Are there essential differences in (training) methods in treatment and registration between the guidelines ER and EMS? (ATLS, PHTLS, TNCC)
At what point is the responsibility for the care of the patient transferred?
Are there differences in working material and is there more to obtain efficiency at equal material?

**Conclusion**
Since 2012, we organize 4 trainings a year. Out of the training we developed a protocol and we see an upgrade in communication, collaboration and working structure. It also gives a positive effect on mutual understanding for the implementation of the work from ER and EMS staff.
We organize now regular internship at the other discipline.

Conflict of interest: NO
The Development of a Military Hybrid Simulation Model for the Training of Haemorrhage Control in Proximal Extremity Bleedings

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Background
Exsanguination from extremity wounds is a major cause of potentially preventable deaths in the military environment. With the widespread use of different techniques to control this type of bleeding, such as tourniquets and haemostatic agents, it has now become possible to dramatically improve the survival rate for these casualties.

Objective
Varying techniques for pre-deployment training of haemorrhage control have been tested and used by the Swedish Armed Forces, for example different types of patient simulators. The recently developed military trauma patient simulators have for example become a major improvement for the training of standard tourniquet application. However, very proximal ‘junctional’ bleedings located in for example axillae and groins still represent a special training problem, since tourniquets cannot be used on these locations.

Methods
Based upon an idea presented by Moorhouse et al.*, we have developed a hybrid training model, consisting of a modified Laerdal® SimMan® 2G manikin, with a slab of meat with artificial ‘vessels’ running through the base of a series of wounds. Artificial blood under pressure is used to produce a bleeding effect.

Results
This hybrid model has been used for two years in the training of medics and combat life savers. It represents a realistic bleeding model, which can be used over and over again. Also, the cost for training is low compared to other alternatives.

Conclusions
Existing patient simulators are not suitable for training of haemorrhage control on proximal extremity locations. Live tissue training on anaesthetized animals is not a first alternative for this kind of training. We consider the proposed hybrid simulation model as the best training method so far.


Conflicts of interest: NO
WORKSHOPS
Surgical Anatomy – a simulation based link between anatomy and surgery

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Background
The transition of theoretical anatomical knowledge into surgery was always challenging. Simulation techniques introduced useful tools to provide good transition from anatomy into surgical theatres. Some of these tools combined with modern educational methods were introduced to the medical curriculum at the Medical University of Lublin, Poland.

Learning objectives
1. Curriculum development of the simulation based basic science course
2. How to prepare and choose faculty
3. Tools available for simulation based basic science course
4. How to obtain funds in low-resource conditions

EXPECTED AUDIENCE
Academicians involved in basic science teaching with interest in implementation of simulation in their courses

REQUIREMENTS/SPECIFIC NEEDS,
Optional but not essential: laparoscopic virtual reality equipment (e.g. LapMentor), dissection room, and laparoscopic column

DESCRIPTION OF THE SESSION
We developed a new course – Surgical anatomy as a link between anatomy course and surgical rotation. The course consists of 4 modules – (A – Surgical anatomy of the gall bladder-cholelithiasis, B – antero-lateral abdominal wall – hernias, C – intestines and stomach-gastric by pass, D – sigmoid colon-colon cancer). Each module contained three parts: 1) Problem based learning, 2) virtual reality simulation, 3) dissection based on OR simulation. The course was designed for 4 grade MD (6-year program) students. The course integrates clinical skills and basic science during a simulation based experience, which engages students to the greater extent in comparison to traditional ways of teaching. During workshop we plan to present the process of curriculum development along with detailed description of this novel method to teach surgical anatomy with special application to Fundamental Laparscopic Skills and Surgical Anatomy. We will also suggest ways to incorporate elements of medical simulation into the course curriculum. We plan to share our experience regarding choosing and training faculty members. We will present simulation tools (equipment, case-studies) that can be used during such course. Participants will be encouraged to develop their own scenarios to be used during similar surgical anatomy courses or other basic science simulation-based courses.

Brief description of the surgical anatomy course, which we plan to present to the audience:
The course consisted of four 3-hours sessions with two sessions. Students attended the course in groups of 4 to 5. Each session consisted of Problem Based Learning, Virtual Reality Simulation Based Training and dissection based on simulated OR. Each session ended with the short multiple choice question test, which encompassed theoretical and practical knowledge. During each module MD students solved a clinical problem, trained basic laparoscopic skills in a virtual anatomy environment, practiced acquired skills and knowledge in a simulated operating room environment. We also plan to present the evaluation tools used for course evaluation.

Conflicts of interest: NO
**Video analysis in simulation research**

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**BACKGROUND**

Most simulation centres are fitted with audiovisual recording equipment, enabling the capture of simulated scenarios and debriefs. This rich source of data is often deleted without being used for any specific research or training purpose. As a centre, we wanted to know how we could use this footage to help us understand more about simulation as a learning tool.

We carried out a literature review to explore the question: “How is video analysis used to research and evaluate simulation training in healthcare?” Our ongoing thematic analysis of 121 published articles has identified numerous themes. The most frequent themes include: assessing performance, evaluating inter-rater reliability, conducting interaction analysis, testing treatment algorithms and equipment, and comparing modalities of teaching.

In this workshop, we will explore the literature and explain the various ways in which video footage is used in simulation research. Then, we will practice using video for evaluation purposes, which is one of the main uses of simulation video footage we have identified in the literature. This will give the audience a hands-on experience of some of the performance evaluation systems that can be applied to video footage and used in simulation research. In so doing, we will encourage workshop participants to think about how video analysis could be used in their own centres.

**LEARNING OBJECTIVES**

At the end of this workshop, participants will have:

1. Reviewed how video analysis has been reported in the research literature on simulation
2. Explored the potential for the use of video as a source of data in simulation research
3. Practiced using recognised evaluation systems to analyse video captured from simulation activity

**EXPECTED AUDIENCE**

This workshop is suitable for simulation researchers as well as simulation practitioners who are interested in developing their own practice. As the workshop is focused on using qualitative empirical data to understand the impact of simulation, it is suitable for anyone who is interested in advancing their evaluation of simulation interventions to level two of the Kirkpatrick hierarchy.

**REQUIREMENTS/SPECIFIC NEEDS**

1. Overhead projector and presentation screen

2. Limit of 20 participants due to the interactive nature of the workshop
3. Five tables and sufficient chairs for breakout sessions

**DESCRIPTION OF THE SESSION**

This 45-minute workshop will begin with a 15-minute presentation of our work on the use of video analysis in simulation. This will be followed by a 15-minute hands-on session using an evaluation tool on a short selection of video, with delegates working in groups of four. The final part of the workshop will be a shared discussion on participants’ experience and learning.

Conflicts of interest: NO
POSTERS
Comparison of oral and video debriefing and its effect on knowledge acquisition following simulation-based learning - Work in Progress

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Background
It is accepted that learning from simulation takes place in debriefing [1], however there are still gaps in the evidence of the most effective methods to use [2]. Two common variances of debriefing in simulation are video-assisted and oral debriefing.

Project goals
1. To evaluate the effect of video-assisted versus oral debriefing on recall of learning points following a simulation based learning event.
2. To evaluate subjective impact of video-assisted versus oral debriefing on practice following a simulated-based learning event.

Method
Candidates will be recruited from simulation training days for second year qualified doctors. Candidate pairs will be randomized to the preselected scenario, and for oral or video feedback. From projected statistical analysis we will have a sample size of 80 candidates.
Candidates will participate in a 15 minute emergency scenario followed by standardised oral and video feedback taking 30 minutes. During the debriefings, we will be taking audio/video recording of the debriefer to be analysed in a descriptive way to differentiate processes in oral and video-based debriefing.
The candidates will complete 30 MCQs to establish baseline knowledge, and then repeat these after simulation and at 3 months. At this time a subset of participants will also be invited for a semi-structured interview to explore the role and effects of oral and video-based debriefing.

Results
We hope to identify whether there is an improvement of knowledge following simulation, and whether there is a difference between oral and video-assisted debriefing. Through thematic analysis we hope to analyse the interviews of candidates to understand quality of recall and retention.

Conclusion
We hope to identify the style of debriefing which has a greater impact on the audience, and identify what key characteristics of video and oral debriefing are required for effective knowledge acquisition.
LOW-COST LAPAROSCOPIC SIMULATION: Genoa operative Advanced Laparoscopic Simulator “G.O.A.L.S.” for acquiring laparoscopic abilities

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Background
The use of simulation in laparoscopic surgery training appears to be qualitatively effective if supported by a suitable evaluation system. The literature shows that the main problem in conventional medical training have led to the development of multimodal virtual surgical systems (Lim et al 2007) This inspired the creation of the immersive virtual simulator “G.O.A.L.S.” (Genoa Operative Advanced Laparoscopic Simulator): a physical low-cost laparoscopic training platform that reproduces the tactile feedback integrated with a software for virtual anatomical realistic scenarios.

Project goals
Aim of this work is to describe the educational-training course that students can use to achieve a complete mastery of surgical gestures till to the correct execution of a laparoscopic cholecystectomy task.

Methods
For a correct evaluation of the training assessment, the team designed a new software able to handle the training task, creating a virtual interface based on the concept “student – exercise – evaluation”. The training course is divided into three main phases: acquisition of basic, intermediated and advanced skills. The program manages the educational value through a standardized scale in relation to the level of competence/mastery. The variables which can influence the evaluation are: Score cut off, Running time, Errors.

Results
This study proposes a curriculum tailored to each trainer’s needs. The result’s data analysis will be possible only after a period of testing of the simulator on different samples of students. Referring to experience from other groups, we expect significant results in terms of: reduction of learning time, better dexterity and ability to manage possible procedural errors.

Discussion and Conclusion
In the recent years, the demand for laparoscopic simulators is growing up. Consequently, it becomes mandatory to make the use of assessment instruments suitable to the complexity of new simulators in order to validate the training experiences even at advanced level.

Conflicts of interest: NO
Perception of students on structured debriefing

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Background
In the simulation, know interrogate the operations of forming is so important as creating scenarios and select the most appropriate simulator. Generally, instructors are discussions for clarification on learning outcomes and the intended goals of the experiment. The debriefing aims to focus and reflect on the actions of the learner to discover the mental frameworks that shaped their decisions. Once they are discovered, alternative mental frames can be constructed so that the future performance can be improved. Follows the simulation and is an intentional and vital process designed to create synergies, strengthen and transfer learning from an exercise in experiential learning.

Project goals
Analyze the perception of students on structured debriefing.

Method
This qualitative study was developed with 22 students of the 4th year of the degree course in nursing. Data were collected in the form of self-report writing, requested and obtained through e-mail, and submitted using the approach carried out by Bardin. Formal and ethical considerations have been taken into account.

Results/concepts
Content analysis resulted in three categories: the concept of debriefing; the impact of structured debriefing three subcategories that emerged as the cognitive, psychosocial and emotional impact, and a third category of suggestions that allow rethink the curriculum of the nursing program.

Discussion
Students have a perception of structured debriefing as a, reflective, interactive method that allows structured thinking, consolidation and systematization of knowledge, which is in agreement with other authors.

Conclusion
For students the structured debriefing has a positive impact on learning and the ability to reflect an approach allowing the student / teacher relationship and reveals that there is also a protection of negative attitudes.

Conflicts of interest: NO
The Debrief Template - A New Approach

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BACKGROUND
Debrief is the key component to aid learning in Simulation training (McGaghie et al 2010) and has been described as the “heart and soul of the simulated experience” (Rall et al 2000). However, debrief is a difficult task and there is confusion as to which is the “best” approach with no single model proven to be the most effective. As a busy simulation centre we train our own faculty and rely on them to debrief appropriately to ensure our learners get the most form their sessions. We recognised not all faculty were as confident with the debriefing process.

PROJECT GOALS
The goal was to design a debrief template for each of our scenarios to enable visiting faculty to have confidence in debriefing effectively in a robust and systematic way within a framework approved by our simulation centre.

METHOD
We reviewed a number of debrief models and methods and looked at educational research in order to design our own template. We were guided by the work of Kurtz et al (2005) and influenced by Flin R et al (2009) and others in trying to place the learner at the centre of the debrief and taking into account the clinical approach observed in the scenario in addition to non technical skills.

RESULTS
The templates are specific for each scenario and are written to be curriculum mapped for observed practice whilst including discussion of human factors. All follow the same pattern and are designed to be a useful tool to enable quality debrief. The feedback from faculty has been very positive and the regional group ensuring quality simulation training have praised our design.

CONCLUSION
Debrief is essential to effective learning in simulation and having an effective template has improved the ability of our faculty to deliver our vision.

Conflicts of interest: NO
Added Value of Simulation; Paramedics Students’ Performance Compared to Professionals

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Background
Medical simulation is an important component for training in advanced blended learning methodology for both skills management and adoption of attitude, especially in critical situations.

Project goals
The aim of the study is to evaluate and compare the paramedics trainees and paramedics professionals’ performances in cardiopulmonary arrest scenario during transportation.

Material
This study consists of 32 participants. We divided them into two groups.
Group A (n=16): Paramedic students having attended at the ALS courses in our simulation center during five weeks.
Group B (n=14): Paramedic professionals working in public ambulance service for two years and attended at the standard ALS courses organized by government without simulation sessions.

Scenario
During transportation of a 65 years old acute pulmonary edema patient having a cardiopulmonary arrest inside the ambulance participants performed cardiopulmonary resuscitation.
Statistically, performances were evaluated by using “chi square” and “ANOVA” test.

Results/concepts
There were no significant difference between the groups according to the approach of airway management, balloon mask ventilation and entubation. In both group ventilation frequency was too high after entubation. For external cardiac compression there were significant difference between the groups (Group B compression frequency was high 140/min. but also uninterruption of compression was better in this group). Rhythm analyzing and proper defibrillation were similar in both groups.

Discussion
Simulation based training is an important alternative for training the professionals and can improve attitudes of professionals especially in critical situations.

Conclusion
The use of high fidelity simulators is an effective learning and teaching tool for advanced blended learning methodology compared to transferring knowledge and skills learned from classroom lecture.

Conflicts of interest: NO
Automated external defibrillator Skill retention after adult basic life support course

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Background
Adult basic life support (BLS) is an important procedure for cardiopulmonary resuscitation in order to increase patients’ survival rate. Automated external defibrillator (AED) is an important electronic device in BLS that automatically diagnoses ventricular fibrillation and is able to treat through defibrillation.

Project goals
To study the AED skill retention after BLS training.

Methods
This study was descriptive design. We included 5th year dentistry students who attended adult BLS course for health care provider at KKU-REACT simulation center, Faculty of medicine, Khon Kaen University. It was 3-hour course for knowledge and skills teaching in accordance with the current American Heart Association Guideline that included AED (FRED® EASYPORT®, Schiller). Participants who failed course were excluded. Then twenty months after the course, we evaluated their AED skill retention.

Results
We included 78 participants into the study, but only 72 participants were evaluated after twenty month (92.3%). Ninety-seven percent and 93.1 % could remember its name and its function, respectively. Eighty five % of participants could successful operated trained AED, and 68.1% could operated un-trained AED (AED Plus®, Zoll). Most common pitfall was attaching the pad before turning on AED. Only 21% of participants had confident in their skills. The causes were forget AED steps, and never used AED in real patients.

Discussion
Our data showed most participants had sufficient AED skill after the course. However, turning on AED step and attached the pad step should emphasized during training. We found that they could used AED despite that was the first time to used. However, only few participants were comfort to use AED, we required to find the strategies to improve their confident.

Conclusion
Twenty months after BLS training, most participants could used AED and could adapted for other type AED. However, we should improved their confident on AED skill.

Conflicts of interest: NO
The airway management preferences of paramedics in simulated difficult airway scenarios

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Background
Airway management for successful oxygenation and ventilation represents a critical procedure for pre-hospital emergency care providers [1,2].

Objectives
This study was undertaken to evaluate the airway management preferences of paramedics in the simulated difficult airway scenarios.

