Improving Regional Emergency Medicine Simulation Opportunities

Dr Ben Atkinson - Consultant in Emergency Medicine, Portsmouth Hospitals NHS Trust
HEE Wessex Quality Improvement Fellow (Simulation) 2017-2018 – ben.atkinson@porthosp.nhs.uk / ben@simwessex.co.uk

1. Background

Historically the Wessex Deanery lacked a specific Emergency Medicine Simulation Network. Collaboration and sharing of staff and resources as well as involving trainees make it easier to deliver effective and sustainable simulation based medical education (SBME) which is vital for healthcare professionals. SBME supports the development of competencies in technical skills and Human Factors (the 'non-technical' / communication / teamwork skills) for all staff and plays a vital part in enhancing these teamwork skills essential for managing clinical crises that are seen every day in Emergency Medicine. This justifies the need for a regional Emergency Medicine simulation network, to improve educational opportunities, share valuable resources and strengthen collaboration between Wessex training sites.

There is evidence that regular simulation sessions for acute cases including human factors training improves safety-critical behaviours and crucially patient outcomes. In-situ simulation has been described as 'crash testing the dummy'. More formally, it is a team-based training technique conducted in actual patient care units using equipment and resources from that unit and involving actual members of the healthcare team. While simulation has often been used as a strategy to train individuals in both technical and non-technical skills, in-situ simulation can be used to evaluate system competence and identify latent safety threats that predispose to medical error. "Latent threats" are system-based threats to patient safety that can materialise at any time and are previously unrecognised by healthcare providers, unit directors or hospital administration.[1]

2. Project Aims

- Improve Regional Emergency Medicine Training Opportunities within 12 months.
- Identification of latent threats in Portsmouth Hospitals NHS Trust (PHT) Emergency Department using in-situ simulation. Identified latent threats shared following every session.

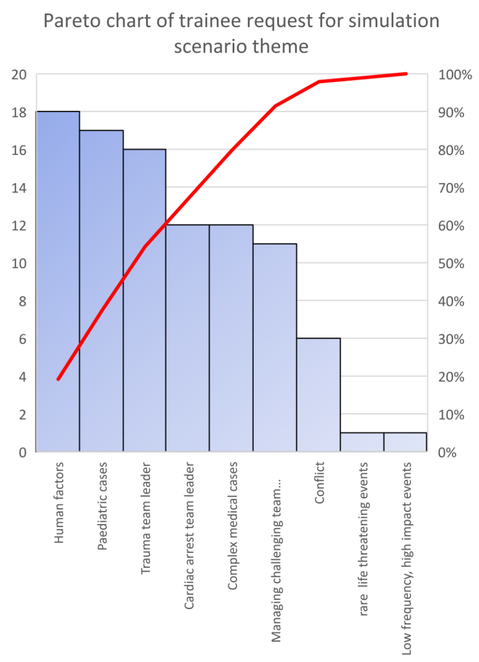
3. Project Design/Strategy

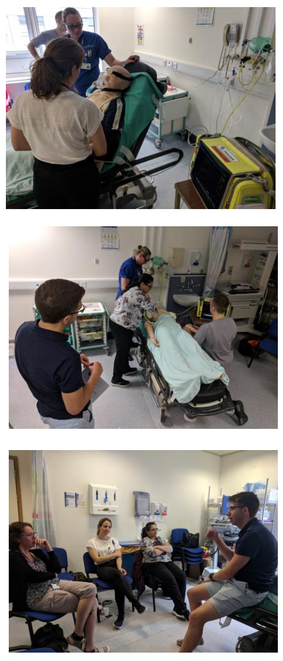
Driver diagrams and process maps were drafted regarding planning regional simulation courses and the local in-situ sessions. PDSA (plan-do-study-act) cycles were used using the model for improvement to find a way of implementing the courses. **Cost, collaboration and available faculty** were the barriers to implement these changes. The most effective way to deliver these courses was by creating a regional network.

SimWessex – The Wessex Emergency Medicine Simulation Network was created by collaboration between all Wessex training sites and the trainee body

The 5-day Wessex Advanced Clinical Practitioner (ACP) simulation course was subsequently created by SimWessex. This was made possible by specific funding provided by HEE. The course has proven extremely popular as a pilot course. Regular courses covering the Royal College of Emergency Medicine (RCEM) curriculum at all levels of training were also needed in addition to the ACP course to enhance the regional SBME opportunities. Funding was applied for.

