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COMMUNITY SIMULATION PROGRAM DESIGNED TO IMPROVE RECOGNITION OF THE DETERIORATING PATIENT AND ESCALATION OF CARE PATHWAYS

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Background: This abstract looks at how we implemented physical health simulations within community hospitals in late 2020 and more recently physical health simulation in mental health units.

Aim: The objectives of these simulations were to improve the recognition of deteriorating patients and the appropriate escalation and/or transfer of care as well as 'identifying latent errors through simulation' ^[1].

Method: We have run simulations in the community since October 2020 and in the mental health units in February 2021. These sessions have covered four main themes:

- Sepsis
- Hypoglycaemia
- Anaphylaxis
- Opioid overdose

These sessions were taken from pre-existing incidents such as the hypoglycaemic relative and anaphylaxis. We also added opioid overdose as this topic is relevant to both mental health units and community hospitals. We delivered a package of four simulations across 1 month at each unit. This allowed for a different simulation each week, regular learning outcomes and wider opportunity of contact with the staff working within these areas. These sessions were always well attended with staff even committing to learning on days off. This level of commitment shows a real desire to improve not only their own knowledge but also patient safety. We engaged over 50 staff on 9 separate sites (five community hospitals, four mental health wards). Staff have been very engaging and have really got behind these simulation sessions as well as the ward managers. By engaging both mental and physical health, it has helped to provide a wider audience of staff and helped to gain a parity of esteem across the trust in the provision of safety training and simulation. We have also identified a number of latent errors such as non-standardized provision of anaphylaxis adrenalin across the trust, staff unfamiliar with resuscitation equipment bags and equipment location within and identifying the lack of Glucagon within a Hypo box.

Results: The data collected from these sessions have shown a growth in confidence in identifying deteriorating patients and how to correctly implement and use escalation tools such as the sepsis pathway, electronic observations (E-Obs), anaphylaxis algorithms and the SBAR communication tool.

Implications for practice: These simulations have really allowed us to bridge the gap between the acute and community site, allowing for a greater parity of esteem for all patients. Further steps in this program will be delivering mental health simulations to all mental health units and community hospitals to further bridge the learning between physical health and mental health.

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MIXED REALITIES CHEST DRAIN WORKSHOP: INTEGRATING HANDS-ON AND VR LEARNING

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Background: During the pandemic, several wards in our surgical wing became re-purposed for COVID patients. This resulted in patients who would usually be nursed in those wards being placed elsewhere. There were also many nurses and medical staff being redeployed to wards in unfamiliar specialities which required caring for patients outside their usual clinical areas. This resulted in some patients with chest drains being nursed outside the usual areas, and incidents being reported regarding their management.

Aim: The hour-long workshop was designed to simulate the management and understanding of the terminology around chest drains. The hands-on aspect was achieved by modifying a manikin to be able to demonstrate these actions and troubleshoot when things go wrong.

- What is meant by a swinging chest drain?
- How much bubbling is expected?
- Followed by the procedure of inserting a large-bore chest drain using immersive virtual reality

Methods: Ward nursing staff, operating theatre staff and junior doctors were invited to attend the workshop. Six sessions each with five participants ran over the course of a month. The first part of the workshop was a hands-on session with a modified defunct manikin. We had the locally available kit for people to be able to interact with and understand the mechanics of chest drains. Introducing people to the Royal Marsden manual of clinical nursing procedures ^[1] as a reference to be used in parallel with our trust protocols. Hands-on session covered the observations taken for safe management of a chest drain, demonstrating what a swinging and bubbling drain look like. Recognizing when and how to clamp a chest drain was simulated, with a short scenario requiring the attendees to troubleshoot a drain that had stopped swinging and the patient condition deteriorated. How the consumables are changed in the chest drain and its ultimate removal was also covered in the hands-on session as this had been a particular area of concern expressed prior to the workshop. The manikin (Frank) was limited in the ability to insert the chest drain in a realistic manner, so this component of the education was augmented by a virtual reality (VR) option. Pottle ^[2] asserts that VR allows participants to learn from experience as they would do in real life. VR is the use of software to create an immersive simulated environment, to experience VR, participants put on head-mounted display which places them inside an experience, where they can engage with the environment and virtual characters in a way that feels real. VR has a unique power, more than any other simulation technology, to make users believe they are in a different environment. The application used is available on the Oculus go format and is produced by the Royal College of Surgeons in Ireland, it takes the participants through the accident that results in the patient requiring the insertion of a chest drain. They are then faced with decisions regarding his care throughout the experience, following through decisions that may lead to a fatal result for the virtual patient. The VR simulation was in real time, with events unfolding at a realistic pace and included the various airway emergencies unfolding before you after the drain insertion.