Methods
Paramedics working as a crew member of Antalya 112 Ambulance Service were involved in the management of simulated difficult airway scenarios using medium fidelity mannequin – SimMan (Laerdal). The manikin was settled to make tracheal intubation under direct laryngoscopy impossible at the first attempt and to make facemask ventilation very hard after the second attempt. With impossible ventilation through the bag mask ventilation, arterial oxygen saturation decreased during 2 minutes before an hypoxic cardiac arrest occurred. Paramedics could use classic laryngoscope with Macintosh blade with guidance of Gum Elastic Bougie (GEB), a ProSeal LMA, an instrumated LMA (ILMA) and a cricothyrotomy set. Prefer for the device and time to manage the effective ventilation with the device chosen was measured. In the debriefing session it was questioned why he/she preferred this device.

Results
Thirty two paramedics took part in the simulation. Participants reported a mean of 5.8 years of service. Twelve (37.5%) paramedics preferred classic laryngoscope with Macintosh blade with guidance of GEB, 3 paramedics preferred ProSeal LMA (9.3%), 15 paramedics preferred ILMA (47%) and 2 paramedics preferred crycothrytomy (6.2%) to manage the airway. The effective ventilation time was 107.25 seconds, 111.33 seconds, 100.13 seconds and 229 seconds respectively.

Discussion
Our study showed that; the decision making to manage the dificult airway between paramedics can vary in a different spectrum. The main factor affecting the decision is the experience and the competence of the paramedic in which device he/she will use.

References

Conflicts of interest: NO
Utilizing eye-tracking technology to investigate students focus during medication administration

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Background
A study using eye-tracking where participants eye movements are recorded during visual stimulus may provide real time information about lineup decision processes because gaze can be continually monitored as participants view them.
Research suggests a strong link between eye movement and cognition. Eye movements are related to cognitive processes during visual tasks. Feedback from eye-tracking can be used to improve teaching and preparations for simulation scenarios.
During simulation identification mistakes of patients may be done in medical administration. Studies show improvement in using guidelines and checklists, as the 5R’s method (right patient, – drug, – route, – time, and – dose), to avoid mistakes in medication administration. There are few studies in health care contexts using eye-tracking method in medication administration.

Objectives
The study focus is on students decision making process in medication administration using the 5R’s method with medical patients having problems in vital functions.
By using the eye-tracker we study what the students actually are looking at when administering medications and monitoring the effects of the medication.

Method
This ongoing study is a part of Arcada Patient Safety Learning Center’s project on safe medication administration. It will be done with second year paramedic students who have accomplished the EMT-basic level and a follow up will be done with the same students in two years on EMT-paramedic level. The study is done in full scale simulation situations using eye-trackers on students and show if the students are using visual attention in both technical and non-technical activities.

Result
The result is based on a hypothesis: the students decision making is based on monitoring vital signs and looking at the patient using the 5R’s method.

Conclusions
The results of eye-tracking study will show emphasis in building up paramedic education and course curriculums and is transferable for nursing education.
Conflicts of interest: NO
Video support in pré hospital emergency care, 
A time for change?

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Veiligheidsregio Gelderland Zuid sector RAV

Background
Audio visual education in the EMS Gelderland South is spreading into the practice of pre-hospital care. The educational environment and learning tool is the daily real time practice in emergency care. Key point are the communication skills with patients. During this research the innovation is the use of video technology. This will change the role of the instructor from a “sage on the stage” to a “guide on the side”, (Salmon, 2000).

Project goals
Live video-coaching is a practical way for reflective coaching and skill development. The ambulance nurse will be made aware of their own effective communicative skills through analytical review of their own footage.

Method
A randomized controlled trial (RCT) is chosen to describe and implement interventions through video feedback in the emergency ambulance care.

Results/concepts
The concept of this research is the operationalization of video feedback and the operationalisation occurs through the MAAS - global score for measuring the quality of communication. The video feedback method shows a statistically significant learning effect (improvement Maas global score> 1 point). In the future, video feedback can be a structurally effective tool in the education and training of ambulance professionals on various skills.

Discussion
The emergency-cases in each video are different because of the real time setting. So no equal comparison between two cases with MG scores by the same ambulance nurse is possible.

Conclusion
The use of a bodycam is accepted by patients and ambulance nurses for training purposes. This research can be valuable in gaining a better understanding of factors influencing the acquisition of communication skills. There is a need of communication training for ambulance nurses to improve quality of (emergency) care. In the near future video feedback can be a structural effective instrument for the training and education of ambulance nurses/crew in “hard and soft skills”

Conflicts of interest: NO
A real time intra-aortic balloon pump waveform generator for patient simulators

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Background
Intra-aortic balloon pumps (IABP) are widely used circulatory assist devices for patients with hemodynamic instability. However, current patient simulators do not incorporate synchronized ECG and arterial blood pressure (ABP) waveforms to simulate IABP scenarios. A customizable IABP waveform generation and display tool would be of great use in education.

Objective
Develop a software platform for use with existing patient simulators that generates and displays in real-time the following synchronized waveforms: ECG, including a library of arrhythmias, contrapulsated ABP and the balloon pressure waveform.

Method
ECG waveforms were extracted from the MIT-BIH public ECG libraries. ABP, contrapulsated ABP, and balloon pressure waveforms were synthetized and synchronized for IAB inflation at the onset of diastole, during T wave, and at the end of diastole, P wave onset of the next cardiac cycle. Matlab was used to develop the real-time generation and display software, with the possibility to change online: ECG rhythm, heart rate, blood pressure values and IABP frequency/mode.

Results
A real-time waveform generation and display tool was created with the following characteristics. The available ECGs are: normal sinus rhythm, atrial flutter, atrial fibrillation (3 cases), ventricular tachycardia and fibrillation (5 cases each) and asystole. The IABP frequencies are 1:1,1:2,1:4 and 1:8; or internal mode (unsynchronized frequency) during ventricular fibrillation and asystole. The platform can be used on any computer running matlab, or as a stand-alone Windows application.

Discussion/Conclusion
A new tool is available for real-time generation and display of changing IABP waveform scenarios. The tool can be used together with current patient simulators. User satisfaction will be promptly tested in a pilot study, and later in training on IABP scenarios like the management of acute myocardial infarctions or ventricular arrhythmias.

Conflicts of interest: This software is sold by Hospital virtual Valdecilla (Santander, Spain), a non-profit Educational Institution focused on improving patient safety through specialized training of healthcare professionals using clinical simulation as a teaching tool.
ENVI Virtual Centre of the Wellness towards innovative distributed virtual learning environment, ENVI 2

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Lapland University of Applied Sciences

Background
Communication, situational awareness and leadership have been identified as key areas in development for healthcare professionals and students in Finland. Traditional simulation centers have concentrated around patient simulators mainly in physical hospital like environments. ENVI 2 is the second phase of ESF/EDRF funded ENVI Virtual Centre of the Wellness Campus project which proposes gamification (Deterding-Khaled-Nacke-Dixon 2011) and serious games approach to answer these issues.

Project goals
ENVI 2 aims to integrate the current state of art simulation training with modern virtual reality environments, serious gaming and gamification to create an immersive and interactive learning experience. Intend of the gamification in this environment is to improve communication and user involvement in the learning scenario.

Methods
First version of ENVI learning environment was implemented in 2005-2007 and it has been used in nursing education since. ENVI 2 continues from previous user experience and new ideas from healthcare education professionals, ICT professionals and other health care professionals from the field. ENVI 2 VR environment includes multiple different level systems to improve the authenticity of the learning scenario. These systems include an mockup patient information system, full scale projection environment, motion platform ambulance simulator and PC based game server. This solution allows learners to participate, interact and learn regardless of physical location.

Results
Both feedback from the field and research results have shown that use of the new learning environment and methods have improved the skills of students (Keskitalo, T 2008; Poikela & Poikela 2012). The new environment is more engaging to the students and improved their overall learning experience.

Conclusion
Simulation training combining with virtual reality or gaming like distributed simulation, is the promising technology utilization in health care education. Similar technology and model can be used in other health care simulation centers and also in different field of expertise.
Is high-fidelity simulation an expensive luxury? A comparison between high- and low-fidelity simulation when teaching medical undergraduates how to assess critically ill patients

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Background
Advances in technology have created highly realistic simulators capable of ‘suspending disbelief’ in the learning environment. Although well-received, there is a paucity of evidence of the effectiveness of high-fidelity compared to low-fidelity simulation. Is it simply an expensive luxury without educational value?

Project Goals
This pilot study was conducted to compare the effectiveness of high-fidelity and low-fidelity simulation as a teaching tool in the acquisition of knowledge, confidence and realism in novice learners. We postulate that there is no difference in increasing knowledge and confidence between fidelities.

Methods
31 third-year medical undergraduates participated in this randomised-controlled study. Students were randomised into two teaching groups; one using a high-fidelity simulation manikin (SimMan®) and one using a low-fidelity simulator (Resusci-Anne). The session on assessing an unwell patient was delivered by two clinicians and cross-observed to ensure standardisation. Multiple-choice questions and feedback questionnaires were completed pre- and post-simulation to assess knowledge, self-perceived confidence and realism. Data was analysed using independent T-test.

Results
We recorded 2498 data points. In terms of knowledge, there was an improvement in MCQ scores pre- to post-simulation (66.2% versus 93.1%; p<0.01) but no significant difference between high- to low-fidelity simulation (91.9% versus 94.9%; p=0.15). Although confidence increased in undergraduates following the teaching sessions, there was no significant difference in confidence levels between high- and low-fidelity simulation (5.1 versus 5.3; p=0.38). There was also no significant difference in the realism between high- and low-fidelity manikin scenarios (2.54 versus 1.49; p=0.14).

Conclusions
This study demonstrated that manikin fidelity made no significant difference in knowledge acquisition, confidence or realism in medical undergraduates. This questions the need for expensive high-fidelity simulation equipment in improving educational outcomes, potentially broadening student access to effective simulation-based training despite educational budget constraints. Further research is required to determine if fidelity has greater effect in experienced learners.

Conflicts of interest: NO
Robotic airway management simulator which simulates several different anatomical characteristics of patients

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BACKGROUND
Tracheal intubation is most important and fundamental skills in anesthesiology. Several accidents, at worst death, occur during tracheal intubation when patients have anatomical characteristics that indicate the presence of a difficult airway. Skill to manage these difficult situations should be trained by using simulators. However, variety of anatomical characteristics simulated by conventional simulators are limited.

OBJECTIVE
We developed a robotic airway simulator which simulates several different anatomical characteristics, such as normal patients, those with small jaw, those with large jaw, those with locked jaw and those with locked neck. An experiment was then performed to confirm its effectiveness to train skill to manage risk of complications in these difficult situations.

METHODS
14 experts, who had a instructor license, were recruited for this experiment. Each participant performed 6 trials of tracheal intubation on the simulator under four different conditions. The simulator simulated normal patients, those with small jaw, those with large jaw, those with locked jaw and those with locked neck. Applied forces on the teeth and tongue were measured. Positions of the tip of the laryngoscope on the tongue were also measured.

RESULTS
Applied forces on the teeth were high only in the case the simulator simulated patients with small jaw. Significant differences are confirmed with other cases. Positions of tip of the laryngoscope on the tongue were far from the correct position, right bottom, only in the case of small jaw. Significant differences are confirmed with other cases.

CONCLUSIONS
Higher applied forces on the teeth and wrong positions of tip of the laryngoscope on the tongue increase risk of complications. Experimental results suggest that risk of complications becomes higher in the case where the simulator simulates patients with small jaw. Thus, skill to manage risk of complications in difficult situations should be trained by using our simulator.

Conflicts of interest: Hiroyuki Ishii and Atsuo Takanishi receive a grant to develop robotic airway simulators from Kyotokagaku Ltd.
Sound management during high fidelity simulation and role-play

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Sound distribution in an of high-fidelity simulation environment or role-play environment is an essential element to consider when creating a simulation center. It is of course necessary to transmit sound from the high-fidelity environment to trainers but also to other potential observers. Similarly, a facilitator in the high-fidelity room should be able to communicate in both directions with trainers who control the mannequin and the scenario. Finally, we can also consider a communication channel between the trainers and the high-fidelity room then another one between trainers and observers.

The following diagram shows the different streams of possible communication between different actors.

Approach used for the realization of the audio communication system:
The communication system is established in several steps: after choosing different ways to capture sound and after choosing solutions for its reproduction, we considered communication protocols.

Different microphones are capturing sound. For instructors, microphones “gooseneck” are used, with the exception of the voice of the manikin performed using a micro “headworn”, in order to reduce the noise level. The facilitator will use a headworn microphone to communicate with trainers for the same reasons.

Learners use a lapel microphone in order to clearly distinguish the voice of everyone. The surround microphone is another solution that is more sensitive to the cacophony.

The sound reproduction occurs by using loudspeakers in the room, except the voice of the manikin (that uses a specific speaker) and the instructions to the facilitator (headset). These instructions are given by the use of walkie-talkie.

The voice of the manikin is transmitted through a specific channel of the manufacturer. Other communications are amplified, mixed and redistributed through external amplifiers and mixers. A switching matrix allows the distribution of the different flows.

Conflicts of interest: NO
Technological aspects of running a large interdisciplinary simulation centre

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Background
Education and Medical Simulation Centre of the Medical University of Silesia in Katowice, Poland is quite a new facility, opened in September 2012. It is located in a separate building and offers a variety of simulation and ICT equipment to be used for undergraduate education. The budget of PLN 30 mln (€7.5 mln) and combining simulation with ICT allowed for some interesting solutions to be implemented.

Objective
To discuss technology issues regarding running an interdisciplinary simulation centre.

Discussion
The centre has six simulation rooms, pre-hospital area and an ambulance simulator equipped with 14 high fidelity patient simulators. Each simulation room is supervised by a control room. There are three debriefing rooms but debriefing can be run directly in the simulation area if necessary. A variety of medical equipment is provided for students. There are also two big training rooms with over 360 manikins and skill trainers to be used.

Providing proper communication between control, debriefing and server rooms as well as maintaining efficient data storage, backup and safety required detailed planning in terms of equipment type and location.

The IT part of the centre consists of lecture rooms, computer rooms and multimedia library. The IT solutions, e.g. e-learning platform, virtual patient software, 3D software, virtual dissection table, video conferencing system, access to digital resources, support and supplement the educational offer of the simulation part. Finally, there are a few supporting systems in the building, e.g. room management and online equipment booking that allow for more effective and flexible Centre management.

Conclusions
The experience has shown that combining simulation and information and communication technologies in one centre can bring benefits. Future projects are planned in order to provide better integration of all technologies available in the Centre so that more effective education is ensured for students.

Conflicts of interest: NO
Telephone call recording as additional tool for facilitating debriefing

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Telephone conversations in the simulation room may play an important role in teaching communication skills. They can be used for obtaining consults or referrals from senior doctors, ordering laboratory tests, communication with family members and auxiliary personnel.

Video and audio recordings are perceived as important part of the simulation encounter. They can boost the debriefing sessions with content that enriches lively discussion.

Recording telephone calls may be also important for feedback and objective evaluation purposes. This is usually done by an overhead microphone which is also used for recording general audio from the simulation room. Therefore, the quality of the recording is frequently inadequate, as it interferes with other sounds of the participants and those coming from the mannequin. Moreover, the other calling party cannot be heard, making the recording unpractical for students’ evaluation. We piloted a call recording system in the simulation lab. All the students consented for video and audio recording in the Simulation Center for educational purposes. The R4ATNR device (Zetkom, Poland) was connected to the phone line and to the intranet network. Each incoming and outgoing call during simulation encounter was recorded. During debriefing phase the selected recordings were played back to the participants through the computer internal network.

The quality of the recording was assessed by the students as superior. They unanimously evaluated this tool as very helpful in improving the quality of debriefing. More studies are required to see if this carries a significantly better educational value than the debriefing without phone call recording playback.

Conflicts of interest: NO
The low cost solution – new opportunities

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Background
Tension pneumothorax and hemothorax are life-threatening conditions. Recognizing and treating them quickly is important for rescuing the injured. To train pneumothorax decompression skills we use the Simone Airway Trainer. When conducting a scenario of pneumothorax decompression we realized:
1. That the system of inflating the bags between the ribs and lungs (that simulate pleural cavity) is not so practical. To retrain the scenario we have to disassemble the mannequin to inflate the bags. It takes quite much time and decrease realism of simulation.
2. According manual the mannequin is not supposed to use in hemothorax scenario.

Project goals
1. To make using of the mannequin easier during simulation.
2. To expand the possibilities of the mannequin for using in hemothorax simulation.