The SimWessex group discussed current SBME delivery locally, the short and long term needs of the region and resources required to make this happen. Recruitment of a trainee representative enabled them to develop skills in SBME whilst being the trainee voice for SimWessex. All Wessex trainees were surveyed to identify the need for regular regional simulation and specific areas they would like to be covered by SBME – Team leadership, Paediatric and Human Factor themes received the greatest response. The proposed courses will cover all these areas thoroughly.

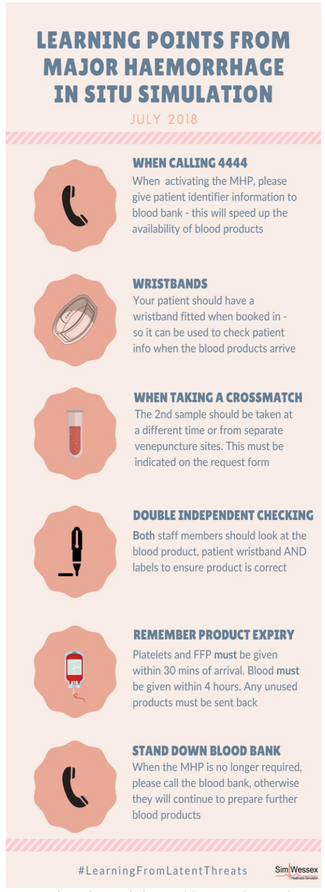




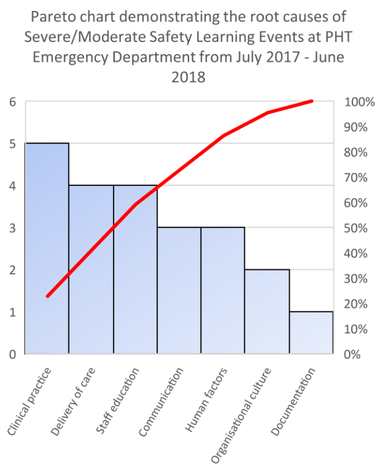
Photos taken at the pilot RCEM ACCS simulation day

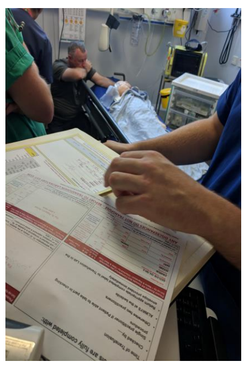
In Situ sessions at PHT:

In situ simulation was used to identify latent safety threats in the Emergency Department and increase staff awareness to prevent further incidents. Scenario themes were chosen based on safety learning events reported at PHT over the previous year. These sessions could only be delivered when the department safety allowed it – **winter (and summer) pressures** had a major negative impact here.



Example of an infographic used to share learning points and latent threats identified from in situ sessions by Emergency Department staff to increase awareness





Photos taken during local in-situ scenarios at PHT where several latent safety threats were identified and shared for learning

Multidisciplinary Team:

SimWessex group (Portsmouth, Salisbury, UHS, HHFT, RBCH, Poole & Dorchester)
Trudie Pestell – Trainee representative for SimWessex
Chris Vorwerk – Consultant in Emergency Medicine, Portsmouth
Lisa Toft – Simulation Educator, Portsmouth
Emma Williams – Simulation Educator, Portsmouth
Joanna Hartley – Head of School of Emergency Medicine
Jude Reay – Training Programme Director Higher Training
Lee Gray – Training Programme Director ACCS

4. Changes made

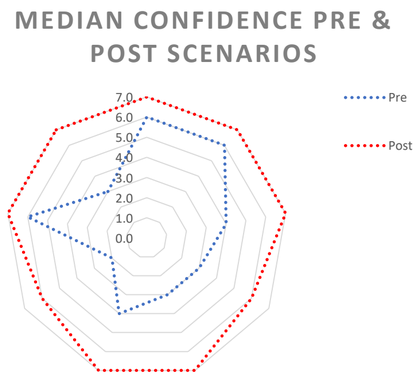
Five RCEM approved courses including a faculty course **were approved for recurrent funding** from this financial year onward. SimWessex now meet quarterly to discuss regional strategy all Wessex training sites are involved and the courses are delivered across the deanery. They will be evaluated using electronic feedback for pre and post confidence levels for all scenarios.

