system is logistically easier to arrange, but the interface is inherently prescriptive and provides more prompts to the user. Medical students agree that the VRS experience is realistic, encourages deliberate practice and offers detailed, personalised feedback. Therefore the implementation of this platform is consistent with several important principles for maximising the benefit of simulation-based medical education. Recommendations Virtual reality simulation is an exciting, innovative tool for educating medical students and adoption of this technology can complement existing teaching methods.

REFERENCES

P69 THE IMPACT OF EXTRA-CURRICULAR SIMULATION BASED LEARNING ON UNDERGRADUATE MEDICAL STUDENTS

Introduction and aims Simulation-based learning is an integral part of physician training. It enables acquisition of knowledge, skills and attitudes in a safe, educationally orientated and efficient manner. Controlled training environments bridge the gap between the theoretical knowledge acquired in pre-clinical years and the translation of this knowledge to clinical skills required to succeed post-graduation. In Ireland, high-fidelity training centres exist at several medical schools; however, their presence has not heralded an expansive increase in medical student simulation-based learning opportunities. This study aims to assess skill development in a student cohort following the introduction of an emergency medicine simulation competition. The use of competition was predicated on the idea that the imposed stressful environment would mimic the pressure of a hospital environment, thus serving as a proxy for hospital preparedness. The medical students involved do not receive extensive simulation-based training as part of the standard undergraduate curriculum.

Methods Students (n=32) from the University College Cork College of Medicine & Health received weekly physician-led simulation training for 3 months, culminating in a simulation-based team competition. Individual baseline surveys were conducted at the beginning of training, and on the day of the competition. The survey was composed of questions aimed at assessing student confidence of the competing students. There was a significant increase in student confidence related to the topic and all agreed or strongly agreed that the workshop improved their ability to use skills acquired in clinical training. 100% of participants agreed or strongly agreed that the workshop improved their ability to use skills acquired in clinical training.

Results There was a significant increase in student confidence towards both managing a patient’s airway (3.56 vs. 1.78, F[1,31]=69.2, p<0.01) and simulating a rapid sequence induction (2.63 vs. 1.22, F[1,31]=36.5, p<0.01) following the competition. In addition, student confidence assuming a leadership role in a trauma situation increased (3.22 vs. 2.72, F[1,31]=5.39, p=0.027) as well as their ability to engage in closed-loop communication (4.06 vs. 3.05, F[1,31]=19.97, p<0.01).

Discussion The introduction of a competitive environment coupled with extracurricular simulation training positively impacted medical student confidence in both technical and non-technical skills. These data support a potential benefit of increased exposure to simulation training through extracurricular competition during undergraduate pre-clinical and clinical years.

P70 ‘CODE RED’: PILOTING A HIGH-FIDELITY SIMULATION WORKSHOP TO ADDRESS LEARNING NEEDS AND RAISE AWARENESS OF RESOURCE MANAGEMENT

Background The primary cause of preventable trauma-related death is major haemorrhage. Activation of a Massive Transfusion Protocol (MTP) or ‘Code Red’ initiates the rapid and continuous supply of a large volume of blood products during life-threatening bleeds. Activation of the protocol can be life-saving, however, ‘Code Red’ is a resource-intensive activity and significant risk is associated with inappropriate utilisation. An extended MTP can quickly deplete the supply of costly blood products and may lead to waste, thus contributing to a significant cost burden to the healthcare system. Locally, the cost per unit of red cell concentrate is €295, plasma €116, platelets €650 and 1gm Fibrinogen €440.

Summary of work A multidisciplinary team of midwives, nurses, porters, laboratory and blood bank staff and consultants in obstetrics, emergency medicine, anaesthesia and haematology engaged in addressing staff needs by developing a pilot HFS workshop. Three scenarios were developed targeting:

1. Use of appropriate blood products for previously cross-matched blood
2. Timely deactivation of a ‘Code Red’ and
3. Management of a ward-based obstetric MTP (high-risk, low-frequency scenario)

Feedback from participants and users was used to assess the feasibility and acceptability of the pilot session.

Summary of results The pilot workshop was run in March 2019 with 15 cross-discipline attendees. Feedback demonstrated that 100% of participants agreed or strongly agreed that the workshop addressed their learning needs, all agreed or strongly agreed that the workshop improved their ability to use skills related to the topic and all agreed or strongly agreed that the knowledge and skills they learned will be useful to them in their clinical job.

