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Emergency Nursing Education Showcase

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Integrating paramedic and emergency nursing learners in an in-situ trauma team simulation

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The Problem

Challenges with clinical experiences during COVID-19

Providing learners with an opportunity to apply learned concepts to a clinical context is a cornerstone of health professions' education. Simulation creates opportunities for learners to consolidate and apply concepts learned in the classroom in a manner that can replicate high-risk, low-occurrence (HALO) events in a safe and facilitated manner (Amiel et al., 2016; Barleycorn & Lee, 2018; Clapper, 2013; Cook et al., 2012). Similarly, in-situ simulation provides an opportunity to apply technical and non-technical skills in the actual clinical environment, which has the added advantage of increasing fidelity and enhancing contextual factors (Cook et al., 2012; Doumouras et al., 2014; Miller et al., 2012). Recognizing that interprofessional experiences are integral in health professions education as a method of promoting and creating a culture of collegial collaboration (Amiel et al., 2016; Doumouras et al., 2014; Miller et al., 2012; Rosen et al., 2012; Walker et al., 2013), many education programs have integrated these experiences into their curriculums. Learners in paramedic and postgraduate emergency nursing programs have previously engaged in high fidelity simulation experiences as a means of fostering technical and nontechnical skills. Unfortunately, prolonged pandemic-related restrictions on gatherings created additional challenges with facilitating clinical education for many health professions' learners. As a means of ensuring continuity of quality educational experiences, an opportunity arose to integrate learners into a well-established in-situ trauma team simulation that was being facilitated on a monthly basis at a local academic hospital as a means of professional development for active clinicians.

The Solution

Stakeholders from the trauma team of an academic health sciences centre, and faculty from paramedic and emergency nursing programs of a local college came together to create a simulation that met the needs of all participants. An agreement was reached where learners could be integrated into a pre-existing in-situ trauma team simulation where they would interact with active clinicians of the health system during the care of a simulated patient with traumatic injuries requiring active resuscitation. Participants included learners from paramedic and emergency nursing programs and active clinicians from the trauma team (anesthesia, orthopedics, general surgery, respiratory therapy, medical imaging, nursing).

After outlining the various needs of each group, common objectives were designed. Technical objectives focused on the pre-hospital and intra-hospital assessment and management of a traumatically injured patient. One scenario involved a patient with blunt trauma and the other with a penetrating injury. Nontechnical objectives focused on: 1) Team handover between paramedic and trauma teams using a structured handover format (IMIST-AMBO; Appendix), and 2) Intrateam dynamics within the trauma team once the patient was handed over.

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Two scenarios involving a traumatically injured patient were developed and expanded to include a prehospital phase. A pre-briefing was held for all participants ensuring familiarity with equipment and scope of simulation. Trauma Team members were unaware of the in-situ simulation until arrival to the trauma room; pre-communication had been sent indicating this was to be expected. Paramedic student learners would perform the initial stabilization and transport of the patient and subsequently transfer care to a trauma team comprised of active clinicians and learners in a postgraduate emergency nursing program. The pre-hospital phase was hosted in a room adjacent to the Trauma Room for paramedic students to perform their assessment. Participants had an opportunity to "patch in" to the receiving team for pre-alert notification. Once care was transferred over to the trauma team, the in-hospital phase ran until one of two points were reached: 1) key milestones were achieved (airway and hemorrhage control, definitive plan of care), or 2) 15 minutes had elapsed from arrival to the trauma room. Debriefing for all teams was hosted after scenario for approximately 15 minutes.

The Evaluation

What went well

This provided an excellent opportunity for learners to be integrated into actively practising clinical teams in a safe and controlled environment. Paramedic and emergency nursing learners had the opportunity to practise new technical skills in a high-fidelity environment. All participants had the opportunity to employ their nontechnical skills and receive facilitated formative feedback on areas for development. According to one participant's feedback: *"Simulation creates a safe environment for students to learn how to manage patient conditions. Although a real patient is much different – the expected deterioration have similarities and I can still remember all the simulations I've done, what went wrong in it and how I could have improved practice."* In addition to being able to practise resuscitative procedures, such as airway management and blood product transfusion, learners appreciated the opportunity to employ their communication skills in a very realistic scenario that reflected potential situations they were likely to encounter in their professional careers. Overall fidelity of the scenario was achieved, largely in part to the in-situ nature of the scenario. Conducting the scenario in the actual clinical environment with the actual equipment and layout that clinicians were accustomed to, helped participants adapt the requisite "suspension of disbelief" that is necessary for the success of all simulation scenarios. Having the actual equipment and device alarms trigger at the right times, helped enhance the overall environment participants were practising in.

