Future Healthcare Journal 2020 Vol 7, No 1: 84–5

EDUCATION AND TRAINING

The bleep experience: preparing new doctors for on-call shifts

Authors: Alan M Greenstein[A] and Muniswamy Hemavathi[B]

KEYWORDS: Simulation, education, postgraduate

Background

Every August, hundreds of foundation year 1 (FY1) doctors begin work in the NHS, with working out-of-hours being one of the most challenging aspects. To ensure a smooth change-over, all hospitals in the UK have locally planned compulsory induction periods. They range from 5–10 days, involving shadowing, orientation and lectures, however there are no formal requirements to utilise simulation.

The following report evaluates an immersive on-call simulation that was developed and delivered as part of a hospital's FY1 induction programme in August 2018. *In situ* simulation is the gold standard for simulation activities due to increased psychological fidelity which, rather than technical fidelity, is crucial to learning transfer; hence this was the basis of this programme.[1] The goal was to improve orientation and confidence with technical and non-technical skills associated with on-calls. There is some published evidence of simulated on-calls, however these are aimed at students and have evaluated generalised on-call confidence rather than specific skills.[2,3]

Methods

Twenty-eight new FY1 doctors underwent a 2.5 hour on-call *in situ* simulation during their induction week which required one consultant and six foundation year 2 doctors to facilitate. The simulation ran three times throughout the day with 8–10 participants in each session. The tasks (see supplementary material S1), mirroring real cases, were designed to include common on-call duties allowing the participants the opportunity to practice prioritising their workload. The simulation utilised bleeps, actors, high-fidelity technology (SimMan), simulated seniors and realistic patient notes. Following a briefing on the hospital and provision of simulated seniors, the participants, working in pairs, were given a handover which linked to some of the tasks to start their shift. The simulated registrar carried a bleep and was able to act as the surgical or medical registrar as needed. A timetable (see supplementary material S2) was used to coordinate the bleeping to prevent congestion at each task. After each simulation, the participants underwent a 45-minute group debrief, using a constructivist model to facilitate participant reflections alongside a tutorial format covering the tasks.

Participants were invited to complete three questionnaires (pre-simulation, post simulation and at 1-month follow-up) to evaluate the simulation and their confidence in specific technical and non-technical skills. Surveys were linked with a code-word to maintain anonymity and any incomplete surveys were excluded. Confidence was assessed with a typical 5 point Likert scale increasing from 1 (strongly disagree) to 5 (strongly agree). The median confidence was measured to assess improvements or regressions as a cohort. The mode was utilised if the median fell between two values.

Results

Six participants failed to provide complete surveys, so 22 survey sets were analysed. The 1-month follow-up was completed on average at 6 weeks (range 4–10 weeks). The feedback was positive, with all participants stating it was a realistic experience that assisted with their orientation to the hospital. While we ran the simulation in pairs to ease apprehension, the feedback indicated the participants would prefer to work as individuals.

The survey results concerning confidence in technical, non-technical and prescribing skills are shown in Table 1. Overall confidence improved post simulation for skills concerning prioritisation, giving phone advice, all prescribing topics and all technical skills surveyed. At follow-up, confidence further increased for prescribing warfarin, managing high international normalised ratios (INRs) and falls, but regressed for prescribing palliative medications.

Discussion

Participants reported a high baseline confidence for recognising limits indicating this may be taught well at undergraduate level, or the participants might generally have been unconscious to their potentially lower level of competence. At follow-up, confidence further improved for prescribing warfarin, managing high INRs and falls. The baseline confidence for these skills was poor which may highlight a deficiency of undergraduate education due to poor exposure. Furthermore, experiential learning may be necessary for skills with this level of complexity. Confidence in prescribing palliative medications was the only skill to regress at follow-up after initially improving. Compared with other skills, it's probably less frequently

Authors: [A]acute care common stem trainee (ACCS anaesthetics), North Central London Deanery, London, UK; [B]consultant in emergency medicine, Luton and Dunstable University Hospital, Luton, UK

Table 1. Results for confidence in non-technical, prescribing and technical skills pre- and post simulation and at 1-month follow-up. Values refer to a Likert scale of increasing confidence from 1–5.