Methods
Originally, the squeeze bulbs for inflating the bags were placed inside the mannequin. We connected each bag with the squeeze bulb by tube. The connecting tubes with the squeeze bulbs were moved outside the mannequin. Leading out these tubes we replaced the original squeeze bulbs by new ones and set up the clips of each tube. The new squeeze bulbs allow removing them easily, so we can fill bags with blood by syringe and clip the tubes to keep blood in the bags.

Results
Now the inflating squeeze bulbs are placed outside the mannequin. The inflating system can be transformed into the blood filling system. Using the mannequin during simulation has become much more practical. This modification has expanded the possibilities of the mannequin and has helped us to optimize the simulation process.

Conclusion
We offer a simple modification that enabled us to use the Simone Airway Trainer in a scenario involving tension pneumothorax and hemothorax. Moreover this solution is very useful for budget as there is no need to buy special simulator for training hemothorax treatment.

Conflicts of interest: NO
What is Body Interact(TM)? How realistic or useful is it?

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Background
Body Interact(TM) is a new medical micro-simulator designed to run on a multi-touch device. Virtually all commands involve touching a part of the screen with a finger.

Objective
To test the realism and usability of the software interface of Body Interact(TM).

Methods
Eight medical students and one junior doctor evaluated the software interface by running a standardized hypoglycemia scenario in Body Interact(TM) (Take The Wind, Portugal) and answered a questionnaire covering realism and usability. A 7-point Likert-scale (7 best; 1 worst; or Not Applicable) was used. Free space for comments was included. The participants were not given assistance until they were clearly in trouble. Data was collected using SurveyXact(R) and analyzed in Microsoft(R) Excel.

Results
The participants perceived the realism of scenario, briefing, questions for/answers from the patient, monitoring, tests and interventions as high with mean values from 5.1 to 6.1. The mean satisfaction with user control was (5.4), consistency in words, situations and actions (6.1), visibility of objects, actions and options (4.9 to 5.8) and relevant information (6.0). The mean usefulness of different functions was rated 4.1 to 6.3, where the events list was perceived as less useful. The debriefing function was perceived as a bit slow (mean 4.4). There is no help function, but the program was intuitively easy to run. All participants felt confident in using Body Interact(TM) (mean 5.3). Two of the 9 (22%) participants did not feel confident in treating a real hypoglycemic patient, but these two medical students have not started clinical clerkship yet. In general, the participants’ experience in playing computer games was low.

Conclusion
All participants perceived the software interface of Body Interact(TM) as realistic and useful. An app for smart phones is desired.

Conflicts of interest: NO
Enhancing Multi-Professional Faculty Development in Social and Healthcare -Identifying Faculty Development Needs

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Background
Simulation is gaining wider acceptance in social and health care higher education (Sanford 2010, Norman 2012, Yuan 2012). Simulation is a valid teaching and learning strategy and useful in gaining knowledge in critical thinking, confidence and satisfaction (Cant & Cooper 2010, Yuan et al. 2012) and students appreciate simulation learning experiences. (Pakkanen et al. 2012). However, the use of simulation poses challenges in terms of instructors’ expertise. Standardized instructor courses are important, but faculty development is vital to effectively use simulation. Providing the faculties with technology is not sufficient to trigger a change in pedagogical practices (Sipilä 2013). Educators’ are challenged to implement teaching strategies to promote learners’ confidence and competency (Yuan et al. 2012). The purpose of this presentation is to describe a project aiming to develop novice multi-professional faculty in the pedagogy of simulation.

Objective
To implement a survey in multi-professional (nursing, social services and physiotherapy) higher education unit to identify the faculty development needs. Organize workshops and use multi-professional simulation as a strategy to better prepare faculty members in their new role towards simulation instructor expertise.

Results
The survey is conducted in one Finnish University of Applied Science in April. Participants are multi-professional educators. Main results of the survey will be presented in SESAM 2014 meeting.

Conclusions
The focus of the presentation is faculty development, especially multi-professional development needs. Identification of the faculty development is significant in providing a perspective of how to support educators to use and integrate simulation in social and health care higher education. In this presentation the aim is to discuss the challenges of developing expertise in simulation and to offer insight to those dealing with similar issues in their own organizations.


Conflicts of interest: NO
Fostering teachers use of simulation by using a mentoring programme

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Simulation learning improves students’ competencies. However, for the facilitators simulations are rather complicated and time consuming, thus using them can be challenging. Simulation facilitation demands ability to use evidence base knowledge and methods, follow multiple actions at the same time and confidence with technology. Savonia-UAS ran two EU-funded projects to develop simulation learning and setting up a simulation centre (SIMUPEDA and SIMULA). During the projects was created a pedagogical mentoring process for social and health care teachers. The mentoring model included all the simulation phases from planning a scenario, briefing and facilitation to the debriefing.

In mentoring process simulation facilitators guided to create scenarios with clear learning goals emulating real life situations; planning the environment, technology, the time allotted for the simulation and choosing the standardized patient or manikin. During the simulations facilitators got guidance in ensuring the students’ positive learning experiences. They were troubleshot with technological problems and offered encouragement. Debriefing was mentored going through the learning experiences and facilitators actions during simulations.

It was found that engaging teachers in simulation pedagogy was important to become competent facilitators. Immediate feedback and hands on guidance made possible the teachers to try out the facilitation process and integrate simulations appropriately in the curriculum. Also the possibility to talk with colleagues was important. Teachers found simulation an excellent method for fostering reflection and learnt new ways in giving positive feedback. They also found simulations more enjoyable than traditional teaching methods.

Still, quite a lot has to be done in the near future to keep up this good experience and inspiration for simulations in social and health care education. As technology advances, ability to simulate patients’ situations will become more sophisticated and thus demand further practice. Also training standardized patients and using them instead of manikins is necessary.

Conflict of interest: NO
Meeting the potential of simulation: an example of a structured programme with a tripartite focus on knowledge gain, practical skills and non-technical skills

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BACKGROUND
Higher-fidelity medical simulation is becoming increasingly available for undergraduate training. Its value is well recognised in preparing senior medical students for practice [1]. Simulation uniquely has the potential to enable learning in multiple domains – knowledge, practical skills and non-technical skills – simultaneously in a safe (non-clinical) environment [2]. How to reliably, efficiently and durably achieve this potential remains uncertain. Whilst simulation facilities remain expensive to procure and intensive to staff there is an imperative to address this question.

PROJECT GOALS
To appraise an approach to the use of simulation teaching incorporating briefing, iterative scenario-based experiential group learning, and consolidation through video debriefing and micro-teaching.

METHOD
At our institution we embarked on a focussed programme of 2.5hr simulation teaching sessions with a cohort of 120 4th year medical students using an approach featuring all the elements above, delivered by staff experienced in simulation teaching and debriefing. The effectiveness of this approach was assessed through pre-session, immediate post-session and 1 year post-session Single Best Answer (SBA) questionnaires testing knowledge as applied to acute medical emergencies, along with qualitative assessments of the assimilation of non-technical and practical skills.

RESULTS and DISCUSSION
Average SBA marks doubled post session from 35.6% to 71% reflecting immediate knowledge gain. There was a degree of knowledge decay at 1 year, though non-technical skills for dealing with medical emergencies persisted.

CONCLUSION
Similar focussed, structured programmes elsewhere could make efficient and reliable use of simulation resources, resulting in durable cognitive strategies which can be used when managing acute medical problems.


Conflicts of interest: NO
SKY – Simulation and Development
Environment in Lapland University of Applied Sciences, Kemi Campus, Finland

Paloranta H.
Lapland University of Applied Sciences

Objectives
Increasing multidisciplinary education in welfare and fluent functions of teamwork, Raising performance level and ensuring standard quality in every work place, Supporting welfare at work and making use of already existing standards and shared resources, Increasing the quality of caretaking and the variety of services offered to customers, Proving regional impact and collaboration, and increasing the attractiveness of LUAS

The main objective is to introduce the open learning environment for everyday use in learning and education.

1. Planning
   a) All staff of Lapland University of Applied Sciences (Kemi campus) are introduced with simulation pedagogy
   b) Senior lecturers will be trained in simulation pedagogy
   c) simulations and curricula will be planned
   d) multidisciplinary scenarios will be planned
   e) simulations will be integrated to all degree programmes (health care, social services and elderly care)

2. Action
   a) The whole staff are is introduced with simulation pedagogy (senior lecturers, principal lecturers, office workers, heads of degree programmes)
   b) 24 Senior lecturers (of 60) are trained in simulation pedagogy within three months
   c) 10 Senior lecturers (from all degree programmes) are given resources to plan simulations and curricula
   d) Multidisciplinary scenarios are planned and in use. Also undergraduate students are making academic scenarios as their Thesis
   e) Simulations are integrated to all degree programmes

3. Assessment
   Feedback is collected from all user groups. So far 13 academic Theses are made. Surveys of the need of continuous and in-service-training of working life are conducted. There is a need to train more senior lecturers in simulation pedagogy.

Results
Variability is the key - the nursing simulation environment can be transformed into a hospital room, operating room, intensive care unit, or even an emergency room. The home environment can be transformed for example to a maternity clinic, conference room or a home of a client. The environment enables the possibility to arrange a new way of training in the area of Kemi-Tornio area.

Conclusion
Simulation and development environment makes the partnership possible between private, public and the third sector. The multidisciplinary nature of environment must be taken into account. It can be used for training in different aspects in nursing, customer service, and in supervision. The environment is in everyday use, adult and in-service-training is possible, and the welfare technology is better exploited.

Conflicts of interest: NO
The Impact of Utilizing Standardized Patients as Simulation Instructional Team Members on Student Learning

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Background
Traditionally, simulation at the University of Calgary has been facilitated by pairs of physician-teachers. However, the cost and availability of physician master teachers (MT) has been a major limitation to expanding simulation training at our school. We developed a simulation education training program for standardized patients (SP's) to allow them to assist a physician with simulation facilitation instead of a second physician.

Project Goals
The aim of this study was to assess the impact of instructional team composition (two physicians vs. one physician and one SP). Outcomes assessed were students’ cognitive load as well as performance on a delayed Objective Structured Clinical Examination (OSCE).

Method
Final year medical students were randomized to one of two instructor team formats (MT/MT or MT/SP) and were exposed to a simulation scenario of altered level of consciousness (ALOC). They were debriefed then cognitive load were measured. Knowledge outcomes were assessed by OSCE evaluation on a related simulation case of ALOC three months later.

Results
There was no difference in the cognitive load of the students taught by MT/SP vs MT/MT: 6.85 vs. 7.02 p = 0.40. Similarly, there was not a significant difference between mean OSCE checklist score: 74.45 vs. 78.57, p = 0.08. However, the odds of being in the top quartile were lower if taught by MT/SP vs. MT/MT: OR 0.43 [0.20, 0.89], p = 0.023.

Discussion
The use of an SP/MT team for training medical students is practical and economical when compared to using teams of two physicians. However, if this format impairs students’ knowledge acquisition and retention, then it becomes difficult to justify.

Conclusion
There is no significant difference in the mean scores on student outcome assessment between groups. However, the trend towards reduced outcomes in the MT/SP group warrants further study.

Conflicts of interest: NO
Can Clinical Simulation Fellowship help in development of Non Technical Skills (NTS)?

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Background
Non-technical skills are ‘the cognitive, social and personal resource skills that complement technical skills, and contribute to safe and efficient task performance [1]. Examples include communication and decision making. There is increasing empirical evidence linking non-technical skills to patient safety [2]. Poor performance of non-technical skills has been shown to be a significant contributor to medical error [3].

Objective
Hull institute of learning and simulation offers up to eight clinical fellowships in leadership and Simulation. Apart from taking lead in designing and implementing education and simulation projects across the region, clinical fellows are also expected to improve their non-technical skills during this post, which can be later transferred to their future work place.

Methods
All the clinical fellows were given a questionnaire at induction to rate their non technical skills in different areas like leadership, setting effective direction, management, interpersonal effectiveness, fitting in & teamwork, assertiveness, communication, time management, influencing, negotiation & engagement. At the end of year fellowship, end of placement questionnaire was also filled for comparison.

Results
There was a uniform increase in confidence levels for majority of the non technical skills for all the fellows. There was particular improvement in domains like leadership, time management and communication. All the fellows felt that this post has helped them immensely in identifying the importance of development of non technical skills in their clinical practice.

Conclusion
Non technical skills training need is well recognised but there is need for recognised framework for their training. We recommend that non technical skills should be incorporated into curriculum for all the training doctors.

Conflicts of interest: NO
Core Surgical Trainees Skills Training

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Background
Surgeons are working in ever busier environments with the European Working Time Directive providing fewer training opportunities. Simulation is becoming more integrated into learning. The Association of Surgeons in Training (ASiT) in the UK released a document on the benefits of Simulation. The Joint Committee on Surgical Training (JCST) agreed to integrate simulation into the Intercollegiate Surgical Curriculum Program (ISCP) from 2012.

Project goals
A one day course was designed and implemented for Core Surgical Trainees (CSTs) in the East Midlands, UK. The aim: to build on Basic Surgical Skills and to improve the skill set of CSTs to enable them to operate successfully in theatre and on the wards.

Method
The course was mapped to the Intercollegiate Surgical Curriculum Program Module 3: Basic Surgical Skills with nine objectives from “To handle surgical instruments safely” to “to use a suitable surgical drain appropriately” and “To understand the principles of anastomosis”. Registrars and Consultants across all specialities were invited to achieve a high Faculty to delegate ratio (1:4 am, 1:2 pm). Sessions ranged from skin lesion excision to bowel anastomosis and use of a virtual laparoscopic simulator. All required hands on interactive surgical skills.

Results/concepts
The feedback from trainees was excellent with all delegates strongly agreeing or agreeing that they had improved in each of the objectives. All delegates strongly agreed or agreed that this course should be run for new CSTs at Induction in August.

Discussion and Conclusion
This new course gave CSTs a safe environment to practice and provided knowledgeable faculty support. It gave CSTs an opportunity to improve skills which is increasingly difficult to find. We aim to run this course at induction for new CSTs each year and it is possible that in future this course could have accreditation from one of the Royal Colleges.

Conflicts of interest: NO
Development and validation of simulation scenarios for nursing and midwifery curricula at KU Leuven Association, Belgium

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BACKGROUND
Healthcare is becoming more complex. It is a challenge for education programmes to deliver nurses who have achieved all skills necessary for safe practise (multidisciplinary teamwork, communication, organisation and coordination of care, clinical reasoning and integration of knowledge and skills). High Fidelity Patient Simulations (HFPS) are expected to teach these skills.

OBJECTIVE
This research project funded by KU Leuven Association (OOF) aims to increase the use of HFPS in the curricula of nursing and midwifery bachelor programmes in Belgium.

METHODS
29 lecturers from three colleges and one university collaborated to develop simulation scenarios. Two researchers based at colleges VIVES and Thomas More worked on the two-year project to develop evaluation instruments and guide lecturers. A template for scenario development was created based on literature. Scenarios were tested in the colleges and participating students filled in a questionnaire. Questionnaires were analysed and feedback was used to adapt the scenarios. Scenarios were validated by expert review and medical professionals who regularly have trainings at our simulation facilities.

RESULTS
23 scenarios were developed in the first year of the project. Five scenarios were already tested on students in the first year of the project. Feedback by students resulted mostly in practical changes (e.g. too many students per simulation, absence of needed material, etc.) as opposed to changes in scenarios. Five scenarios were checked for medical correctness by a physician. One scenario was tested by nursing professionals.

CONCLUSION
The majority of scenarios still needs to be validated by testing with students and review by experts in the second year of the project. However, this project made it possible to develop instruments that were used to review the scenarios and coordinate the process of scenario development. Our methods might be interesting to other institutes who want to develop and validate simulation scenarios.

Conflicts of interest: NO
Fostering simulation pedagogy to enhance safety in perioperative nursing

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Operating room is a complex environment where nurses are responsible for maintaining safety of the patients. Hands-on practical learning is essential, which occasionally causes mistakes on patients. Simulation can be a solution for this problem. During simulation participants repeat and perfect their skills, interaction and multidisciplinary teamwork optimizing clinical outcomes in guided contexts. Simulations also allow for putting through scenarios which are able to reflect afterwards helping the participants to grow as professionals.