The second major contributor to the fidelity of the scenario was the truly interprofessional nature of the simulation. Often, when educational programs conduct simulation scenarios, they are uni-professional and rarely integrate all members of an actual clinical team. This often impacts the fidelity of the scenario, as some roles are not accurately represented or accounted for. Also, when participants are already familiar with each other from being in the same training program, an inherent familiarity with team members may make the challenges of real-world ad hoc clinical teams difficult to replicate. By including all of the professions involved in a trauma response, clinical roles were adhered to, but also the natural challenges associated with ad-hoc teams and crowd control were replicated in a realistic sense. Similarly, participants were pleasantly surprised at how some simple communication interventions could help mitigate some of the chaos and confusion associated with dynamic resuscitations and ad hoc teams.

Challenges and what could be improved

Given that this simulation was conducted in an active clinical environment, this activity was not without its challenges. As is well described in the literature on in-situ simulation, competing operational demands inherently limit the ability to conduct these activities, as well as the availability of the active clinical team. With maintaining patient safety and quality care the principal guiding factor, the planned scenario had to be deferred on two occasions due to actual trauma patients arriving to hospital.

Secondly, given the relative size of the core trauma team and the number of stakeholders involved, coordination between all groups was often a challenge. Finding an ideal time when the learners and team members could safely conduct an in-situ simulation with minimal impact to active clinical operations limited the timing of these activities to mid-morning, when most of the interprofessional handovers had completed and most morning routines of clinical areas had been completed. Scenarios that were attempted later during the day were challenged with predictable increases in patient volumes and clinical operations.

Buy-in from active clinicians was initially challenging at the start of scenarios, but encouragement and support from departmental leadership of all teams helped with active participation. Proactive communication was sent to all clinical teams well in advance of the planned simulation informing clinicians of the non-judgmental manner of these in-situ simulations, and the general expectation for active participation barring immediate unavoidable conflicts with patient care activities. Participants were expected to participate to the best of their ability.

The next challenge arose from the inherent need to limit the duration of the activity to minimize impact to actual clinical care. From start of the scenario to the end of the debrief, trauma team resources were engaged in this activity for 45–60 minutes. In some cases, the planned 15-minute run time was insufficient for participants to achieve key milestones in the scenario. For participants to have a truly meaningful learning experience, the facilitators often decided to extend the scenario run time until some key milestones such as hemorrhage or airway control had been reached. This, ultimately, had an impact on the overall exercise time, and impacted the scenario debriefing. Due to the relative size of the trauma team and time limits, the clinical debrief often had to be truncated, and not all participants had the opportunity to provide input.

Lastly, the academic rigour of this exercise could have been improved through the collection of more qualitative and quantitative data from facilitators and participants to measure if this activity had any impact on clinicians learning or performance.

Given what is already known about conducting in-situ simulations and the experience of this activity, the authors have

determined two major considerations for future continuity of this or similar programs. First, ensure all participants have an opportunity to participate in debrief, potentially by separating the large group into micro-team debriefs. Secondly, strict adherence to time commitments to ensure efficient facilitation. If a scenario is failing to progress, facilitator-injected prompts to move the scenario along may be considered.

Sustainability

Overall, integrating learners from health professions' education programs with an actual clinical team for an in-situ simulation provided participants with a positive opportunity to apply their technical and non-technical skills. This immersive opportunity created a valuable experience for learners that highlighted some of the real-world challenges in working in a high acuity environment with an interprofessional team. While faced with similar challenges with facilitating any in-situ simulation, this educational experience proved valuable to the learners and can be considered for future curriculum planning for health professions' education programs.

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Appendix A

IMIST-AMBO Communication Tool