TRAINING ON A CRANIOTOMY SIMULATOR IMPROVES NEUROSURGICAL OPERATIVE PERFORMANCE

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Introduction High fidelity simulation is increasingly indicated in contemporary surgical training in the era of decreased working hours and less operative experience. Simulation offers a safe learning experience, with no risk to patient safety and circumvents trainee surgeons’ working time restrictions.

We asked if ab initio neurosurgical trainees benefit from the intensive two day ‘QMC Craniotomy Simulator Course’ using the Realistic Operative Workstation for Educating Neurosurgical Apprentices (ROWENA™). Skills taught include 3-pin head fixation, burr holes, cannulating ventricles, intracranial pressure bolt placement, turning a craniotomy flap, bone flap fixation and basics of image-guided stereotactic and neuroendoscopic surgery. This type of simulation in neurosurgery has not been carried out before.

Methods Twenty seven junior neurosurgical trainees, over four courses, with minimal prior neurosurgical operating experience were assessed by two independent assessors (Consultant and Registrar level). Participants’ ability to perform a basic neurosurgical procedure, namely burr hole evacuation of a subdural haematoma, was compared at the beginning and end of the course.

Assessments were performed using the Modified Objective Structured Assessment of Technical Skills (MOSATS) - a validated and well-utilised test of operative skill.

Results All participants’ operative ability was demonstrably improved. There were significant improvements in participants’ knowledge of instruments and procedure (by 48% and 45% respectively on MOSATS). Most importantly, significantly improved time and motion (42%), instrument handling (45%), respect for tissue (37%) and flow of operation (48%) were shown (see graphs below). The course was very well received and participants provided encouraging feedback regarding the usefulness and realism of craniotomy simulation.

Discussion, conclusion and recommendations These results, which build on our previous paper, suggest a promising role for intensive craniotomy simulation in neurosurgical training because it appears to improve trainees’ neurosurgical operative ability. The course was very well received and participants provided encouraging feedback regarding the usefulness and realism of craniotomy simulation. Twelve such courses have been carried out over six years and we intend to continue to assess improvement in trainees’ neurosurgical abilities through simulation under the auspices of the Nottingham Neurosimulation Group.

High fidelity surgical simulation offers significant, clinically meaningful improvement in surgical ability in a craniotomy simulator. There may be a role for high fidelity surgical simulation in other surgical specialties.

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EVALUATION OF THE IPATIENT PROJECT – A DIFFERENTIAL DIAGNOSIS TEACHING TOOL FOR OPTOMETRY STUDENTS

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Introduction In recent years, an increase in the number of available postgraduate qualifications for Optometrists has facilitated an expansion in the Optometrist’s scope of practice allowing management and treatment of a wide range of conditions (Needle et al 2008).

It is essential that Optometry teaching both at undergraduate and postgraduate levels involves encouraging the development of clinical decision making based on signs and symptoms that patients present with. Many postgraduate programmes or continuing professional development (cpd) courses available to Optometrists include an element of online learning (Acosta et al 2018).

Methods We developed a novel online simulation tool (iPatient) to afford students opportunities to practice their diagnostic skills on patients presenting with signs and symptoms that typically present as a ‘Red Eye’. The iPatient tool simulates patients, randomly generated from a pool of 14 conditions which typically present with a ‘Red Eye’. These include conditions that range from mild (e.g. allergic conjunctivitis) to sight-threatening (e.g. acute angle closure glaucoma). Medical notes, level of vision, and ocular measurements are generated to provide a variety of information for each condition. Presenting signs and symptoms directly relate to The College of Optometrists’ Clinical Management Guidelines for each of the 14 conditions (College of Optometrists).

Following appropriate ethical approval, the application was piloted with a group of undergraduate (n=20) and postgraduate/qualified (n=10) Optometrists. The programme was demonstrated and participants were asked to complete one scenario. Feedback was invited in the form of a structured questionnaire incorporating Likert responses and free comments.

Results Overall positive responses were received from both cohorts supporting the statements that the tool was ‘easy to use’ and that they ‘learnt from the tool’. Results also demonstrated that the tool was ‘ready to use in a teaching capacity’. Comments relating to how the programme could be improved included; increasing the number of conditions, improving image quality, reducing background music and refining the design aspect of the programme.

