COVID-SIM: building testing capacity through public engagement with healthcare simulation

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INTRODUCTION

An outbreak of respiratory disease caused by COVID-19 has caught the world off guard. As death tolls rise and governments implement stringent measures to control its spread, members of the public show desire to help.

Testing as a means to manage and contain the disease has been recognised worldwide. This has spurred numerous initiatives including set-up of drive-through COVID-19 testing clinics. Currently, drive-through testing is performed by healthcare workers.

Using these drive-through clinics as inspiration, we propose integrating simulation to train volunteers from the public to perform safe testing of symptomatic patients for COVID-19 in the community.

MAKING SIMULATION ACCESSIBLE

The initial uptake of simulation in contemporary healthcare education was first employed to prepare for crisis events. As we combat the COVID-19 pandemic, healthcare educators have a duty to expand the use of simulation beyond its dominant use in training and assessment to its full potential, including making it readily accessible and relevant to the public. We suggest Kneebone et al’s model of ‘distributed simulation’ as an easily accessible, widely available method to deliver a low-cost, ‘immersive’ simulated experience.

This can be achieved by taking simulation away from the physical confines of a simulation facility and into the community. We envisage that this could be successful as learners and educators will be working towards a common goal with personal meaning.

COVID-SIM: A LOW-COST, MOBILE SIMULATOR

Our audience

 Volunteers from the public, ideally with a basic understanding of infection control, for example, from the food handling industry, biomedical laboratories.

Simulated scenario

 Simulated ‘test centres’ to train volunteers on safely donning and doffing personal protective equipment (PPE) and swabbing symptomatic patients for COVID-19.

Our purpose

 Alleviate pressures posed on the healthcare system, allowing greater numbers of nurses and paramedics to return to the front line.

► Safely teach new skills to volunteers.
► Create a representation of ‘safe swabbing’ for the purposes of practice.
► Extend the benefits of simulation to the community.
► Provide a safe space for learners for feedback and debriefing.

In the preparation phase, comprehensive and achievable intended learning objectives should be set around the use of PPE, appropriate sample collection and communicating with patients. We propose that educators use a low-technology manikin head, PPE and testing kits to deliver situating training in the community, based on a standardised protocol.

Following an introduction and demonstration of the simulators, volunteers will learn through practice and experimentation. The educator’s role will be to provide ‘Vygotskian’-style ‘scaffolding’, encouraging novice learners to experiment and providing support and feedback when required to advance learning. A formal debrief will conclude each session (figure 1).

SIMULATION-BASED INSTRUCTIONAL DESIGN

The simulation design progressively layers and integrates skills as follows:

Stage 1: skills-based simulations

► Safe donning and doffing of PPE (demonstration, practice with PPE, feedback).
► Swabbing of patients (demonstration, practice with swabs and manikin heads, feedback).
► Communication for gaining consent, explanation of the procedure and process of obtaining test results (demonstration, role-play, feedback).

Stage 2: scenario-based simulations

► Task performance using the manikin in a ‘car’, with the voice of an educator/volunteer (briefing, experimentation, simulation practice, debriefing).

Multiple debriefing tools exist to structure the discussion that follows the simulation. The primary aim is to foster a supportive environment where the learners feel safe and psychologically challenged to engage in reflective practice.

RETHINKING FIDELITY: SHIFTING FOCUS TO ENGAGEMENT AND MEANINGFULNESS FOR LEARNERS

The rise in popularity of technology in simulation accompanies the assumption that greater simulation fidelity (ie, a high resemblance to real patients, events and/or environments) will lead to enhanced
This has shifted focus away from the intended educational outcomes of the simulated experience. Hamstra et al argue that higher fidelity does not necessarily correspond to improved educational effectiveness. They go so far as to maintain that the concept of fidelity is unhelpful and that ‘functional task alignment’ and ‘learner engagement’ are more important features of learning using simulation.

Going beyond the above definition of fidelity, Stokes-Parish and colleagues describe two complementary modes of reality: (1) conceptual or ‘semantical’ realism, that is, the cue that invites the learner to progress in the scenario, and (2) ‘phenomenal’ realism or the emotional buy-in of the learner. The potential for COVID-SIM’s success lies in the phenomenal realism that learners bring to the simulation. Our intended learners have willingly signed up so we anticipate they enter the programme flexibly and low-cost simulation approaches. This has shifted focus away from the intended educational outcomes of the simulated experience.

Handout Image

Figure 1 Description of the phases involved in the design and application of the simulated activity for COVID-SIM (adapted from Swanwick et al). ILO, intended learning objective.

HOW CAN WE USE THE LESSONS LEARNT HERE TO INTEGRATE SIMULATION IN THE FUTURE?

COVID-19 has created a global healthcare crisis. Here we propose a role for simulation that goes beyond the confines of the simulation facility and beyond the healthcare community. As a new initiative addressing an expanded ‘audience’ we believe COVID-SIM offers space and potential for exploration.

In an attempt to reflect the emergent nature of the COVID-19 crisis, we have not added details on how we would train educators or what suitable equipment could be used where potential shortages of PPE or testing kits exist.

Like this virus, simulation sees no boundaries. Moving forward, this initiative could provide a starting point to illustrate an expanded scope for simulation, one that potentially forges greater connections and collaboration between healthcare and the public.

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REFERENCES

1. Kneebone R, Arora S, King D, et al. Distributed simulation—accessible immersive training. Med Teach 2010;32:65–70.
2. Battista A, Nestel D. Simulation in medical education. In: Swanwick T, ed. Understanding medical education evidence, theory and practice, 2019.
3. Rudolph JW, Simon R, Rivard P, et al. Debriefing with Good Judgment: Combining Rigorous Feedback with Genuine Inquiry. Anesthesiol Clin 2007;25:361–76.
4. Hamstra SJ, Brydges R, Hatala R, et al. Reconsidering fidelity in simulation-based training. Acad Med 2014;89:387–92.
5. Stokes-Parish J, Duvivier R, Jolly B. Expert opinions on the authenticity of moulage in simulation: a Delphi study. Adv Simul 2019;4:16.