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

Natasha Christodoulides, William P Duggan, Kirsten R Dalrymple

Department of Surgery and Cancer, Imperial College London, London, UK

Correspondence to
Dr Natasha Christodoulides, Department of Surgery and Cancer, Imperial College London, Clinical Skills Centre, 2nd Floor, Paterson Centre, St. Mary's Hospital, South Wharf Road, London W2 1BL, UK; natasha.christodoulides19@imperial.ac.uk

Accepted 14 April 2020
Published Online First 30 April 2020

To cite: Christodoulides N, Duggan WP, Dalrymple KR. *BMJ Simul Technol Enhanc Learn* 2021;**7**:52–53.

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.[1]

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 situated 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.[2] 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.[3]

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

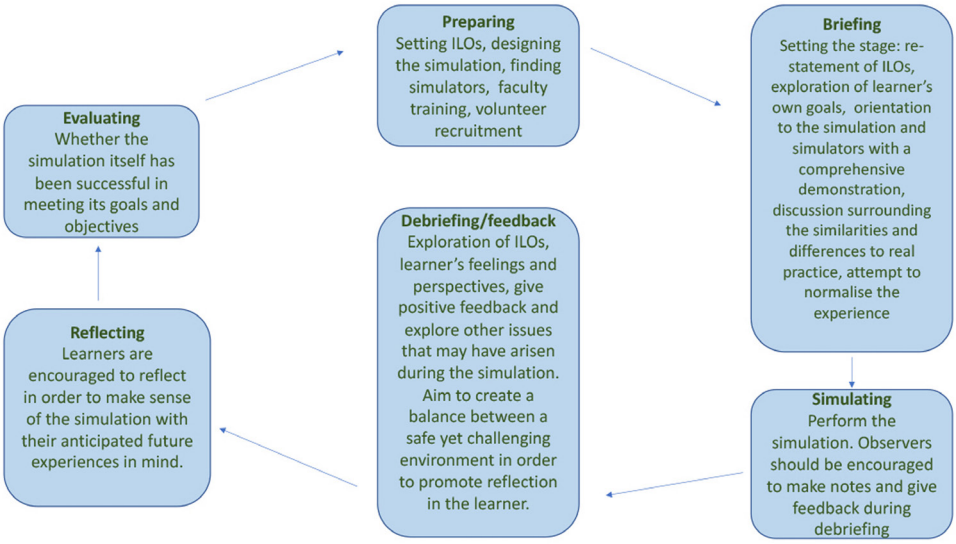

Figure 1 Description of the phases involved in the design and application of the simulated activity for COVID-SIM (adapted from Swanwick *et al*[2]). ILO, intended learning objective.

learning.[4] 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.[4]

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.[5] 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 with greater emotional investment, greater sense of purpose and, hence, a greater average level of engagement. As effective simulation lies largely in engagement and meaningfulness for the learner, COVID-SIM is poised to create learning gains using flexible and low-cost simulation approaches.[1 2 4]

Key messages

- The COVID-19 crisis provides an unprecedented opportunity for healthcare educators internationally, to employ low-cost, easily accessible and portable simulated training to relieve pressures on healthcare systems.
- Taking simulation beyond the confines of training and assessment of clinical 'insiders' shows the potential for simulation to train non-clinical volunteers to perform essential tasks.
- Practice, experimentation, feedback and effective debrief are key in encouraging reflective practice in learners.
- Crisis situations are known to create a stronger sense of 'community'—the emotional engagement of learners and educators can be harnessed to promote relevant learning.

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 nor 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.

Twitter Natasha Christodoulides @Natasha_C3

Contributors NC conceived and designed the work. All authors were involved in the planning and leadership of this work; were involved in the development of the idea; and contributed in the preparation of this manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Provenance and peer review Not commissioned; internally peer reviewed.

ORCID iD
Natasha Christodoulides http://orcid.org/0000-0002-5951-6867

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.