Savonia-UAS runs an EU-funded project (SIMULA) to develop simulation learning and equip the simulation centre. The aim of the project is to create a modern simulation learning environment and improve social and health care students skills without compromising the safety of patients.

The practical project has increased collaboration between social and health care organizations, fostered the strategy of simulation pedagogy and progressed towards the practical experiments; piloting simulation scenarios in perioperative nursing.

Perioperative simulation has been found as a useful training frame where participants become immersed in variety of features taking place in OR setting. Scenarios have been introduced and practiced step by step. In debriefing facilitators have reviewed the participants’ strengths and weaknesses, and the group discussed together of the opportunities for improvement by using mutual support strategies.

Simulation learning has improved students technical-, communication and problem solving skills e.g. in the preparation of the patient for anesthesia, intubation and anesthesia starting procedures and aseptic technique. Moreover, simulation has fostered students overall confidence and helped them to participate in teamwork more fluently during their clinical practice. Providing an interactive exercise that stretched the participants’ limits in a safe environment has given opportunities to learn from each other and empowered them to explore new methods of training as well.

Conflict of interest: NO
High Fidelity Simulation and Non Invasive Mechanical Ventilation: pre-graduate medical training

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Background
Non Invasive Mechanical Ventilation (NIMV) courses are typically delivered through a theoretical approach. They were usually split into theoretical and practical aspects. Besides that, NIMV courses usually lack a clinical and practical approach because real situations where NIMV should be used are hard to replicate. Several authors defend that practical aspects such as dealing with the interface and selecting the ventilator mode and settings are crucial to NIMV adherence in selected patients. We developed a pre-graduate course of NIMV to medical students, using high-fidelity simulation (HFS) scenarios to overcome the usual lack of practical approach in a classical NIMV course.

Project goals
Our major goal was to assess students’ opinion about learning with HFS and about their confidence on managing practical/clinical situations before and after high fidelity scenarios.

Methods
This descriptive study resulted from a simulation-based methodology using HFS, during an NIMV course. Confidential surveys were applied to students before and after HFS sessions. Statistical analysis by SPSS20® software, using Wilcoxon Signed Rank test for non-parametric variables (p<0,05).

Results
A total of 16 students were included in this study, 73% females. Their median age was 23.4±1.36 years. After the course students changed positively their opinion about using HFS in a NIMV course. We found statistically significant difference in 2 of 7 questions, wherein the strongest was “I hope that HFS facilitate the acquisition of new skills in NIMV in my future clinical practice” (p = 0,025) and “I’ve got high expectations related to HFS in a NIMV course” (p = 0,03).

Discussion/Conclusion
We found that adding HFS to a classical NIMV course was important to increase students’ self-perception about their practical knowledge and skills related to NIMV therapy. In the future we want to continue this investigation to verify if HFS in NIMV course objectively traduces better clinical results.
High fidelity simulation in obstetric emergencies – Impact on competences self-assessment

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Background
Obstetric emergencies (OE) are potentially devastating, requiring an effective interdisciplinary approach. High-fidelity simulation (HFS) provides individual and team training on critical events management and can lead to performance improvement in clinical practice. The Obstetric Emergencies Course (OEC) is designed to facilitate training that classical methods do not address.

Project Goal
To assess the impact of OEC on individual self-perception about their skills in managing OE.

Methods
Anonymous surveys were applied before and after OEC in 2012-13. Trainees were asked to self-assess their knowledge and experience in OE and to express their satisfaction and expectations about OEC. Statistical analysis was performed using SPSS® 20.0 and student t test. We considered p ≤ 0.05 as statistically significant.

Results
Of the 54 participants, 20 were anaesthesiologists, 25 obstetricians and 9 nurses. A visual numeric scale (VNS) of 10 points compared self-perceived knowledge and experience in OE before and after OEC (3.7 vs. 5.1, p=0.000) and (4.9 vs. 6, p=0.000), respectively. Regarding the statement “I will change my clinical practice as a result of what I have learnt”, using a 5 items scale (1-totally disagree and 5-strongly agree), 76% strongly agreed and 24% agreed partially. The overall satisfaction with OEC, using a VNS of 10 points, was 8.8 (± 0.845). Regarding simulated clinical cases, 98.1 % of participants (n=52) affirmed being satisfied or very satisfied. About the possibility of including a medical simulation training program in the respective specialty, 62.3 % (n=34) considered mandatory or much necessary, 37.7% (n=20).

Discussion/Conclusions
After OEC participants improved significantly their self-perception of competence (knowledge and experience) for managing OE. This is in agreement with the concept that multidisciplinary HFS can improve critical obstetric events management and maternal and fetal outcome. The intention of the participants to change clinical practice is an important indicator of effective learning.
Integrating Clinical Skills Using Simulation into the Medical Curriculum

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Background
Changes in health care delivery and health professions education (HPE) have presented the educators with considerable challenges in providing suitable clinical experiences. Increased awareness of patient safety, improved technology and increased pressures on educators has promoted simulation as a teaching strategy to complement traditional clinical skills teaching. Patient simulation helps to improve learner’s competence and confidence as well to improve patient safety and in reducing medical errors. There is a shift towards medical practitioners to demonstrate competence in key skills and simulation is being increasingly used for assessment of competence in these skills. For simulation to be effective it has to be well integrated into the curriculum.

Objective
Develop an integrated clinical skills course using simulation for the undergraduate medical curriculum?

Method
A two year structured Clinical skills course which is well integrated with organ system course during the pre-clinical phase of medical curriculum. Clinical situations for teaching and learning purposes are created using mannequins, part-task trainers, simulated patients or computer-generated simulations. A mid-year OSCE and end of the year OSCE using simulation assesses the candidate’s competency to assure that the expected outcomes are achieved.

Results
This course receives good feedback from the students, improving their confidence and competency to perform clinical examinations and clinical procedures. The summative assessment marks makes sure that they achieve the required outcomes in clinical skills. Their performance during the clinical postings ensures that the students have achieved the required competencies.

Conclusion
Simulations provide students with an opportunity to practice their skills in a safe environment, allowing for skill refinement with repeated exposure over time. The success of the course is mainly because of the integration of the clinical skills curriculum using simulation into the undergraduate medical curriculum.

Conflict of interest: NO
Joint Injection/Aspiration Simulation Course for Speciality Trainees in Rheumatology

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WORK IN PROGRESS

BACKGROUND
Simulated training can provide a realistic learning opportunities to prepare for actual patient care. The CMO* [1] and Department of Health UK [2] have both published documents to encourage the use of simulation as a training tool to enhance patient safety. The Rheumatology Training curriculum [3] mandates that trainees should be able to identify the anatomy of the musculoskeletal system and should also gain competencies in joint and soft tissue injections for hand/wrist, elbow, shoulder, hip, knee and ankle/foot joints. We aim to run a simulation course in the Yorkshire and Humber Deanery to aid trainees in achieving these competencies.

Objectives
1. To provide simulated training in joint injections/aspiration for Rheumatology speciality trainees
2. To demonstrate the surface anatomy of the joints using live examples

Methods
Speciality trainees in their first year will be invited to participate in a one day workshop. There will be 4–6 workstations with a maximum of 2 candidates per station. Actors will be used to provide live examples to demonstrate surface anatomy. Experienced faculty member will be present to provide instructions. Pre-course joint injections instruction manual will be sent to candidates. A pre-course lecture on joints anatomy and injections will be given on the day. Evaluations will be carried out using pre and post-course questionnaires. Candidates will be encouraged to complete a self-assessment questionnaire following their first real procedure.

Results
We aim to demonstrate increase in knowledge of anatomy and improved skills in injecting the joints. We hope that the candidates will have increased confidence in carrying out the procedure independently.

Conclusion
We hope to establish a course that runs annually for new Rheumatology trainees, that could potentially be extended to include GP, orthopaedics and emergency medicine trainees.

*CMO=Chief Medical Officer

(References are provided in the poster)

Conflicts of interest: NO
Mapping a course to trainees’ needs? How easy is it when the perceived needs are not in the existent curriculum

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Background
In the United Kingdom, simulation has already become an integral part of training the health care providers of the future. Both, the Chief Medical Officer (1) and the Department of Health (2) of UK have published articles to encourage and promote the use of simulation in training the new generation of doctors.

In medicine, there are courses for foundation year one doctors, core medical trainees and medical registrars, but no formal simulation courses for foundation year two doctors.

Goals
To design a new simulation course for doctors in their second year of postgraduate training (FY2) tailored to their training needs.

Methods
Having reviewed the national curriculum for FY2 trainees, we conducted a focus group interview for FY2 doctors to explore their views on perceived training needs. The trainees were consented and video-recorded. Four questions were asked in the focus group:
– challenging routine clinical encounters,
– difficult emergency clinical encounters,
– challenging communication encounters and
– gaps in existing curriculum requirements.

Results
Trainees expressed confidence in carrying out basic management including acute emergencies. However, there was a general dissatisfaction with the lack of opportunities to gain more experience in dealing with these scenarios at a more advanced level.

The majority of trainees expressed no inhibition in communicating with senior colleagues, or patients apart from complex scenarios.

Finally, the majority of trainees agreed that although their curriculum requirements are achievable, they are really “basic”, and they would like “the extra step”.

Conclusion
A hospital at night (H@N) simulation course was created. Although based on the existent curriculum, the trainees have only telephone senior support. This way, the trainees have the opportunity to experience the “next step” they desire, but in a risk free environment, and without any effects on their curriculum targets.
Promote Clinical Skill Training Forward to Medical Ability Training

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Background
Tianjin Medical University (Tianjin, China) has established a 2000 square meter hospital copy-SimHospital and 500 hours simulation based curriculum to provide medical students with clinical ability training.

Project goals
Physician is a sociologist with professional medical knowledge, and perform professional service. Our goal is to build up a simulation based comprehensive clinical ability training system that not only includes clinical skill, but also knowledge and personal quality. Our program incorporates a large amount of medical humanistic knowledge and quality training.

Method
A new Program has been designed to incorporate simulation based Medicine and Society training courses based on communication and administration. Students take eight weeks consolidate training in SimHospital before internship. Teachers can remotely guide the students and give them feedback and grading, especially attitude evaluation. An online video transmission and mobile grading system including Google Glass were used. More than five hundred students had been trained. We surveyed students and teachers on students’ clinical ability.

Results
Survey shows 94.15% of students approved that simulation based training can improve clinical ability, increase self-confidence while facing patients, and they can adapt hospital workflow quickly; 92% of teachers who are in charge of internship admit that student’s personal clinical skill and team work ability have significantly improved compared with previous classes.

Discussion
Simulation based medical training may enlarge and hold in whole six medical program, and extend to life learning. Knowledge, skill, and attitude are inseparated training, and may benefit each other. Survey shows that students’ communication and management have not improved significantly, which means strengthen training is necessary when students face different patients.

Conclusion
An independent simulation based curriculum will surely be developed into major teaching discipline. Our mission is to nurture students’ medical ability, expand clinical skill training forward to a medical ability complex training.
Simulation of orthopedic surgery

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Background
The pre-clinical education introduces the medical students into the theoretical background of medical disciplines. However the contact with real patients specially in surgery is always stressful. To make this stress lower we introduce the student into the atmosphere of surgery hall using the simulation tools based on the computer science methods.

Project goal
The simulation of the surgery process may be performed according to the standards as it is expected according to the theoretical introduction. However some unexpected failures may happen. Their presentation is limited to specific intra-operative complications only excluding the general ones.

Methods
The basic scenario of properly performed operation of fracture in hips is taken from the real surgery. The failure branches are simulated using the graphic tools to visualize the reaction of the body to the not correct action.

Results/Concepts
The movie form of the event documentation is additionally supported by the graphic schemes explaining the mechanism of the operation action. Each scheme is strictly related to the real picture of the operating table. The aim of “failure” branches is to explain the consequences and solutions to the actions which are not perfect however they may happen in any hospital. These situations are very well known to specialists in this discipline. We prepare the students to find the correct solutions in such situations.

Discussion
The presentation of uncorrect actions raises doubts but it seems to be necessary to show complications and to help finding solutions avoiding the negative consequences. Our presentation is aimed to make the student familiar with such solutions if they unfortunately take place.

Conclusions
The material in form of movie and schemes is aimed to link the knowledge of practical surgery with the knowledge of anatomy. Material is prepared for students after pre-clinical education and before the clinical one.

Conflict of interest: NO
Simulation Training in Intensive Care Medicine: Does the course meet trainees’ expectations and learning needs?

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Background
The National Training Curriculum in Anaesthesia overseen by the College of Anaesthetists entails acquiring expertise in Intensive Care Medicine (ICM). The College runs a comprehensive simulation programme, including ICM among its mandatory components. The ICM course covers 6 clinical scenarios: aspiration and pulmonary sepsis progressing to septic shock, head injury with raised ICP, acute coronary event progressing to cardiac arrest and post-resuscitation care, conducting brain death tests and communication regarding organ donation, tricyclic overdose, and management of burns and inhalational injury.

Project goals
1. To determine whether the actual ICM simulation scenarios are relevant to trainees’ self-perceived learning needs; 2. To evaluate trainee satisfaction with the course.

Methods
We reviewed the pre- and post-course evaluation questionnaires of 52 trainees who have participated in 5 ICM courses since 2012. Of these, a subgroup of 22 participants were asked to list at least 5 ICM scenarios which they considered relevant to their training needs. All participants were asked to score their satisfaction with the course content and delivery on a 5-point Likert scale.

Results
Trainees most commonly listed the following scenarios as relevant to their training needs: 1. Respiratory failure (81.81%); 2. Septic shock (72.72%); 3. Head injury (63.63%); 4. Trauma (50%); 5. Cardio-pulmonary resuscitation (31.8%); 6. Acute kidney injury (31.81%); 7. Toxicology (31.8%) and 8. Acute coronary syndrome (31.81%). Of the above, 1-3, 5, 7 and 8 are all covered in the ICM course. Median satisfaction scores for relevance, content and methods of delivery were excellent.

Conclusion
Our current ICM course and the choice of actual simulated scenarios match trainees’ expectations and perceived learning needs. Since trainees appear to place extensive weight on training in the management of respiratory failure (81.81%), we have recently acquired a lung simulator, which will improve our ability to simulate the acute respiratory failure.
Six steps to make your scenario more interesting and realistic

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Background
Despite the fact that the modern 3D simulators have basic scenarios the individual approach and realism of simulation are required to make the learning process interesting and effective.

Project goals
1. To adjust scenario to trainee’s specialty.
2. To enhance realism during scenario conducting.

Methods
1. Development of different scenario versions to adjust to trainee’s specialty.
2. Role description for all participants.
   - Information for assistant (mannequin preparation; medical equipment and instrument preparation; special materials and drugs preparation).
   - Information for operator (the scenario stages, such as the physiological parameters of a patient-simulator; duration of stages; variants of transition to the next stage).
   - Trainer’s and trainee’s duties and objectives.
3. Utilizing of real medical equipment and drug imitation.
4. Using of additional information (analysis results, X-ray and ultrasound, etc.)
5. To optimize debriefing process during simulation audio video control is conducted. Moreover there is a checklist for every trainee’s group for assessment of trainee’s actions.
6. Trainees have opportunities of retraining.

Results
We have developed three version of the scenario “Acute blood loss - hemorrhagic shock” for surgeons, internists and obstetricians. 92 % of trainees, who took part in this training at our center in 2012 (n=458), assessed the scenario as more interesting and realistic than basic one.

Conclusion
Step 1 – adaptation of a scenario to trainee’s specialization.
Step 2 – describing participant’s duties in details to prepare the simulation process.
Step 3 – utilizing of the real medical equipment and drug imitations to provide lifelike simulation training.
Step 4 – involving qualified physicians’ help for creating a scenario.
Step 5 – conducting audio video control and using a checklist to make debriefing more accurate.

Conflicts of interest: NO
TIME Learning Platform – an Approach for Designing a Web-Based 3d Learning Portal for Pre-med Students

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BACKGROUND
The TIME (Transformation In Medical Education) Initiative is a student-centered, clinically focused program designed to increase the effectiveness of medical education while shortening its duration. The TIME Learning Platform is a 3D game-based simulation portal to support the TIME Initiative Program. The TIME Learning Platform focuses on researching the effectiveness of interactive gameplay for teaching communication skills and electronic professionalism to the premed students under the TIME Initiative Program.