The SimWessex website is currently being developed to allow sharing of simulation activities, identified latent threats, course delivery and for faculty collaboration. - **simwessex.co.uk**

Local in situ simulations have led to the identification and awareness of latent safety threats in the Emergency Department to improve staff and patient safety. These were addressed and shared through the staff social media pages, via staff email notifications as well as during the debrief.

5. Outcomes

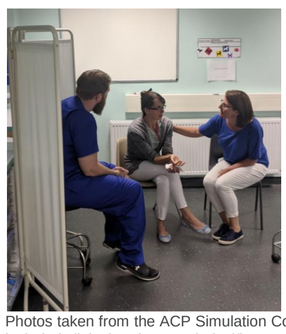
The courses have been implemented and are in the calendar for the coming academic year. All course evaluations show significant increases in confidence post scenario. An 8 point Likert scale was used (see below for example of pre and post confidence levels for one of the courses delivered). The course will be run every year for the year 2 ACPs.



Radar chart demonstrating median perceived pre and post confidence of the ACP trainees (Likert scale of 0-8) before and after a simulation day. Each point on the radar represents a single scenario. It shows all scenarios significantly increase trainee confidence level (p value <0.05). This data will be used to improve and develop future sessions

The ACP Simulation Course evaluations included the following descriptors:

- Inspiring, thought provoking, valuable, challenging, practical, and comprehensive
- 89% of trainees felt they would implement all they had learned on the course
- 78% of trainees felt they would implement what they had learned within the next week
- 100% would recommend the course to others



Photos taken from the ACP Simulation Course during a scenario (left) and briefing (right). All sessions included clinical and non technical/human factors element and communication skills

Impact of the regional work

- The 5-day ACP Sim course will be run annually in Wessex (already completed the 2018 course) and then hopefully UK wide after discussion with the national RCEM simulation committee
- Five additional one day courses for Emergency Medicine Trainees funded each year which will provide **up to 100 'trainee days' of SBME in Wessex.** One of these courses already delivered.
- Local nursing staff are involved in all of the training day scenarios, furthering their own knowledge and experience as well as the trainees, whilst making the sessions more realistic
- The Faculty development course will increase the number of multidisciplinary SBME trainers in region who will help deliver the courses and perform their own in situ sessions at their local Trusts. Having a multidisciplinary simulation faculty will enhance the regions SBME experience.

In situ simulation sessions at PHT identified the following latent safety threats:

- Blood label identification errors – 2 person independent checking required
- Not all clinical staff have blood bank access
- Knowledge on bolus rate of Belmont rapid infuser
- Trauma line kit should be stored together for ease of use
- Emergency theatre number not known by the team at the time
- Telephone numbers changed due to office moves of interventional radiologist
- Blood bank not stood down following major haemorrhage protocol
- Need for a CT transfer checklist

6. Lessons learnt

- Regional network creation takes time – engagement with multiple departments in multiple sites took a lot of logistical planning – use of various communication methods needed
- Funding is key – there is only so much goodwill available to make things happen
- Importance of developing regional faculty to ensure sustainability for delivering the courses
- SimWessex now has individual centres responsible for specific funded courses. This will help with sustainability and gives ownership and continuity for each centre.
- In-situ simulation is extremely useful, but only if the department allows it – year round 'overcrowding' pressure is the barrier that is difficult to overcome – peri-situ (in a local training room within the Emergency Department) is an alternative but removes the realism and would be less effective in identifying latent threats.
- The SimWessex website will make it much easier going forward – advertising of courses, sharing of identified latent threats and improved faculty collaboration
- Further national funding from RCEM may be on the horizon. With a growing pool of faculty this will allow further course development locally, regionally and nationally.
- Simulation is an evolving industry with continual advancements in technology and innovation. This will enable us to further improve the simulation opportunities regionally and beyond.

1. In situ simulation: detection of safety threats and teamwork training in a high risk emergency department. Patterson MD, Geis GL, Falcone RA, et al. BMJ Qual Saf 2013;22:468–477.