Discussion The suggested improvements could widen the application of the programme within both face-to-face and online
undergraduate and postgraduate Optometry courses. In addition to developing Optometrists’ skills in a safe simulated environment, this innovative iPatient project has potential to be employed with other healthcare professionals such as nurses and pharmacists.

Conclusion With minor amendments to the programme following the review, this tool has the potential to transform Optometry education and introduce a strong interactive element to teaching.

REFERENCES

026 IMPACT OF A MULTIPLE, SHORT DURATION IN-SITU SIMULATION ON INPATIENT DIABETES MANAGEMENT – A PILOT STUDY
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Introduction The relation between dysglycaemia and morbidity, cost of hospitalisation and mortality is well established. Even in the presence of established guidelines, human factors may play an important role in the insufficient control of diabetes. The identified gaps include contextual and biomedical knowledge, attitudes, clinical inertia, confidence, and familiarity with existing hospital resources and guidelines with regards to hospital diabetes care. Adherence to guidelines for inpatient diabetes management has shown to be greater with repeated training. Management of blood glucose in an in-patient requires basal-bolus insulin therapy, regular glucose monitoring, as well as enhancing healthcare provider’s role and knowledge. Implementation of training in practice is challenging, mainly due to increasing workload burden on staff and fear of hypoglycaemia. We seek to demonstrate the efficacy of multiple, short duration in-situ simulation; a pilot study in a ward to improve outcomes in patients with diabetes.

Methodology This study will be conducted in the Ward 70 of the Hull University Teaching Hospital. In the first week, 6 patients with diabetes on insulin will be chosen and their blood sugar recordings will be noted. The insulin therapy and adherence to guidelines will be noted. Also noted will be the number of hypoglycaemic episodes. This will serve as the baseline for our current data suggests that there is inadequate adherence in this area. In the second week an in-situ simulation will be delivered replicating hypoglycaemia and diabetic ketoacidosis. This will be repeated twice a week for 3 weeks. Every week data will be collected on the adherence to guidelines in the ward from the medical records of patients with diabetes on insulin. Data will be analysed for multiple episodes of dysglycaemia ( < 4 mmol/L and > 14 mmol/L) and deviation from the hospital protocol.

This is an ongoing study and is expected to be completed in 8 weeks.

Discussion Continuing education to health care professionals is essential to improve patient outcomes and can be provided as in-situ simulation. We believe that this study will form the basis for further research in using low dose high frequency methodology of in-situ simulation for improving ward based care. We believe that our project is unique in identifying whether this methodology can be used for medical patients in a busy tertiary care hospital. If found effective and feasible we hope to share our results widely and replicate this model in other wards and other hospitals in our region.

028 CAN AN ENDOCRINE SIMULATION BASED EDUCATION INTERVENTION ADDRESS THE LEARNING NEEDS OF SENIOR HOUSE OFFICERS?
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Introduction Endocrine diseases are common and acute presentations can have a mortality rate of up to 25%. Trainees need to be able to recognise and manage these conditions competently.

Aims To support 1st and 2nd year Senior House Officer (SHO) trainees in the diagnosis and management of common endocrinology emergencies, through a well- designed hi fidelity simulation based education(SBE) workshop aligned to their self-identified learning needs. Secondary aim was to look at the impact of the workshop as an educational tool and its role in competency.

Methods A mixed methods study was conducted in a major teaching hospital in Ireland. Pre workshop surveys were circulated to the SHOs to rate on a Likert Scale (1–5, the frequency of encounter and their levels of comfort in the management of endocrine emergencies. Post workshop surveys evaluated satisfaction levels and if their learning needs were addressed. Interviews with endocrine consultant supervisors at 8 weeks were conducted.

Results A total of 28 SHOs completed the needs analysis with an average of 3.3 years clinical experience.

Only 7.1%(n= 2) felt that the management of endocrine emergency topics were adequately covered by their education and over 85% agreed or strongly agreed that they would benefit from further training. 64%(n= 18) reported they encountered endocrine emergencies in the out of hours setting. Only 39%(n = 11) felt comfortable in managing diabetic emergencies and only 42%(n = 12) were comfortable in managing acute adrenal insufficiency.

A multidisciplinary hi fidelity simulation workshop was designed to address the learning needs with 3 endocrine