OBJECTIVE
The TIME Learning Platform includes three simulation episodes: a video that introduces students to the educational concepts covered, and two interactive gameplay scenarios that teach portions of a communication skills and electronic professionalism curriculum. The communications episode is designed to allow students to practice demonstrating rapport, empathy and active listening during a medical interview with a virtual patient and his wife. The professionalism episode covers behavior in electronic communications through a fake social media site and simulates potential harmful consequences to patient privacy. The two interactive scenarios are linked to a web-based discussion board that facilitates team interaction and reflection.

METHODS
Interviews were conducted with Subject Matter Experts to determine priorities of the curriculum to be taught.

RESULTS/OUTCOMES/IMPROVEMENTS
The design and development of two 3D gameplay episodes are the result of interviews with Subject Matter Experts who identified four educational outcomes as part of the emphasis on professional identify formation. The episodes allow students to practice improving professional behavior through a time-sensitive medical interview and a simulated online social media conversation.

CONCLUSION
The TIME Learning Platform offers numerous benefits: our development is scalable, dynamically updatable, and allows for the addition of more learning modules.

An analysis of students’ gameplay, discussion board activity and instructor feedback will be used to inform a methodology for developing an assessment framework for a game-based simulation to complement face-to-face clinical training in medical school.

Conflicts of interest: NO
Use case diagram for interpretation of informational processes in clinical scenarios

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Background
Technical support of the clinical scenarios in training centers is quite difficult. Using modern methods of system analysis allow dividing a complex problem into several simple tasks.

Project goals
To develop an information model of the clinical scenario, by use-case diagram of uml

Methods
The Unified Modeling Language - UML - is most-used specification, and the way the world models not only application structure, but also business process and behavior. A use case diagram can portray the different types of users of a system and the various ways that they interact with the system.

Results
The informational model of clinical scenario was developed. Model includes 4 actors: operator, instructor, assistant, student - and 20 use-cases: starting the script, video recording, visualization of medical data, voice control, briefing, assessment of actions, debriefing, presentation of theoretical material, equipment of room, safety rules, treatment assignment, preliminary test, medical examination, diagnosis, care delivery, treatment, appointment of manipulation, conduction of manipulation, evaluation of the quality of treatment, recommendations.

Conclusion
The information model allows us to trace the behavior of each actor in the simulation and to provide technical requirements for each use-case. For example, visualization of medical data - in this use-case involves two types of actors: operator and students. Student asks the operator to provide medical paraclinical data of virtual patient, on the monitor. For technical support it requires two networked computers preloaded with the medical HL7-database and the DICOM-server.

Conflicts of interest: NO
The Development of High-Fidelity Mannequin-Based Simulation in Taiwan

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The increased complexity of health care, especially in critical emergent medical events, presents great challenges to clinical education. High-fidelity mannequin-based simulation (HFMS) has been recognized to be effective and essential in educating physicians in their clinical competency. As it is high cost and manpower consuming, implementing HFMS in Taiwan, which contains a highly efficient healthcare system, has been considered difficult. This study is to report the status of HFMS in medical education and the driving factors for its uses in Taiwan.

Methods
The information on medical simulation/clinical skill center was first retrieved from each hospital website. The mannequin sale records from manufacturers were then collected for confirmation. From the existing simulation facilities, a questionnaire was distributed to the directors of the clinical skill centers, which inquired about the equipment, personnel, financial supports and the program. Finally, the driving factors and the barriers to implement a HFMS program were identified.

Results
The questionnaire response rate was 45.7% (16/35). There were a total of 70 full-scale mannequins among 34 healthcare institutions. In 90% (35/40) of the survey programs, HFMS was an essential component of their clinical curriculum. 43% (17/40) of the programs had publications on simulation, while 67% (27/40) conducted inter-professional training. The barriers to successful simulation are mainly due to the lack of manpower and poor recognition of the faculties’ efforts. The driving factors that pushed the use of HFMS included concerns of patient safety and healthcare quality, research/educational grants and the requirement of simulation education in hospital accreditation standards. National simulation competition also played a significant role in promoting the use of HFMS.

Conclusion
FMS has been widely used in clinical training, assessment and educational research in Taiwan. The success of its application can be contributed to government policy and high level of supports from faculties and institutions in improving healthcare quality and patient safety.

Conflict of interest: NO
The establishment of simulation centers in four perinatal hospitals in Ukraine

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Background
Medical education based on case scenarios and on simulation is weakly developed and fragmented in Ukraine. In particular, the evolution of perinatal care in the country demands more effective approaches to continuous education of personnel. More than 87% of obstetricians confirm they need such training (based on survey at Annual OB/GYN congress in Sept, 2013). Especially in a multidisciplinary field such as perinatology, team oriented practical training proved to contribute to better clinical outcomes.

Objective
To assure the access to enhanced training for perinatal teams through the establishment of simulation centers in four perinatal hospitals in Ukraine.

Methods
Comprehensive initiative had been planned and implemented to build up capacity for simulation education:
1) Design phase: development of a concept and strategic planning of the initiative.
2) Professional capacity building: nomination of suitable perinatal professionals (trainers’ teams), trainings and follow up visits.
3) Regulations: decree regarding placement of the centers, team creation and load, involvement of participants.
4) Infrastructure: Specification, elaboration and procurement of the manikin-type simulators, selection and modification of premises, provision of basic equipment and consumables.
5) Course development: selection of topics, procurement and development of scenarios, development of course structure and materials.

Project duration from the procurement of manikins till the first trainings for participants was less than 1 year (2013). Project was done as sub-initiative within Swiss-Ukrainian Mother and Child Health Programme.

Results and discussion
Simulation centers were established in four regional perinatal hospitals: Crimea, Ivano-Frankivsk, Vinnytsia, and Volyn.

In average, each center provides two 1-day courses per week, covering 8-14 professionals a week. Observation of simulation proves that participants improve from total failure to full accomplishment of scenario. Colleagues of participants also observe changes in their routine practice.

Conclusion
Results increased the interest for simulation based education in Ukraine and created successful example of center establishment; positive feedback of participants contributed into the overall picture.

Conflicts of interest: NO
Assessment of team performance in obstetrics: a systematic review of the best available tools

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Background
Lack of non-technical skills has been identified as a major contributor for adverse outcomes in health care (Kohn, 2007). In obstetrics, simulation-based team training has been implemented to improve these skills. Although some of these skills are exchangeable between medical contexts, domain specific non-technical skills are identified (Bahl, 2010; Morgan, 2007). To objectively evaluate these skills, a validated and reliable assessment tool for obstetric team performance is required.

Objective
To determine the best available assessment tool to objectively evaluate team performance in obstetrics.

Methods
A systematic search was conducted until 17th of February 2014 in Medline and The Cochrane Library using medical subject headings (MeSH) and free terms. Articles describing a validated assessment tool for team performance in obstetrics were included. Abstracts, and if necessary, full articles and references, were reviewed by two independent reviewers. Disagreements between reviewers were resolved by discussion or consultation of a third reviewer.

Results
The search resulted in 86 articles and 15 additional references. Seven articles were included of which two were excluded, because they were specifically validated during operation and handovers (Beard, 2011; Pezzolesi 2013). The remaining five articles presented six tools developed or validated in obstetric simulation. Construct validity was identified in two tools (Guise, 2008; Siassakos 2011), internal consistency in two tools and test reliability in one tool (Morgan; 2012), inter-rater reliability in five tools (Guise, 2008; Morgan, 2007; Morgan, 2012), and usability was appointed in three tools (Guise 2008; Morgan 2012). The construct validity of the Clinical Teamwork Scale (CTS) is defined as correlation between score and pre-defined teamwork level ranges from 60-82% in combination with an intraclass correlation of 0.98 (95%-Confidence Interval(CI) 0.97–0.99) and usability, defined by completeness of filled items, of 88.9–100.0% (Guise, 2008).

Conclusions
We recommend the CTS for the objective assessment of team performance in obstetrics.

Conflicts of interest: NO
Assessors in OSCE – where do we stand?

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Background

Objective structured clinical examination (OSCE) is one of the most valid, reliable and effective tools for assessment of clinical skills, because the competency of students is assessed based on objective testing through direct observation. At our faculty, this is a relatively new form of examination. First OSCE was implemented in November 2010 in elective course Selected topics and novelties in propaedeutics.

Objective

The aim of our research was to evaluate competences of OSCE assessors.

Methods

We recorded five doctors performing cardiovascular examination (CVE) and intravenous cannulation (IV). Peer tutors (N=21) and teachers (N=6) assessed filmed procedures (F) using validated checklists.

Results

Peer tutors’ average points in assessing CVE were: F1 40.7±0.8, F2 38.9±1.3, F3 38.2±1.9, F4 31.7±2.2, F5 38±1.5 out of 45 points and F1 25.9±3.6, F2 28.3±2.8, F3 26.2±2.7, F4 29.3±1.9, F5 27.4±2.1 out of 34 points for IV. Within one standard deviation (SD) were 75.2% of results for CVE and 78.2% for IV, 21% and 15.1% within two and 3.8% and 6.8% were distant more than two SDs, respectively. Altogether there were 7 rigorous assessors. Teachers assessed three films (F2, F3, F5) of CVE (teachers’ average points: F2 38±0.7, F3 36.8±1.5, F5 38.8±2; <1 SD 77.8%, <2 SD 22.2%). There was significant difference between peer tutors’ and teachers’ assessment only for F2 (p=0.0025).

Out of statistical results we concluded that used checklists should be elaborated and more accurate instructions should be given to the assessors.

Conclusion

An important goal of medical faculties should be providing fair assessment of student achievement and thus ensuring patient safety by allowing only competent individuals to progress during studies. At OSCE, all assessors are not equally experienced. Therefore, continual internal evaluation of assessment quality is needed as well as cohesive program to train peer tutors and teachers on assessment.
Does prior training of evaluators change their rating in a role play?

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Notation in role play can be used for certification evaluation. We wanted to know if the assessor prior training modified his/her evaluation.

Material and methods
A role-playing session was organized in the framework of a master training about difficult relationships with patients. Six students, all health professionals, should give bad news concerning a patient to his/her family represented by two to three professional comedians. The learner was filmed during the role play which was shown to spectators who were installed in a separate room. The comedians had previously received a description of the situation and were able to understand all technical questions. Learners have been briefed just before the role play they had to carry. Once the scenario was played (10-15’), spectators (S) and comedians, either they were actors (CA) or simply spectators (CS), assessed the performance of the learner through a form of 5 questions to be answered using a 6 levels Likert scale. The questionnaires were filled out by S, CS and CA. Statistical analysis: non-parametric tests.

Results
Ten responses were obtained for each of the six situations. By grouping the answers to the 5 questions the assessment shown to be significantly different between groups (p = 0.002, Kruskal-Wallis), in particular between L and CS. Stratification issues showed that significant differences occurred for questions 1 and 2 (Table).

Table.

<table>
<thead>
<tr>
<th>Question</th>
<th>S Med</th>
<th>min-max</th>
<th>CS Med</th>
<th>min-max</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 : Start the discussion</td>
<td>5</td>
<td>[3-5.5]</td>
<td>4</td>
<td>[3-5]</td>
<td>0.009</td>
</tr>
<tr>
<td>Q2 : Provide the new</td>
<td>5</td>
<td>[4-5.5]</td>
<td>4</td>
<td>[3-5]</td>
<td>0.013</td>
</tr>
<tr>
<td>Q3 : Explain the causes</td>
<td>5</td>
<td>[3-6]</td>
<td>4</td>
<td>[3-5]</td>
<td>NS</td>
</tr>
<tr>
<td>Q4 : Give a perspective</td>
<td>5</td>
<td>[3-6]</td>
<td>4</td>
<td>[3-5]</td>
<td>NS</td>
</tr>
<tr>
<td>Q5 : General Behavior</td>
<td>5</td>
<td>[4-6]</td>
<td>4</td>
<td>[4-6]</td>
<td>NS</td>
</tr>
</tbody>
</table>

Conclusion
The evaluation of a performance in a role play is significantly influenced by the prior training of assessors.

Conflicts of interest: NO
Objective assessment of laparoscopy skills

Kossovich M.
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BACKGROUND
The majority of Russian surgical hospitals are equipped with the endosurgical technics. Despite of this high level of equipment the number of laparoscopy procedures is relatively low.

GOAL
We need to implement the training system to enlarge the quantity of general surgeons able to perform laparoscopy. Surgeons have to be trained and assessed to become approved for real surgery.

METHOD
The most common laparoscopy interventions are cholecystectomy and appendectomy. To acquire skills that are necessary for these procedures the following training modules can be used: Peg Transfer, Pattern Cut, Clip-applying and Endoloop. These tasks have been offered in the skill course MISTEL among with the other three. However, we believe that the others are not applicable in appendectomy and cholecystectomy.

Additionally, young specialists have to be proved in theory (laparoscopy instruments and units, topography anatomy, possible complications, etc.).

RESULTS
For fast-track of endosurgeons training 4 practical and 3 theoretical tasks are offered.

CONCLUSION
The offered system can create motivation of endosurgical training, bring objective methods into assessment and increase number of surgeons able to operate via laparoscopy approach.

Conflicts of interest: NO
OSCE in Gynecology and Obstetrics at Tbilisi State Medical University

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Tbilisi State Medical University

Background
Objective Structured Clinical Examination (OSCE) is the excellent modern method to evaluate medical students clinical skills and competencies. Tbilisi State Medical University (TSMU) conducts OSCE-type testing for last 5 years, it was first carried out by Gynecology and Obstetrics Department at TSMU.

Objective
TSMU Gynecology/Obstetrics Department carried out OSCE at TSMU Clinical Skills Center for 4th year Medical 262 students. Exam task included the estimation of students theoretical and practical skills in combination. In details, the students were examined in following topics:
1. Gynecologic and Obstetric manipulations:
   - Gynecologic Examination
   - Obstetrical Examination
   - IUD (Intra Uterine Device) Insertion
2. Communication with Standardized Patient
3. Theoretical Knowledge:
   - Short answer questions
   - MCQ (50 tests)

Methods
Before the exam, the students had practice the similar type of gynecologic and obstetric procedures during practical courses and "independent practice week" in TSMU Clinical Skills Center, so that all of them had equal chance and possibility to pass the testing. Each student was given 2 hours for OSCE, comprised of 50 min. for MCQ, 55 min. for OSCE Stations and 15 min. for logistics. During the full time of testing 32 students could pass the exam simultaneously, as there were 2 typical station circles for 16 students during approximately 1 hour, while another 16 students were writing the MCQ parallel to the OSCE station, after an hour they simply change places.
All the results were calculated, summarized and correlated; also, the manipulation process was recorded through Video Control System.

Results/Conclusion
The OSCE results were quite promising, as there were only two students, who failed. During the post-exam debriefing students admit that they have excellent chance to reveal their skills in best ways, also the statistic curve of the students final score is much better as it was before when they were tested only by MCQ-s.

Conflicts of interest: NO
Simulation –Based Learning In Post Graduate Nursing Advanced Life Support Training Program: Utilizing a ‘flipped classroom’ method

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Acibadem University CASE Istanbul Turkey

Background
In current ALS training programs for postgraduate nurses limited time is available for simulation sessions. Alternative modules of education include ‘flipped classroom methodology’ which is blended learning paradigm and can arrange optimal performance by increasing time for simulation sessions.

Project goals
Aim of study is performance assessment of postgraduate nurses in ALS scenarios after a training program utilizing flipped classroom methodology.

Method
60 post graduate nurses hadn’t taken part in ALS training programs before were included in this study. A curriculum that included ALS course objectives, cases and debriefing was developed for simulation-based 8 hour courses. One week before ALS training, e-learning modules were sent to participants. Following task trainer sessions they participated in postoperative cardiopulmonary arrest scenarios. 10 groups : each group consisted of 6 participants ; 3 of them acted as patient’s primary care nurses and others as blue code members. Performances of each group were evaluated by OSCE.

Results/concepts
Primary care nurses: 100% of all groups called blue code in <30 sec. Crash card was brought < 1 min. 70% of groups checked pulse but 71% of them done this <30sec. None of primary care nurses prepared proper position for CPR and began cardiac compressions until blue code arrival.
Blue code team: 40% of groups took the patient over, but methodology was not appropriate in 90%. Cardiac compressions were proper in each group but in 40% compression frequency was <100/min. 30% of groups applied cardiac compressions without interruption. 70% of groups recognized rhythm (VF). All of them applied proper defibrillation. 70% of them intubated the patient but only 14% of them were performed in <20 sec.