	Pre-simulation	Post simulation	1-month follow-up
Non-technical skills			
Prioritising jobs			
Median	3	4	4
Mode	3	4	4
Phone advice			
Median	2	3/4	4
Mode	2	4	4
Recognising limits and escalation			
Median	4	4	4
Mode	4	4	4
Prescribing skills			
Rx analgesia			
Median	2	4	4
Mode	2	4	4
Rx warfarin			
Median	2	3	3/4
Mode	2	3	4
Rx palliative			
Median	2	4	3
Mode	2	4	3
Rx fluids			
Median	3	4	4
Mode	3	4	4
Technical skills			
Mx high INR			
Median	2	3	4
Mode	2	3	4
Mx hyperkalaemia			
Median	3	4	4
Mode	3	4	4
Mx fall			
Median	2	3	4
Mode	2	3	4
Death certification			
Median	2	3/4	4
Mode	2	4	4
Mx sepsis			
Median	3	4	4
Mode	4	4	4

INR = international normalised ratio; Mx = managing; Rx = prescribing.

encountered; hence this regression may be due to a lack of practice and consolidation which is known to cause skill decay.[4]

A drawback of our study was the small number of participants which precluded any statistical analysis. The data evaluated subjective confidence which does not necessarily translate into competence. Without objective measurable outcomes, for example adherence to guidelines or practical skills, evaluating competency is difficult and ultimately subjective. Likert scales were used which have drawbacks, including a tendency to punt for the middle value, however our data doesn't appear to be subject to this. Furthermore, the intervals between each value cannot be assumed to be equal. To overcome this, the mode was analysed if the median fell between two values.

A further crucial component for learning transfer from simulations is effective debriefings.[5] From our general experiences, we encourage facilitators to become comfortable with a constructivist-based debriefing approach, as used here, to avoid use of Pendleton's approach to feedback.

Conclusion

This simulation received positive feedback and improved confidence in many core skills associated with on-calls while orienting new doctors. Hence, we feel this type of *in situ* simulation needs local adaptation but should be included in the induction programme for all new FY1 doctors. ■

Acknowledgements

The authors would like to thank the simulation faculty who assisted with running the simulation including Dr Paran Kiritharamohan, Dr Brinda Ahya, Dr Safiya Bishar-Abdirahman, Dr Kasim Ahmed and Dr Santhya Logarajah. Furthermore, thanks are extended to the wards which facilitated simulation scenarios in their vicinity and the medical education department at the hospital for their support.

Supplementary material

Additional supplementary material may be found in the online version of this article at www.rcpjournals.org:

S1 – Tasks
S2 – Timetable.

References

1 Norman G, Dore K, Grierson L. The minimal relationship between simulation fidelity and transfer of learning. *Med Educ* 2012;46:636–47.
2 Ramsden N, Newman J, Cooper R, Wilson A. 'An hour on call' – simulated medical education. *FHJ* 2016;3(Suppl 2):s41.
3 Lumley S. An hour on call: simulation for medical students. *Med Educ* 2013;47:1125.
4 Arthur Jr W, Bennett Jr W, Stanush PL, McNelly TL. Factors that influence skill decay and retention: a quantitative review and analysis. *Hum Perform* 1998;11:57–101.
5 Issenberg SB, McGaghie WC, Petrusa ER, Lee Gordon D, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. *Med Teach* 2005;27:10–28.

Address for correspondence: Dr Alan Greenstein, Education Faculty, Luton and Dunstable University Hospital, Lewsey Rd, Luton LU4 0DZ, UK.
Email: a.m.greenstein@doctors.org.uk