Using High-fidelity Immersive Simulation in General Practice Education

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Introduction

Simulation is used as an educational tool throughout clinical education and assessment. While multiple simulation modalities are fully integrated into secondary care education, its use in primary care is limited to simulated patients. This individual level learning misses the opportunity to learn from dynamic scenarios, over prolonged periods and to understand how the trainee manages macro-communication or systems.

Immersive simulation is where the, "environment takes on an important role in achieving the learning outcomes, or affects directly the educational experience and the occurrence of events"[1]. This poster shows how unmet training needs of military GP trainees were addressed by co-creative design of an operationally focused training course with fully integrated immersive simulation to promote effective learning.

Developing a Military GP

Military GP training is fully aligned with the RCGP and GMC standards for licensing. Trainees spend time in a mixture of military training practices and civilian placements supported by local Deaneries.

In recent years, Defence First5 GPs have delivered babies at sea, managed hypothermic paediatric cardiac arrests, septic neonates in remote and austere environments away from supportive secondary healthcare. These high-acuity, low occurrence events provoke anxiety akin to that of young doctors suffering stress because they were ill-prepared for their roles[3].

The military VTS changed focus to provide extra learning for curriculum areas frequently seen by military GPs and on non-RCGP topics such as those in figure 1.

Figure 1: Military General Practice [2]

10 features of high-fidelity simulation that facilitate learning[4].

- **Feedback**
- **Repetitive Practice**
- **Curriculum Integration**
- **Range of Difficulty Level**
- **Multiple Learning Strategies**
- **Capture Clinical Variation**
- **Controlled Environment**
- **Individualised Learning**
- **Defined Outcomes**
- **Simulator Validity**

Figure 2 (left): Casualty packaged for transport and waiting for helicopter extraction.
Figure 3 (above): Skills stations in non-threatening classroom environment.

Immersive Simulation in Defence Vocational Training

The military VTS adopted immersive simulation as a key training modality for a week of operational preparedness prior to CCT. The aim was to expose trainees to challenging situations away from any risk to patients, the team or the doctor.

The course uses multiple learning strategies to build from classroom and small group taught theory, through to skills training with part-task trainers, to classroom based moulages and then into the immersive environment. This allowed layering of learning; each step consolidating and developing what is taught previously allowing deliberate practice of cognitive and psychomotor skills.

Immersive exercises have included disaster relief, peacekeeping and mass casualty management.

Application to Civilian GP Education

General practice is about more than the consultation, and learning from simulation translates beyond the competence being trained to improve patient outcomes in other situations[5]. GPs increasingly face burn-out through overwork, and new models of working place further demands on the GP overseeing a collaborative team of allied health professionals. Immersive simulation could be innovatively used for whole practice training.

Clinically, a morning simulated surgery could involve more than sequential patient assessments; a mid-surgery emergency case, a knock at the door from a junior doctor needing help, an interruption from reception all add to the simulation validity. Holistically, scenarios could challenge reception, nursing and management staff, promote closer working between practice teams and allow team members to see how they, and others, respond to high acuity low occurrence events such as a patient having a heart attack in the waiting room, the mistaken disclosure of patient identifiable information or the violent patient.

Immersive simulation within military GP training has better prepared new GPs for their future role. In civilian practice, immersive simulation using the whole practice setting could better prepare future GPs for their dynamic and challenging role in a safe environment without fear of failure or consequence.

Limitations

The course cannot offer the benefits of team-based training; developing a cohesive group who understand their own and each others' skills and limitations. It does however, allow trainees to fail without impacting on the trust of the team they are leading. Later pre-deployment training should provide team-based training and it is hoped this demonstrates why GPs should be doing team-based training within their future work environments.

References

1. Chiniara G, Cole G, Brisbin K, Huffman D, Cragg B, Lamacchia M, et al. Simulation in healthcare: A taxonomy and a conceptual framework for instructional design and media selection Simulation in healthcare: A taxonomy and a conceptual framework for instructional design and media selection. 2013
2. Adapted from: Mears K, Morgan-Jones D, Richardson J, Simpson R, Wall C. General Practice in the Armed Forces: A Definition and Model. J R Army Med Corps [Internet]. 2012 Sep
3. Barlow A, Smith M. Do UK military General Practitioners feel adequately skilled in the provision of care to the acutely unwell or injured patient? J R Army Med Corps [Internet]. 2019 Oct 1
4. Issenberg SB, Mcgaghie WC, Petrusa ER, Gordon DL, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. 2009
5. McGaghie WC, Issenberg SB, Barsuk JH, Wayne DB. A critical review of simulation-based mastery learning with translational outcomes. Med Educ [Internet]. 2014 Apr 1