Discussion
Advanced blended learning is an effective methodology for new curriculum development.

Conclusion
Flipped classroom technique provides better performance by increasing time for simulation sessions compared to current ALS courses.
Simulation as a Tool for Improving Infant Bone Marrow Puncture Skills among Four-Grade Pediatric Medical Students

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Background
Simulation-based training promotes skill development in a confidentiality and non-threatening atmosphere before patient contact; therefore it has been widely adopted as a training and assessment tool in medical education. Generally, senior-grade pediatric medical students have few opportunities to perform infant bone marrow puncture (IBMP) for children. Enhancing the quality of IBMP is a key factor to improving outcomes for blood disease, Infectious disease and some parasitic diseases in children and requires effective training strategies. This study compares the IBMP skills of a group of four-grade pediatric medical students trained using SimBaby (Laerdal, Norway) with a group of four-grade pediatric medical students trained using the traditional experiential methods (audio & video [AV] teaching plus demonstration), prior to attending one-year internship.

Project goals
High-fidelity simulation can be used to improve Infant Bone Marrow Puncture Skills among Four-Grade Pediatric Medical Students.

Methods
Two groups of four-grade pediatric medical students (n=100) were compared before attending one-year internship. One group (n=50) received infant bone marrow puncture skills training using SimBaby (i.e., the simulation-trained [ST] group). The second group (n=50) received traditional AV training plus demonstration (i.e., the traditionally trained [TT] group). A questionnaire was used to evaluate the effect of two different training methods. Questionnaire data and test scores were analyzed using SPSS version 16.0, p<0.05 was accepted as reliable and used in the data analysis.

Results
There are no differences in the knowledge test between ST group and TT group (p>0.05); Significant differences in the operation test between ST group and TT group were observed (p<0.05). After implementation of the simulation-based training, the puncture skills improved significantly, and the satisfaction degree of the students with stimulation-based training of infant bone marrow puncture was increased.

Discussion
Traditional teaching adopting multimedia teaching plus demonstration was not sufficient to achieve proficiency in professional IBMP training. This small study supports the acceptance of high-fidelity simulation as an educational tool within undergraduate clinical skills training curriculums.

Conclusions
Simulation-based IBMP teaching is more practicality and effective in training senior-grade pediatric medical students than the traditional experiential method; it can improve in participants’ IBMP skills and confidence.

Conflicts of interest: NO
Simulation in obstetric emergencies as a multidisciplinary training process

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Background
Simulation is a practical approach to the acquisition of task-oriented and behavioral skills.

Project goals
To assess the importance of multidisciplinary team training in obstetric emergencies.

Method
A number of 11 courses of simulation were spent between July-December 2014. The simulation was done in the Center of Simulation, Institute of Mother and Child, Chisinau, Republic of Moldova. Teams were multidisciplinary and included specialists in obstetrics, anesthesiology, midwives and nurses in anesthesiology and resuscitation. Five clinical scenarios were presented: fetal distress and instrumental birth (CTG assessment, the use of vacuum extraction and forceps), shoulder dystocia, eclampsia, postpartum hemorrhage and maternal resuscitation. A new cognitive model of learning was implemented: factual aspect (to say, to show how to do it) and conceptual aspect (to say, to show why or for what it is necessary). The anonymous survey that included 43 questions, was developed to assess the degree of satisfaction of medical staff involved in the simulation. Five possible answers (strongly agree, agree, partially agree, partially disagree, strongly disagree) were proposed. 78 participants were interviewed: 41 physicians (52.6%) and 37 nurses (47.4%).

Results
Participants specified that the proposed scenarios were well adapted and close to reality (78 cases – 100%). They reported high degree of correlation between topics of theoretical courses and its practical implementation in scenarios (70 cases – 89.7%). In all cases, people have certainly highlighted the need and importance of communication between team members to achieve results with maximum efficiency. Simulation in obstetric emergencies changed the vision about professional training and different way to approach the working process (77 people – 98.7%).

Conclusion
The simulation allowed the implementation of multidisciplinary team training programs and education of medical staff in the Republic of Moldova. This made prompt decisions in obstetric emergencies and developed patient safety.

Conflicts of interest: NO
Simulation training in emergency setting during Medical School: the “Genoa University” experience in the last 3 years

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¹ U.O.C Anesthesia and Intensiva Care, IRCCS San Martino – IST, Genoa, Italy; ² Department of Surgical Sciences and Integrated Diagnostics, University of Genoa, Genoa, Italy; ³ Regional Service 118 Liguria, Genoa, Italy; ⁴ Centro di simulazione scuola di scienze mediche e farmaceutiche Università agli studi di Genova

Background
Knowledge and knowhow are usually achieved in several steps. Simulation is crucial in order to drive students of medicine from theoretical to practical knowledge according to different clinical contexts.

Project goals
To evaluate the degree of compliance and satisfaction of the new training proposal.

Methods
During Medical School 2011–2012, 2012–2013, 2013–2014; 500 students at the University of Genoa have experienced 4 hours of simulation training program. The training sessions included emergency and urgency.

The teams of students were in charge of managing several issues (cardiac arrest, managing arrhythmias, airway in emergency and first assessment in trauma). Two instructors were driving events and debriefing.

After the training sessions each student received one questionnaire divided into two parts: 1 the quality of the teaching (has it been useful?) – 2 personal perception of the training sessions (how did you feel during the trainings?). Students were asked to fill a specific questionnaire with multiple choice answers and give free comments.

Results
We have sent 500 questionnaires and we received 296 back (Table 1). More than half of the students 50% expressed their willingness to have more hours of simulations.

<table>
<thead>
<tr>
<th>Question</th>
<th>Excellent</th>
<th>Good</th>
<th>Sufficient</th>
<th>Scarce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you reached your goals?</td>
<td>234 (79.05%)</td>
<td>61 (20.61%)</td>
<td>1 (0.34%)</td>
<td>0</td>
</tr>
<tr>
<td>Were the simulations in line with your theoretical knowledge?</td>
<td>221 (75.33%)</td>
<td>71 (24.00%)</td>
<td>2 (0.67%)</td>
<td>0</td>
</tr>
<tr>
<td>Do you feel more confident facing real events?</td>
<td>164 (55.40%)</td>
<td>124 (41.90%)</td>
<td>8 (2.7%)</td>
<td>0</td>
</tr>
<tr>
<td>Has the team work been useful?</td>
<td>225 (76.00%)</td>
<td>71 (24.00%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Did you feel confident during the training sessions?</td>
<td>266 (89.86%)</td>
<td>29 (9.8%)</td>
<td>1 (0.34%)</td>
<td>0</td>
</tr>
<tr>
<td>Have you been emotionally involved?</td>
<td>232 (78.38%)</td>
<td>50 (16.89%)</td>
<td>13 (4.39%)</td>
<td>1 (0.34%)</td>
</tr>
</tbody>
</table>

Conclusion
The introduction of simulation as didactic and training method during Medical School has been very appreciated. Most of the students appreciate the chance to test their theoretical and practical knowledge based a clinical situation.

Conflicts of interest: NO
The effect of multi-professional simulation-based obstetric team training on patient satisfaction and perceived quality of care during pregnancy and childbirth.

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BACKGROUND

Besides medical outcome, patient satisfaction as an indicator of quality of care is becoming more and more important (Lledo et al., 2000; Wildman et al., 2003). The Netherlands have a unique obstetric system with a primary care level represented by independent community midwives providing care to women with low-risk pregnancies. Due to the complexity of the leveled obstetric care system (Posthumus et al., 2013), pregnant women often see different care providers, which may interfere with a personal treatment and continuity of care, and might negatively influence women’s satisfaction with received care. Multi-professional simulation-based team training should improve communication and collaboration between different levels of obstetric care and contribute to better perinatal outcome and patient satisfaction.

OBJECTIVE

This study aims to measure the effect of simulation-based team training on quality of care as perceived by women who recently gave birth.

METHODS

An interventional study with simulation-based team training in the area of a hospital in the Netherlands. In five groups, 75 health professionals were trained in a medical simulation centre. The groups represented the chain of obstetric care consisting of: ambulance personnel, maternity nurses, community midwives, nurses, hospital midwives, residents, and gynaecologists. The training focused on process management of the four main causes of perinatal mortality, and contained elements of deliberate practice and crew resource management (CRM).

To measure quality of care as perceived by women, the 25-item Pregnancy & Childbirth Questionnaire (PCQ, Truijens et al., 2014) with three subscales (Cronbach’s alpha = 0.92), was assessed at six weeks postpartum.

RESULTS

At baseline, a PCQ mean total score of 103.8 [11.6] (M[SD]) was measured at six weeks postpartum (N=76).

After the team training intervention, a higher PCQ total score of 109.1 [10.9] was reported (N=68), indicating a significant increase in patient satisfaction (t= -2.86, p= .005).

CONCLUSIONS

Multi-professional simulation-based obstetric team training improves quality of care as perceived by women who recently gave birth.

Conflicts of interest: NO
A Course for Caregivers at the Simulation Centre: A Phenomenological Approach

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Annamaria Bagnasco
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Background
The approach presented by the Conceptual Method of the “Caregiver Burden” is centred on caregivers and on their psychological and physical burden, who in this study are the family members and formal carers that take care of chronically-ill patients.

Goals
To identify the needs of the caregivers and use them to design a course focusing on the needs of patients and their families.

Method
We adopted the phenomenological approach to conduct an in-depth exploration of the most important phenomena in the fields of nursing practice, education, organization, and from the perspective of the patients’ lived experiences. The Focus Group is one of the most appropriate methods (along with interviews) for phenomenological studies that pursue a constructivist vision of reality.

Results
Among Informal Caregivers, emerged the need for a more effective communication between carers and professionals, and the need to provide a better continuum of care was common to all participants. With regard to Formal Caregivers, they confirmed the need to: gain more awareness and confidence in practice, but also sensitivity and empathy; learn how to use equipment very well, to increase patient safety; refresh their knowledge and the specific technical skills. With regard to Confidence, Informal Caregivers declared that continuum of care also contributes to improve confidence both in patients and in caregivers, thanks to a continued relationship across time.

Conclusion
This study confirmed the importance of continuum of care both for patients and caregivers. For patients, discontinuity meant meeting always new caregivers who always keep on asking the same questions. In addition, as the patients grow older, their needs change. At the end of this course, all caregivers felt much more confident.

Conflicts of interest: NO
In situ simulation programme for CRM training in OR

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Background
Anesthesiology has been established as a model of patient safety. These safety improvements can be owed, in part, to training by means of medical simulation, which is an essential tool for clinical learning and practice and technique improvement, without potential risks for the patient [1]. In the last years, studies have shown the importance of simulation in the actual clinical environment (in situ simulation) in improving team work and preventing adverse events [2].

Objective
In order to implement a simulation programme in our institution, two experimental training sessions were conducted in the Operating Room on February and July of 2012. Our aim was to evaluate the acceptance of the simulation sessions by the health professionals and the need for a crisis resource management (CRM) training programme.

Methods
In each session, two clinical scenarios of medical emergencies were presented. In each scenario, two anesthesiologists and two nurses participated actively. The other health professionals observed the simulation exercise. The sessions were also videotaped and reviewed at the debriefing session, focusing on the learning objectives and applying the CRM principles.

Results
Health professionals recognized the benefits of in situ simulation in identifying latent safety threats, detecting potential system and equipment issues and improving response time within emergency settings, as well as assessing our local protocols for critically ill patients. However, some participants found it to be a stressful environment and feared judgement from their peers. Our Hospital Administration perceived the importance of these exercises and in situ clinical simulation sessions will be included in our institution’s educational programme.

Conclusions
Medical training in simulation centers is becoming more and more popular. In situ simulation is a different approach that allows teams to solve own problems and test protocols in their clinical environment, improving performance and safety in real high-risk events.
In situ simulation session: an opportunity to enhance teamwork and leadership skills

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Background
In situ simulation can provide a realistic environment for participants. It can also help to identify safety issues [1]. An in situ simulation exercise in Gynaecology operating theater that included theater scrub nurses and anesthetists was thus organised.

Objectives:
1. To use in situ simulation to enhance team working and leadership skills among theatre staff
2. To identify safety issues within the real live environment

Methods
Anaesthetic registrars, theatre scrub nurses, perioperative nurse practitioners were invited to participate in the session. The scenario was based on a routine gynaecology operation that culminated in a cardiac arrest using a high fidelity simulator. Some of the candidates were assigned roles, which they were unfamiliar with to enhance understanding of each other roles. Candidates were filmed for video debriefing and feedback. Candidates completed Pre and post session evaluation sheets.

Results
All candidates agreed that simulation could provide a powerful tool to enhance human factors training. Candidates reported an overall increase in confidence in recognising an acute emergency and ability to lead in a crisis. There was a notable increase confidence in communicating with team members and prioritising tasks in an acute emergency

Conclusion
In situ simulation can provide insight to participants to look for potential hazards at their routine workplace. Routine simulation exercises should be utilised to aid in the reduction of medical error and to provide safer patient care.

Conflicts of interest: NO
Multidisciplinary In-situ Theatre Simulation Course

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Background
The operating theatre is a complex, multi-professional environment where successful implementation of both clinical and non-technical skills (NTS) can make a positive impact on patient safety. Full immersion in-situ simulation training may be a useful way of improving how multidisciplinary teams’ function in their own environment to the benefit of patient care.

Project goal
To promote patient safety and improve team working through the use of cost effective simulation training for theatre staff.

Method
Learning outcomes were designed for each specific team and based on critical incident reports and real events occurring in theatre, with particular focus on the WHO safety checklist. Monthly simulation workshops were introduced at Guy’s and St Thomas’ operating theatres. Each session included an introduction to human factors and NTS and discussion of the video: “Just a Routine Operation”. These were followed by a simulation scenario and debrief session facilitated by a multi-disciplinary faculty. Where time permitted, participants were offered the opportunity to repeat their scenario for further educational reinforcement. Course evaluation was obtained using a 6-point Likert scale questionnaire at the end of each workshop.

Results/concepts
So far, thirty candidates have participated including scrub nurses, anaesthetic assistants, anaesthetists and surgeons. All participants felt that the course matched their learning needs and would impact on their future clinical practice for the benefit of patient care (≥ 5 score). 90% of candidates requested regular theatre simulation training at least every three months.

Discussion and Conclusion:
Although labour intensive; cost-effective, multi-disciplinary simulation training within the workplace can help theatre teams’ address clinical and team working deficiencies. With well constructed learning outcomes, robust and tailored educational packages can be successfully delivered to theatre staff. It can successfully raise awareness of NTS and highlight the importance of the WHO safety checklist for the continued improvement of patient safety.
Simulation At Home – Improving Delivery for Community Midwives

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BACKGROUND

Midwives are trained to manage obstetric and neonatal emergencies in two contrasting environments – on labour ward and at home deliveries. In the hospital setting, the midwife can easily access equipment, medications and expert assistance. In the home environment however, any emergency must be managed with limited resources in a remote location. Most midwifery training relating to emergency management is hospital-orientated with regards to equipment and strategy. There is little familiarisation with managing emergencies specifically in the home setting, or the key components of “out-of-hospital” emergency preparedness.

Planned home births currently make up 3% of the total number; this is expected to increase, as women with uncomplicated pregnancies have been shown to have good outcomes delivering at home.

PROJECT GOALS

- Conduct a pilot needs-analysis using mobile simulation to probe emergency preparedness among community midwives;
- Develop and evaluate a training model based on this needs-analysis;
- Identify key system issues such as minimum equipment standards or handover.

METHODS

- Full-immersion mobile simulation of commonly-encountered emergencies in a realistic home-birth environment.
- Participatory Action Research (PAR) model used, involving the multi-disciplinary health team in repeated cycles of needs-analysis, planning, implementing actions and evaluation.

RESULTS

- Identified educational needs in areas of knowledge, procedural and non-technical skills in the out-of-hospital environment.
- Designed a package for future training of community midwives, including practical application of mobile simulation for home birth.
- Developed new skills among our multi-disciplinary team to design and deliver obstetric simulations in the community.