Discussion, conclusions and recommendations HFS offers a solution to both training clinical staff in improving the management of MTPs and in optimising the use of blood products so as to limit waste and resource depletion.
P72 21ST CENTURY IMMERSIVE SIMULATION LAB

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10.1136/bmjstel-2019-aspihconf.170

Background ASSERT, UCC are designing and self-building an immersive simulation space; a 21st century learning environment. The immersive space is a flexible learning space, which facilitates training for restrictive educational settings, is engaging to those outside of healthcare training, appealing to generation Z learning styles, and is scalable to leverage the potential of future XR technologies.

Summary of work A high quality paint finish infused with fine silver and diamond reflects either moving, or still images from 6 professional 8500 lumen projectors, illuminating three walls. The corners are curved to avoid sharp right angles, allowing seamless blending and wrapping of video. Installation of high quality speakers ensures optimum audio in the 70m² immersive space. In addition to high quality projection and audio; DMX controlled scenting machines, fogging machine, lighting and high turbine fan ensure a multi-sensory experience, to increase fidelity and simulation immersion. Four HD cameras record live activity in the space, which can be used for debriefing, assessment, and remote observation. In an adjacent control room 8m², trainees can manipulate the projected images/videos from a powerful Alienware PC, operate simulators, control radio-microphones, operate sensory effects by DMX command, and view the participants on two 65” OLED screens. OLED screens perform better in darkness, with superior viewing angles, deeper black levels giving higher quality contrast and richer colour, and therefore more suitable to simulation control room ergonomics.

Results of work It is a large undertaking, which requires considerable resources in floor space, time and expertise. It has generated much interest with healthcare sciences, allied sciences and the community.

Discussion The projects second phase will see the installation of motion detection devices, so there is full interactivity with the projection displays, and advancement of the applications of XR technologies. The aim will be to maximise telepresence in the virtual world with full interactivity and deep immersion. The technology will be used to supplement carefully designed curriculum and learning objectives, as it is not a substitute for high quality instructional and educational methods.

Conclusion Applications are broad from training pre-hospital personnel in austere conditions, to most hospital and community settings. The application of immersive simulation has shown benefit to people with phobias, anxieties and learning difficulties¹. The space will be used to foster collaboration between departments, and to engage with industry and community, as it is a learner-centred environment to which generation Z will relate, respond and interact with.

REFERENCES


P74 THE DEVICE PROJECT: DIABETES EMERGENCIES: VIRTUAL INTERACTIVE CLINICAL EDUCATION

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Background The TOPDOC survey reported low confidence in Diabetes Mellitus (DM) management by non-diabetes specialist doctors.¹ The prevalence of Type 1 diabetes is increasing and there is a national awareness of increased risk of Diabetic Ketoacidosis (DKA) in hospital with Type 1 diabetes. DM is becoming increasingly complex as patients are living longer with multiple comorbidities and polypharmacy.

Virtual reality (VR) simulation has been used in training successfully in multiple industries. Recently VR technology has been shown to be a viable platform for medical simulation for the future.² Clinical Diabetes project leads therefore wondered if VR simulation may provide a means of offering junior doctors a safe training environment in the management of diabetes emergencies without any risk of harm to patients.

Summary of work The DEVICE project uses Oculus Rift VR headsets in conjunction with Oxford Medical Simulation software in collaboration with Novo Nordisk which immerses learners in virtual scenarios. They are fully interactive, managing acutely unwell patients with diabetes (type 1 and type 2) as they would be in real life, giving the clinician the opportunity to diagnose and initiate treatment for the virtual patient and the ability to interact with the multi-professional team.

The environment, patient and other team members are fully interactive, with conversation and physiology adapting to user actions and treatment. Users then receive personalised feedback, performance metrics and a self-reflective debrief.

This study looked at how using the VR technology improves the confidence of the trainee clinician in managing diabetes emergencies and the retention of the knowledge over time to Kirkpatrick level 2. Junior Doctors and Advanced Clinical Practitioners had a 15-minute orientation and practice session on a test scenario and were then tested on the immersive DKA scenario.

Summary of results This study demonstrated an improvement in the participants confidence in managing diabetes emergencies in the test scenario.

Discussion and conclusions VR technology is a useful educational tool and increased the confidence of the participants in their ability to manage diabetes emergencies and their commitment to bringing back the knowledge gained to their daily practice. Positive feedback from participants included recommendation of VR as a useful modality for education in a safe environment.

Recommendations This pilot study using VR method of education can be further developed in a larger study to compare VR education with standard classroom/workshop/in situ simulation with the same learning outcomes as the pilot study.

REFERENCES