

In-situ simulation: medical students and junior doctors working together to improve their management of the acutely unwell patient

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BACKGROUND

Increased use of undergraduate simulation has helped bridge the gap from student to doctor¹ and improved junior doctors' confidence in managing acutely unwell patients.² Growing evidence suggests that in-situ simulation positively impacts on patient care; deteriorating patients are recognised and escalated to intensive care quicker following regular sessions.³ At the Royal United Hospital Bath, all F1s undertake a two week placement in intensive care. During the year some F1s expressed uncertainty regarding when and how to refer patients. Two of the authors are clinical teaching fellows and also noted apprehension among final year medical students regarding the management of acutely unwell patients. A new pilot in-situ simulation series was therefore designed with the following aims:

- 1) To enable final year medical students and foundation doctors to work together to manage acutely unwell patients in real-time on a medical ward.
- 2) For participants to recognise a patient's deterioration and the need for referral to intensive care.
- 3) For participants to improve their handover to intensive care.
- 4) To give students the chance to adopt the F1 role and F1s the chance to adopt the F2 role.
- 5) For students, doctors and other healthcare professionals to learn from each other's experience.

METHODS

During their academy welcome lecture, final year medical students were asked to anonymously write down their biggest fear about becoming a doctor. Simulation scenarios were designed to combine student and F1 teaching and address their main fears. All scenarios were centred around an acutely unwell patient who deteriorated despite appropriate treatment and required referral to intensive care.

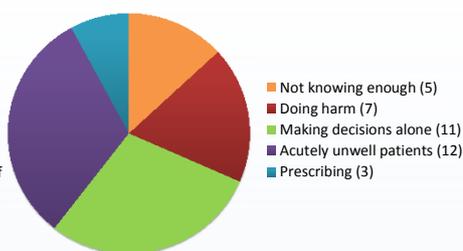
All final year students and F1s at the Royal United Hospital Bath were invited to participate by email. Simulations took place in March 2015 according to participant availability. In-situ simulation took place in the medical assessment unit or ambulatory care unit. The simulation suite was used if there were no bed spaces available.

All scenarios were run by one author, who acted as the simulation technician, registrar and intensive care SHO. To start a scenario, medical students were bleeped to review an acutely unwell patient. Students called their F1 for help when the patient deteriorated. During the F1's review the patient deteriorated further requiring admission to intensive care. If bleeped, the registrar was unable to attend. Each simulation ended after referral to intensive care and was followed by a debrief. In May participants were invited to attend a peer-teaching session to learn from the scenarios they didn't take part in. Afterwards participants completed a questionnaire to evaluate what they learned.

RESULTS

STUDENT FEARS

Figure 1: Pie chart of student fears regarding their F1 year. All 46 students participated. Only fears with ≥ 2 student responses have been included. The total number of students represented by the chart is 38.



PRACTICAL PROBLEMS

- Due to rota commitments and student exams it was difficult to find times when all participants were available. Consequently, although 5 scenarios were designed, only 3 actually took place.
- The simulation suite had to be used for 2 of the 3 simulations as there were no free beds on the medical assessment unit or ambulatory care unit at the time when all participants were available.
- Only F1s attended the peer-teaching session at the end of the series. Students didn't attend as they felt it was too close to their final exam.

EDUCATIONAL IMPACT

All participants completed a post-simulation questionnaire asking what they learned from the experience. Recurring themes:

STUDENTS

- How to manage the clinical scenario they encountered.
- The importance of giving a concise handover.
- A better appreciation of the length of time it takes to undertake tasks.
- Gained confidence managing an acutely unwell patient.

"I feel more confident in recognising my own abilities and limits with each session"

"I liked the opportunity to practice handover & the general experience of managing the acutely unwell patient"

"it felt realistic as it's likely support staff will be extremely busy with other jobs in reality"

F1s

- How to manage the clinical scenario they encountered.
- Recognition of the acutely deteriorating patient.
- SBAR handover; particularly how to take a handover from an F1.
- Practice of giving clear instructions to more junior team members.
- Recognition of when a patient requires intensive care.

"the experience of acting up as an SHO was very useful"

"the scenario was very realistic & one I have encountered many times since on medical nights"

"I gained a lot, primarily in experiencing taking the SHO role & thinking about when to refer to ITU"

SIMULATION DESIGN & UPTAKE

- 5 F1s and 11 students wanted to take part. Students that didn't want to participate stated this was because the sessions were too close to their final exam date. F1s didn't give reasons for not wanting to participate.
- 5 scenarios were designed based on typical presentations to intensive care to allow each F1 to undertake a different scenario:

- 1) Septic shock secondary to community acquired pneumonia.
- 2) Acute kidney injury with refractory hyperkalaemia secondary to hypovolaemia and nephrotoxic medication.
- 3) Anaphylaxis with partial airway obstruction.
- 4) Status epilepticus.
- 5) Cardiac arrest with return of spontaneous circulation.



Figure 2: The simulation suite used when no beds were available for in-situ simulation.

DISCUSSION

In-situ simulation is expanding in recognition of its potential to improve patient care. The simulation series presented here addresses areas from the foundation and undergraduate curricula. It is unique in uniting undergraduate and postgraduate learning and encouraging deeper learning through peer-teaching.

Strengths are that the simulation unites undergraduate and postgraduate learning and gives both students and F1s the opportunity to experience adopting a more senior role. The peer-learning session at the end gives participants the opportunity to learn from all scenarios; thereby enabling a wide range of scenarios to be undertaken with benefit to all participants.

Limitations are the difficulty in organisation and lack of bed space for in-situ simulation after mid-morning. Lessons learned from this which will be addressed before re-implementation on larger scale within the same hospital are:

- Organise the series earlier in the year to ensure participant availability.
- Don't hold the simulation around student exam time.
- The ideal time for F1s to participate is during their two week intensive care placement.
- The best time for in-situ simulation in the medical assessment unit or ambulatory care unit is around 8am.
- All participants felt that in-situ simulation was preferable to the simulation suite as it was useful to practice locating equipment and working with the multi-disciplinary team.

CONCLUSIONS

- Final year medical students and F1s benefitted from united teaching: students learned from watching and helping the F1s assess patients; F1s found it useful to experience a more senior role and be called for help.
- Participants felt more confident recognising the deteriorating patient after the simulation series.
- F1s demonstrated improvement in their handover following the simulation series.
- In-situ simulation enabled students and F1s the opportunity to learn from the whole multi-disciplinary team.
- Students and F1s valued the opportunity to experience acting in a more senior role.

TAKE HOME MESSAGES

- All participants gained confidence in recognising and referring patients that require intensive care treatment.
- Students and F1s valued the opportunity to experience acting in a more senior role.
- Peer-teaching enabled participants to gain benefit from scenarios they didn't take part in.
- For this series to be successfully undertaken in-situ, it needs to be organised early in the year and simulation should take place early in the morning.