CONCLUSIONS

- Community midwives need to adapt their expertise to work in a non-hospital environment; this has implications for their training.
- Multi-disciplinary approach to community-based simulations created new opportunities for inter-professional learning.
- Cyclical (PAR) model is agile in situations of complexity and can be revised and refined over time.

Conflicts of interest: NO
The role of simulation in facilitating return to work after prolonged absence

Nimalan N
Imperial College NHS trust

Background
Anaesthetists can be away from normal working hours for a variety of reasons and the period of absence can vary from a few months to years. Safe integration back into clinical practice is imperative to ensure patient safety. Various courses exist to aid a safe return to work.

Project goals
Comparing simulation courses vs alternative courses with regard to
- trainee satisfaction
- skills gained in order to aid safe return to clinical practice.
- difference in clinical complications in trainees
- confidence levels

Method
A trainee survey was sent to all anaesthetists in London who had taken prolonged leave over the last two years. Data was collected on reason for leave, length of time away, simulation & lecture courses attended whilst on leave, trainee feedback on the benefits of simulations vs lecture courses, confidence levels on return to work and any increase in clinical complications on return.

Results
There were 72 responders - of which 42 attended simulation courses and 30 attended lecture based course. The trainees who attended simulation courses were found be more confident on return to work and suffered far less clinical complications than those who attended lecture courses. Comments included that simulation courses provided the human factors not just the clinical knowledge required to be a safe anaesthetist. It also allowed management and leadership skills to be refreshed prior to returning to work.

Discussion
Simulation courses offered not just clinical knowledge but leadership skills, human factors teaching and simulated working environment all of which made it superior to lecture based courses aimed at facilitating safe return to work.

Conclusion
Simulation courses were found to be more beneficial than lecture based teaching in aiding a safe return to work.

Conflicts of interest: NO
Using in-situ simulation to improve confidence and highlight learning needs for nursing staff in a tertiary referral cancer centre: A qualitative survey at The Royal Marsden Hospital.

Royal Marsden Hospital, London, England

Background
In situ simulation can be used to identify obstacles to patient safety. This may be through skill maintenance, with deliberate practice of high-risk low-frequency events (1), or through evaluation of non technical skills(2).

Objectives
We aimed to increase nurses’ confidence when dealing with medical emergencies; to identify obstacles to the provision of excellent care and to assess staff members’ response to simulation training.

Methods
We surveyed the first 20 nurses participating in the program, before and after simulation. Scenarios were designed from previous patient safety incidents, or around local and national clinical guidelines. Each moulage was followed by a debrief and technical skill teaching.

Results
Fifteen staff nurses and 5 senior staff nurses participated. Pre-simulation, 55% stated they did not enjoy coping with emergencies and 40% experienced significant stress during these times. Only half of the staff felt able to deal with a wide range of emergencies.
Post-simulation, 70% felt more confident in approaching any medical emergency. Eighty five percent found the training valuable, requesting further simulation training. Identified obstacles to emergency management included poor communication, unclear leadership and a lack of task delegation. Further training was requested on emergency intubation, tracheostomy dislodgement and cardiac pacing.

Conclusions
The enhanced realism of in situ simulation was well received. Confidence was notably increased amongst the team members. Further training on identified areas should succeed in achieving optimal health care team functioning during medical emergencies on the Critical Care Unit.

Conflicts of interest: NO

Conscious sedation-training for non-anaesthesiologists: A inter-professional full-scale simulation with embedded specific skill training

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Background
Conscious sedation specifically with propofol is widely used by physicians and their team performing rather unpleasant interventions (e.g. gastroscopy, colonoscopy, bronchoscopy, etc.) in hospital but also in private practice. Usually these health care providers do not have specific anaesthesia training and airway management skills are rather poor. Awareness about the possibility of critical events overall in patients with relevant co-morbidities is mostly given but very little chance is provided so far to learn the proper use of sedatives in the clinical environment for inter-professional endoscopy teams. That all together has its impact on patient safety.

Method
After proper needs assessment with the clinicians we developed a full-scale training basis on scenarios with a focus on non-technical skills and embedded basic airway management skills training and patient monitoring into that.

Project goals
The learning goals of the scenarios were the handling of 1) over dosage resulting in respiratory arrest, 2) in pulsless electrical activity and the need of CPR, and 3) a patient not cooperative for this kind of sedation procedure aiming for a decision to convert that into anaesthesia calling the anaesthesia team. The ABCDE approach to deteriorating patients, clinical decision making under stress, team performance and communication were implicit learning aims in the small group video-debriefing sessions after each scenario with the focus on team feedback.

Basic airway skills included the delivery of oxygen, bag mask ventilation and placement of an intubation supraglottic airway. Beside the standard non-invasive patient monitoring end-tidal capnography was introduced, alltogether in a half day session.

Concepts
So far physicians, nurses, and nurse practitioners went through the program. The concept of simulation with embedded skills teaching and the scenarios were well received. The focus on non-technical skills brought up vivid discussions and follow up actions were formulated for the endoscopic suite (e.g. position of the AED, additional personnel for drug injections and monitoring). Annual re-trainings were scheduled and many of the participants came again to the Training.

Conclusion
A half day full-scale simulation with embedded airway management skills and monitoring training enhances inter-professional non-anaesthesiologists teams ability to handle critical patient conditions due to i.v.-sedation for procedural interventions.

Conflicts of interest: NO
Piloting a new Anaesthetists' Non-Technical Skills (ANTS) training course

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Background
Non-technical skills are the cognitive and social skills that complement workers’ technical skills, and contribute to safe and efficient task performance. The Anaesthetists’ Non-Technical Skills (ANTS) framework was developed by Anaesthetists and Psychologists in 1993, to provide a tool to recognise and describe the non-technical skills essential to safe anaesthetic practice. This includes the skills of situation awareness, decision making, team-working and task-management. The need for a course to provide further training in using the ANTS framework has been identified.

Objectives
The aims of the course are: to enhance understanding of the concepts and language used to describe non-technical skills; to use the ANTS tool to recognise behaviours linked to categories within the ANTS framework; to increase familiarity with using the ANTS tool for reflection, feedback and assessment of non-technical skills.

Methods
A collaborative project between a group of Anaesthetists with expertise in ANTS and the Royal College of Anaesthetists (RCOA), London, has been undertaken to design a new course aimed at delivering training in using the ANTS framework.

A one-day course has been designed. It will use a combination of short presentations, and facilitated discussions of videoed simulated scenarios to observe and recognise behaviours related to each of the 4 categories in the non-technical skills framework. The course will be piloted locally in March 2014, and subsequently at the RCOA, London.

Results
Feedback and evaluation from the pilot course, with respect to ascertainment of the above learning objectives will be collated. The results will be available for presentation at the SESAM conference.

Conclusions
A need for further training in using the ANTS framework has been identified. A new course to deliver such training has been compiled, and will be evaluated upon piloting in March 2014.

Conflicts of interest: NO
Right patient, Right blood – Simulation-based training in blood transfusion practice in nursing education

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Background
In spite of strict checking procedures for handling blood transfusions, severe adverse reactions are likely to happen and the major cause of morbidity occurrences is attributed to human error. Nursing students have limited opportunity to practice safe blood transfusion during clinical placements. We introduced simulation-based workshops to reinforce safe transfusion practice and not only increase patient safety but equally importantly, to bridge the gap between theory and practice.

Objectives
The objective of the current study was to test workshops focusing on procedures for safe blood transfusion by combining theory and practice and integrating current guidelines on safe blood transfusion, hereby helping students to better recognize and handle errors and adverse reactions.

Methods
372 third year students were offered three theoretical lessons consisting of an e-learning session on safe transfusion practice, followed by a simulation workshop consisting of a reflection session based on study questions and a scenario dealing with safe blood transfusion. The students acted correspondingly as a patient and ward nurses in scenarios using fake blood, IV trainer hands and original transfusion-documents. A subsequent debriefing session concluded the workshop. Learning outcomes were evaluated using an anonymous self-assessment questionnaire based on a 1-5 Likert scale and open-ended questions (response rate 71.8%)

Results
The students assessed their main learning outcomes related to patient safety as increased awareness of adverse reactions (mean 3.7), increased knowledge of observations during transfusion mean3.9, identification of complications (mean 3.6), knowledge of interventions (mean 3.6) and bridging the gap (mean 4.3). Practical skills were highlighted from the qualitative perspective, as well as the transfer of theory to practice, increased awareness of adverse events and capacity to intervene in complications.

Conclusions
The study demonstrates that simulation-based training in safe blood transfusions can contribute to improved skills and thus potentially improving patient safety in blood transfusion practice.

Conflicts of interest: NO
Can the simulation programme ameliorate stress?


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BACKGROUND and OBJECTIVE

Job burnout defines a state of physical and mental exhaustion commonly observed in health care workers. We conducted a study to measure if simulation training could ameliorate the anesthesiology trainees’ own perceived stress or not, and we evaluated their stress perception before and 3 months after simulation training.

METHODS

40 anesthesiology trainees from different hospitals were called for a simulation programme. They were asked to fill out a questionnaire consisting of demographic data (age, gender, marital status, number of children, and years in training), and the Perceived Stress Scale (PSS) consisting of 10 items, each of which is answered on a scale from 0 (never) to 4 (very often). They attended a simulation training programme including basic 6 haemodynamic and airway management scenarios for two days. After 3 months, perceived stress questionnaire was repeated. Statistical calculations were performed with SPSS 19.0 version. Besides standard descriptive statistical calculations (mean and standard deviation), paired sample t test, student t-test and one-way ANOVA were used to compare the groups. Chi-square test was used for qualitative data.

RESULTS

Demographic data of participants and their stress levels in relation to demographic characteristics are demonstrated in Table 1. There were no statistically significant difference in PSS results before and after simulation training.

CONCLUSION

Simulation training seems not to be able to change the perceived stress levels of anesthesiology trainees. But we think that this is because the sample size is too scarce and the majority of the participants are of 2nd-3rd years of residency. We consider that airway management and cardiovascular challenges which we have set as primary objective in simulation training are basics in anesthesiology training and it does not account for additional stress factor for experienced anesthesiology residents.

Conflicts of interest: NO

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Background
Our simulation centre runs a course for novice anaesthetic trainees. Faculty observed that trainees often lacked a basic plan for managing the 12 critical incidents outlined in the 2010 UK Curriculum for a CCT in Anaesthetics. A free training package was therefore developed: Anaesthetic Critical Incident Drills (ACID). ACID was designed to be delivered locally by individual departments.

Project goal
Does ACID training provide trainees with a plan for managing anaesthetic critical incidents?

Methods
Trainees attending the course were surveyed about what level of training they had received regarding managing the 12 critical incidents including whether they had trained using the ACID drills.

Two years of trainees were surveyed. Group 0 in the year prior to ACID release, and Group 1 in the first year of ACID release.

Group 1 was subdivided into those who had not (Group 1A) and those who had (Group 1B) received ACID training.

Results
Information was obtained from 45 trainees in Group 0, and 46 trainees in Group 1. Group 1A (no ACID) consisted of 23 trainees and Group 1B (ACID) consisted of 23 trainees. Only 7 trainees in Group 1B (30%) had been given the recommended 2 half-days of training.

Less than 25% of trainees in Group 0 and Group 1A had been given a basic plan to manage any of the 12 critical incidents. This was significantly less (p<0.05) than those who had ACID training.

Similarly, there was a statistically significant difference between Groups 1A and 1B for the numbers of trainees reporting having rehearsed the 12 critical incident drills (p<0.05).

Discussion
The comparisons of Groups 1A and 1B demonstrate that ACID provides trainees with a basic management plan. Perhaps more importantly, the trainees with ACID training were much more likely to rehearse the critical incident drills.

Conflicts of interest: NO
Increasing simulation based learning in nursing and midwifery curricula by collaboration at KU Leuven Association, Belgium

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BACKGROUND
Healthcare is becoming more complex. It is a challenge for education programmes to deliver nurses who have achieved all skills necessary for safe practise (multidisciplinary teamwork, communication, organisation and coordination of care, clinical reasoning and integration of knowledge and skills). High Fidelity Patient Simulations (HFPS) are expected to teach these skills.

OBJECTIVE
This research project funded by KU Leuven Association (OOF) aims to increase the use of HFPS in the curricula of nursing and midwifery bachelor programmes in Belgium.

METHODS
Two researchers based at two colleges in Belgium (VIVES and Thomas More) coordinate the two-year project, which started in October 2012. Following strategy was used: 1) introduction of partner institutions and finding interested lecturers, 2) dividing lecturers in subgroups based on field of interest, 3) planning of meetings in person or online, 4) development of a scenario template that will ease sharing of scenarios by the researchers based on literature, 5) development of clinical scenarios by the lecturers.

RESULTS
29 lecturers of the four partner institutions participated and were divided into six groups (1. Midwifery, social nursing and physicians, 2. Advanced life support, 3. Prehospital and emergency, 4. Postgraduate paediatrics, 5. Multidisciplinary day, 6. Assessment). 23 (multidisciplinary) scenarios were developed using the scenario template. Lecturers worked individually on the scenarios but discussed these in their subgroups.

CONCLUSION
Collaboration between different colleges made it possible for the partner institutions to have access to more simulation scenarios than each institution could have achieved individually with the same investment. We believe that this abundance of material is necessary for institutions to start implementing simulation in their bachelor programmes, which is the next aim of the ongoing project. The methods of this project can be a guide to other colleges who want to start with or implement simulation education in their curriculum.

Conflicts of interest: NO
Self-confidence to intervene in emergencies, satisfaction and gains perceived for the students: evaluation after simulated practice

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Background
Previous training is fundamental for effective intervention in emergencies and high quality in nurses’ action. This high quality can double or triple the patients’ chances of survival. The students perceive the simulation as attractive, contributing to various gains and high levels of satisfaction and confidence. Objective: analyse the self-confidence to intervene in emergencies, the satisfaction and gains perceived for the students after a programme with simulated practice.

Methods
Descriptive correlational study, with evaluation after 15 hours of simulated practice with 280 nursing students. Medium and high fidelity simulators are used. Instruments: questionnaire with demographic questions, Self-confidence Scale (vp), Satisfaction with the Clinical Simulated Practices Scale and Gains Perceived with High-Fidelity Simulation Scale.

Results
Participants are mostly (84.6%) women. The mean age is 22.25 years (SD = 0.55 years).

After simulated practice, students pointed self-confidence with 3.4 points (5 points is the maximum value).

The satisfaction is punctuated with 8.7 points to the cognitive and practical dimensions and 9.0 points in the realism dimension. Overall mean was 8.8 points (10 is the maximum value).

The gains are punctuated with 4.2 points in the dimensions recognition/decision, technical and practical cognitive and 4.3 points for intervention and attitudinal dimensions. Overall mean was 4.2 points (5 points is the maximum value).

The Spearmen correlation tests reveal that there are positive correlations between the studied variables, which are statistically significant (p< 0.001) in all tests.

Conclusion
Simulated practice is a good strategy for nursing education. In case of emergency nursing, helps to build the students’ confidence and this confidence is associated to other outcomes such as student satisfaction and various gains. In a school that puts students at the centre of the process, these factors contribute to justify the investment in simulation as an educational strategy.

Conflicts of interest: NO
Systems Biology – Functional Strategies of Living Organisms

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Background
The processes in living organism on molecular level are complicated however it is possible to simulate them in silico. The model in details is presented in “Systems Biology - Functional Strategies of Living Organisms” — Konieczny L, Roterman I, Spólnik P. – Springer 2014.

Project goals
The general assumption is to present and simulate all processes in living organism as the system of mutually coupled negative feedback loops (NFL). The simulation of few (many) units (NFLs) with different mutual relations is the main goal of the project.

Methods
The simulation of the system is undertaken. Few versions are under consideration for different sets of parameters (characteristics of Receptors and Effectors) and different mutual relations between units (NFLs) in an open system (linear relation between units) as well as in the system generating the closed circle.

Results/Concepts
The set of parameters representing the status of Receptors (R) as well as Effectors (E) (sensitivity of R and E) is aimed to simulate the propagation of signals in the negative feedback loops system and deliver information about the status of the net as a whole. The time scale (the time to reach the expected signal level - concentration of the product of E) is introduced to allow the simulation of the action of the complete system.