Results: Questionnaires were completed before and after the workshop for attendees to evaluate their confidence to

independently manage a chest drain. Every attendee reported an increase in confidence because of the session (Table 1).

Table 1:

How confident are you to.....	Pre-session, %	Post-session, %
Monitor vital signs	95	100
Assess chest drain function	60	90
Recognize/monitor swinging drain	60	90
Patient mobilizing with drain	55	90
Recognizing when/why/if to clamp	25	80
Clamp a chest drain	50	80
Wound management post-removal	35	75
Change chest drain bottle	25	65
Remove chest drain	25	55

Implications for practice: As a result of this session, the ward areas created a 'chest drain box' which had everything needed to manage and replace a chest drain included as locating where kit was kept was identified as an issue. This box will be at the side of the patient being managed with the chest drain and will be checked for completeness regularly. This workshop would be useful to repeat because 50% of junior doctors have now rotated placements and many of the ward staff have been re-deployed to other areas.

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MEDICAL EMERGENCY *IN SITU* SIMULATION TRAINING FOR DENTAL HYGIENE THERAPISTS

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Background: *In situ* simulation, in the clinical environment, can help detect any issues with the systems, policies and practices within an organization that may not work. Many system errors go unnoticed until there is a real incident. Conducting simulation *in situ* is an innovative way of picking up these embedded problems^[1]. Experiential learning theory suggests that, to truly understand a concept, you must experience it first-hand by doing it. Deliberate practice^[2] recognizes that to gain expertise you must keep practicing a skill. Practicing tasks in a simulation environment helps to build performance levels and thus improves patient care and safety.

Aims: This simulation exercise is designed to develop the skillset of foundation dental therapists in respect of Medical Emergency recognition and management in their own working environment. The parameters for assessment included teamwork, knowledge, communication, effectiveness of actions and situational awareness.

Methods: Research methods for this project included a learning needs analysis, surveying and interviewing previous cohorts of hygiene therapists. The conclusions of which highlighted the need for further training in managing medical emergencies. The learning needs identified from stakeholders relating to this course have been used to develop the learning outcomes using Blooms' taxonomy^[3]. The faculty delivered a medical emergency *in situ* simulation training session for Dental Foundation Therapists across the Midlands and East region. The therapist and dental nurse were given information on the 'patient' before the interactive mannikin was

positioned. Facilitators used an adjacent room from which to control the mannikin, including its vital signs and voice. A 360-degree camera along with iPads were used to monitor and record the session for safety and debrief purposes. The therapist worked with their dental nurse to react and respond to the emergency unfolding before them. They then watched back their performance, reflected and provided feedback.

Results: Using GIBBs model of reflection, the 2021 delegates recognized personal learning needs including improvement in leadership and management skills, delivery of chest compressions and teamwork. Changes to practice were also recognized, for example, placing their emergency drugs in a more appropriate location. Using video, a 'Hot Debrief' method of evaluation was carried out whilst the experience was fresh. This proved to be powerful and enhanced personal reflection to support future learning and development. Later, an evaluation method in the form of a survey took place. Results of which showed that 50% of delegates had never partaken in simulation-based education before and 100% gave an excellent rating on the benefits to team and individual. One participant stated 'this was such a good, real-life experience! I hope this can either be introduced into undergraduate training or as part of the practice annual BLS CPD!!'.

Implications for practice: A successful session needed prior communications with the practice staff to free up a surgery for use, inform present patients of the activity and understand where the emergency equipment was during the session for patient safety. The benefits of conducting *in situ* simulation were staggering, the delegates reviewed their current practices and made changes as appropriate.

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CONTINUING ESSENTIAL EDUCATION DURING THE COVID-19 PANDEMIC: VIRTUAL NEONATAL SKILLS TRAINING

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Background: Practical procedures are integral to neonatal care. All first-year paediatric specialist trainees (ST1s) are expected to develop essential skills from their first neonatal placement. However, many trainees join the speciality with minimal prior exposure. With recent changes in junior doctors' contracts, reduced working hours and evolving clinical practices, trainees may not get enough clinical exposure to acquire required skills. Simulation is recognized as essential to bridge this training gap^[1]. A practical skills course developed in 2018 has been running with consistently good feedback. However, during the COVID-19 pandemic, it was suspended.

Aim: The aim of the study was to adapt neonatal skills training to virtual delivery.

Methods: In September 2020, we trialled a half-day virtual training course for new trainees on core topics. The first part included 'Human Factors' followed by 'Stabilization of the premature infant' using a pre-recorded simulation followed by a live debrief. The second part covered 'intubation