Discussion
The general unified system which is able to consume the detailed data collected in databases is highly expected. The presented system based on the structural/functional unit which is one negative feedback loop, seems to satisfy the expectations.

Conclusions
Generation of the program simulating the biological system allows the “experiments in silico” on one hand and introduces the new method to generalize biological phenomena in teaching process on the other. The teaching oriented on generalization allows comprising the ever increasing volume of teaching materials.

Conflict of interest: NO
Team experience and teamwork behaviors influence clinical performance in pediatric emergency care

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Background
Teamwork has frequently been associated with adverse events and patient harm. Teamwork is central to the successful provision of patient care. However, the literature provides mixed results about the effect of specific teamwork behaviors on performance. Based on previous studies we assume that contradicting results can - at least in part - be explained by differences in team characteristics such as the team's experience level.

Project goals: We assume that the experience level of the leader influences team performance and we hypothesised that this difference can be explained by different coordination patterns of experienced and less experienced teams.

Method
A series of simulation-based in-situ trainings were carried out in five different hospitals. All trainings were video-recorded and then analysed by human factors experts using a structured set of observation categories.

Results: We found a significant correlation between team leader experience and performance (r= .44, p=.05) and team experience and performance (r= .37, p=.05). Concerning team coordination, experienced teams (M=40.5%, SD=20.9) provided more information without request than did less experienced (M=30.5%, SD=13.05) teams (t(14) = -2.22, p=.022). Further analysis is ongoing.

Discussion
As expected team experience and performance are related and especially the team leader's experience determines the performance of the whole team. Beyond greater clinical expertise we tried to explain this relationship with different coordination mechanisms of experienced and less experienced teams. The results indicate that experienced teams anticipate more and so provide more information without someone is asking for it.

Conclusion
Provide information without request is a way to build a shared mental model of a task which can have a positive effect on performance. Future interventions should investigate this relationship and so enhance the performance of medical teams.

Conflicts of interest: NO
Technical Skills Training for the Surgical Specialties

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BACKGROUND
Simulation training is used for safe, standardized development of technical skills. Many hospitals provide local access to simulation training, but the status of curriculum development, scientific research, and sustainability is unknown.

OBJECTIVE
To provide a state of the art of the facilities, utilization, research, and management of surgical skills labs in Europe.

METHODS
A questionnaire was sent to the memberships of the SESAM and EAES professional organizations. A total of 3163 invitations was sent to members in an estimated 90 countries. The questionnaire was split in sections for Facilities, Courses, Research, and Management.

RESULTS
A total of 460 responses were collected, of which 70 completed the questionnaire. Exact response rate could not be calculated due to potential overlap in the SESAM and EAES memberships, but lies between 15 and 24 percent. Respondents represented 24 nationalities. Average size per facility is 211 m², range 5-2700, with a substantial skew of 3.6 (most facilities are smaller than average). Thirtythree institutions housed 1 training facility, 25 institutions 2 or more. Thirty facilities offered VR simulators for training, 27 videotrainers, 15 manikins, and 19 facilities offered animal models for training; with most facilities offering more than one type. Training courses serviced an estimate of 34000 residents yearly. Eighteen respondents were actively involved in research into skills development, most respondents listed transfer of skills to the OR as a research priority. Facilities are most commonly funded by the departments themselves, followed by intramural grants and industry funding. Funding through commercialization of courses and extramural grants is minor.

CONCLUSIONS
Large numbers of residents are trained in local, well equipped skills labs. Research into transfer of skills to the OR is felt to be important, but research volume is lacking. Facilities are mostly funded internally. Commercialization of training is underutilized.

Conflicts of interest: NO
The gains perceived by nursing students with high-fidelity simulation: scale validation

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Background
In nursing education, the simulation of the different procedures is required for professional practice. The simulated clinical experience in a controlled environment without the presence of the patient, improved student performance in the real world, in technical, psychological, cognitive and attitudinal skills. The simulated clinical experience improves nursing student satisfaction with his learning and increases confidence in what he believes to be able to develop.

Project goals
This study aims to validate an instrument to evaluate the gains perceived by nursing students with high-fidelity simulated practice.

Method
This is a methodology research study. A scale with 26 items was applied to a sample with 458 nursing students after high-fidelity simulated practice. Factor analysis with varimax rotation was applied and for their validation using the randomization of samples and estimation of internal consistency.

Results/concepts
Almost all items show high correlation with the total scale, with an alpha value of 0.951. The scale items were divided into five factors with internal consistency between 0.699 and 0.930. The two subsamples have alpha values very close to the original sample.

Discussion
The database proved to be adequate to the objectives. The factors correlation with the global scale is stronger with the recognition and decision dimension (0.967) and weaker with the cognitive dimension (0.701), suggesting that the capacity for leadership, elaborate diagnoses and establish priorities in situations of critical patient are perceived as important in the high-fidelity simulation gains. The attitudinal dimension showed the most evident gains and the recognition and decision dimension the less clear gains.

Conclusion
The scale meets the requirements for validity, revealing high potential for use in research.

Conflicts of interest: NO
Development of professional communication in the simulation center
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Background
Lack of interprofessional communication reduces the quality of care.

Objective
To evaluate the effectiveness of communication in emergency medical care in emergency conditions in Perinatology and teamwork.

Methods
Individual interviews and anonymous questionnaires after simulation followed by deductive interpretive thematic analysis. Ethical approval was obtained for the study and all participants signed a consent form.

Results and discussion
A total of 120 questionnaires specialists. Doctors are divided into two groups: an average 0.9 years and an average 20.8 years of experience. In a teamwork participated 9 physicians. Communication between doctors an average 0.9 years of experience absent, between staff and doctors was one-sided in 50%: execution of instructions of the doctor. Call other participants of teamwork was without correctly transmission of information on the state of the patient. Arrival time specialists were from 3 to 12 minutes. Teamwork practically absent. With relatives of the patient and patient communication was very low: questioning of anamnesis.

Doctors an average 20.8 years of experience had interprofessional communication in 75 percent of simulations. Call timely reported on the critical condition of the patient. Arrival time specialists were from 3 to 12 minutes. Transmission of information was the correct in 50 percent. Communication with the patient was in all simulations, but only questioning history of the disease. Communication with relatives was only in 25% of simulations.

Conclusions
Almost all doctors with little experience and 25 % of physicians with extensive experience not have the skills of interprofessional collaboration in critical situations, can not provide psycho- emotional support to the patient and her family. Conducting team training simulation of critical situations allows communication skills to work for their use in practice.

Conflict of interest: NO
High fidelity simulation away from the acute clinical setting – Advanced communication skills for dermatologists

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Background
It has been shown that poor patient satisfaction can lead to poor adherence to treatment with consequently poor health outcomes [1]. One of the major reasons for poor patient’s compliance to treatment is the clinicians’ communication skills. Improving clinicians’ interpersonal skills can increase patient satisfaction, which in its turn will have a positive effect on treatment adherence and health outcomes [1].

Goals
We aim to increase communication and interpersonal skills amongst advanced dermatology trainees, with a target to achieve better outcomes in the communication between physician and patient.

Method
We created and conducted a full day course with three different clinical high fidelity simulation scenarios for nine advanced trainees in dermatology, ranging from level ST3 to ST6. The scenarios scripted were mapped to the communication needs of the trainees attending. A questionnaire was sent a month prior to the course, asking trainees what they find challenging in their communication with patients. Their responses were studied and the three scenarios were created accordingly. All the scenarios were set in an outpatients’ setting, and three professional, standardized actors were used, one for each scenario.
All trainees practised a scenario, which was video taped and debrief was conducted by one experienced debriefer clinician with no dermatology background and one consultant dermatologist without formal training in debriefing.

Results
All nine trainees found the day extremely useful and relevant to their challenges. Tables with post course results will be provided in the poster. All trainees also agreed that the course increased their ability to communicate in difficult scenarios of their day to day job.

Conclusion
High fidelity simulation can be used to advance inter professional skills in non acute medical settings.

Conflicts of interest: NO
Inside information, a multi-professional collaboration focussed on learning about the larynx

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Background
This teaching and engagement activity was part of a collaboration with Clod Ensemble, an innovative performance company. The “Inside Information” workshop brought together experiences in anatomy, simulation and vocal performance.

Objectives
To provide medical students and members of the public with an opportunity to learn and discuss the anatomy and functionality of the larynx, as well as demonstrating the relevance of teamwork in medical emergencies to ensure good patient outcome. In addition we aimed to enhance public perception of Anaesthesia through involvement in simulated clinical crisis management and facilitated reflection on the events.

Methods
The participants attended 3 rotating workshops, introducing the larynx in different settings:

Larynx exposed: Participants were able to explore the vocal apparatus, watch how the cords move as sound is produced and appreciate the size and shape of the vocal cords through the use of videos, anatomical models and real anatomy specimens.

Larynx in action: Welsh National Opera singer, Soprano Ros Evans demonstrated the effect of anatomical and physiological knowledge in voice training techniques, which attendants could practise.

Larynx at risk: Members of the public were asked to volunteer to help in the management of a simulation manikin presenting stridor. Their roles focussed on reassuring the distressed patient, assisting with intubating equipment and monitoring vital signs as the patient’s life was saved.

Results
A team of students from our local School of Art and Design illustrated the sessions. Their drawings reflected the relationship between images, sounds, emotions and thought processes. These were presented to all attendants at the end of the session and constituted the basis for a concluding dialogue.

Conclusion
Developing this project has been extremely rewarding. As well as providing a unique public learning opportunity, this multi-professional collaboration has offered us a new perspective into our own fields of expertise.

Conflict of interest: NO
Subjective and quantitative assessment of the contribution of simulation in the management of pediatric emergency situations by adult care providers

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Background
Pediatric simulation training is a well established learning tool. However this tool is new in our University Hospital and the advantage for adult care providers dealing with pediatric patients on a day to day basis has yet to be demonstrated.

Project goals
Comparative study of evaluation and comments from adult care providers who had pediatric training during a 1 year period.

Method
60 participants (adult nurses and emergency physicians) took part in a pediatric emergency course including presentations and simulation scenarios.
A year later candidates had a refresher course, with a short presentation followed by 3 pediatric simulation scenarios.
Sessions were evaluated by the participants at the end using a score from 0 to 5/5.

Results
First year, popular elements: realism of the scenario (58.3%), facilitators and debriefing (22.92%), team work and communication (16.67%), high fidelity (16.67%), practice (16.67%), group size (2.1%), management of stress and parents (25.6%), presentation (8.33%).
Following year these percentages are respectively (47.6%, 21.43%, 14.28%, 11.9%, 0%, 7.1%, 33.3%).
First year unappreciated elements: limited timeframe (4.2%), not knowing the environment (4.2%), lack in pediatric pathology (2.1%), technical limit (2.1%) short presentation (2.1%).
Following year these percentages are respectively: (2.4%, 0%, 2.4%, 2.4%, 2.4%)
First year most frequent suggestions. Repetition (88.58%), increase the realism (10.41%), syllabus (12.5%) Following year percentages respectively: (47.62%, 2.4%, 0%).
In quantitative terms, first year average 4.93/5; second year average 4.9/5.

Conclusion
Pediatric simulation training is popular and useful for adult care providers looking after pediatric patients on a day to day basis and should be established at least twice a year. At our University Hospital the most popular points were: debriefing skills, scenarios, teamwork. The least popular points were: ignorance of pediatric protocols, limited timeframe.

Conflicts of interest: NO
Using Simulation to educate & train acute pain management

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BACKGROUND
Intense acute pain afflicts millions of patients each year. Despite the recently increased focus on the importance of pain control, management of acute pain has remained suboptimal [1]. Pain knowledge surveys of nurses suggest that educational efforts probably have been beneficial and should continue. Early in the education of nurses, responsibility for pain assessment and use of analgesics must be instilled [2].

OBJECTIVES
Our aim was to enhance the learning experience of nursing staff in terms of management of patients with acute pain in different clinical settings. To make it more effective tool we incorporated simulation based scenarios rather than just didactic delivery.

METHODS
One day acute pain management workshop was organised at two different days. 40 nurses attended it. Initial half of the day focused on enhancing knowledge base through interactive lectures. Later half had simulation scenarios based on common acute pain themes encountered by nursing staff. An evaluation sheet was generated to highlight key learning points. Feedback was sorted from all the candidates pre and post simulation scenarios.

RESULTS
Average job experience of group was more than 15 years. More than 90% of candidates had no prior exposure to simulation based education. Feedback and evaluation indicated that not only candidates find simulation based learning enjoyable but also more effective in reinforcing the concepts of management of acute pain.

CONCLUSIONS
Based on our results we have decided to make acute pain management via simulation run as twice a year program to educate more staff. We suggest that simulation based education can be an effective tool to train acute pain management.

Conflicts of interest: NO
Precision of the decision-making in cardiac arrest based on heart rhythm analysis

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BACKGROUND
Current ERC guidelines share advanced life support algorithm for 2 paths: shockable and non-shockable rhythms. The decision to implement the appropriate procedure, should be taken within 10 seconds while heart rhythm is analyzing. Failure defibrillation when ventricular fibrillation or pulseless ventricular tachycardia occur as well as the omission of chest compressions in cardiac arrest, decrease the chances of survival.

OBJECTIVE
The aim of this study was to determine the precision of implementation of the appropriate procedure, based on assessment of heart rhythm on ECG monitor and pulse examination.

METHOD
The study included 120 students: paramedic and nursing of two medical schools. 40 teams of 3 members each was created. Teams were asked to perform CPR according to ALS algorithm (ERC 2010), running in accordance with the previously prepared script. The simulation was performed on heart rhythms VitalSim simulators (Laerdal). We assessed: accuracy and time of diagnosis of heart rhythm, effectiveness of pulse on the carotid and radial artery examination, and correctness of implementation of further proceedings based on a standard ALS algorithm (chest compressions, defibrillation, ventilation of the patient and the decision of the administration of adrenaline).

RESULTS
The mean time of heart rhythm diagnosis was 6.2 ± 1.3 sec. and did not correlated with the type of rhythm (p>0.05). Time without chest compressions due to pulse examination in case of PEA was 10.6 ± 3.1 sec. 25% of teams were not able to implement the proper procedure (30% of them did not perform defibrillation when pulseless ventricular tachycardia occurred, 50% did not attempt resuscitation in PEA, 20% used epinephrine inconsistent with the algorithm).

CONCLUSIONS
We should pay particular attention to the essence of defibrillation in pulseless ventricular tachycardia. We should also raise the level of education in checking vital signs and recognizing PEA.
Analysis of the causes of interruptions in chest compression and their impact on the effectiveness of resuscitation

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INTRODUCTION
According to the current ERC guidelines, minimizing interruptions in chest compressions is an important determinant of survival of sudden cardiac arrest. Additionally procedures, such as advanced airway management, ventilation, intravenous and other operations should not interfere with high-quality CPR. The activities that allows break in chest compression are: heart rhythm assessment and defibrillation. It has been shown that interval longer than 10 seconds has a negative impact on survival.

OBJECTIVE
The aim of this study was to assess the time without chest compression, and to investigate the causes of this problem.

METHOD
The study group took 105 students. Participants were asked to perform resuscitation according to ALS algorithm (ERC 2010) in a team of three members. Prepared scenario assumed stop the simulation after fourth heart rhythm assessment. Total time of interruptions in chest compression and the reason pauses of were assessed. The study group had at its disposal a variety of devices for advanced airway management. The study used a VitalSim (Laerdal) simulator.

RESULTS
The mean time without chest compressions was 118 ± 52 sec. The longest interruption was associated with the assessment of heart rate and pulse examination. (total duration of 4 evaluations was 42 ± 12 sec, of which most of the time occupied examined patient with PEA, least with ventricular fibrillation ), performing endotracheal intubation and confirmation of the correct position of the endotracheal tube (33 ± 14 sec), and the preparation and perform of defibrillation (preparation and perform 1 defibrillation on average 17 ± 11 sec). Other gaps were related to switch of the compressing rescuer. A statistically significant difference between the length of breaks taken to secure the airway, depended on the chosen method (p<0.05).

CONCLUSIONS
We should place emphasis on a fast and proficient preparation and perform of defibrillation. We need to improve the teaching of chest compressions during defibrillator charging. We should also evaluate students’ skills in the field of pulse examination.