

A toolbox for teaching telehealth using simulation

Romany Martin¹  | Allison Mandrusiak¹ | Trevor Russell² | Roma Forbes¹ 

¹School of Health and Rehabilitation Sciences, The University of Queensland, St Lucia, Queensland, Australia

²RECOVER Injury Research Centre, The University of Queensland, Herston Rd, Herston, Queensland, Australia

Correspondence

Romany Martin, School of Health and Rehabilitation Sciences, The University of Queensland, 84a Services Rd, St Lucia, QLD 4067, Australia.

Email: romany.martin@uq.net.au

1 | INTRODUCTION

There has been a surge in telehealth during the COVID-19 pandemic as, by definition, it does not require physical proximity.¹ This rapid uptake has presented challenges for the workforce, who traditionally have not received pre-professional preparation for telehealth service delivery.² In response, education providers are starting to implement telehealth training within healthcare curricula that typically involves didactic teaching, skills training and experiential learning.³ Simulation is an experiential learning approach for developing telehealth service delivery skills. Simulation allows learners to apply knowledge and skills in a safe and low risk environment whilst also providing opportunities for direct feedback.⁴ Some authors have gone as far as positioning simulation as vital for the safety and quality of telehealth practice.⁵ This paper extends on the current literature regarding telehealth curricula³ by summarising the use of simulation for the teaching of telehealth skills in health professional education.

Simulation allows learners to apply knowledge and skills in a safe and low risk environment.

This toolbox recommends the consideration of key domains: inclusion of telehealth guidelines, telehealth simulation design elements such as telehealth-specific skills and the

clinical case and telehealth simulation delivery such as learner preparation and debrief and considerations for using online platforms. The following recommendations have been compiled from relevant literature and experiences of curriculum designers and educators at the University of Queensland.

2 | TELEHEALTH GUIDELINES

In response to the COVID-19 pandemic, many professional bodies have detailed competencies for telehealth practice, for example, the 'Australian Physiotherapy Association Telehealth Guidelines'⁶ and 'Speech Pathology Australia Telepractice checklist'.⁷ Such guidelines provide a structured approach for clinicians to ensure that professional standards and legal requirements are maintained. When developing simulation for telehealth education, it is beneficial to reference relevant professional guidelines to inform discipline-specific teaching and learning outcomes⁴ and to assist with enhancing perceived clinical relevance for learners.

3 | TELEHEALTH SIMULATION DESIGN

3.1 | Structure

Simulation activities should follow a structured format, covering preparation (including a briefing orientation), an interaction and a debrief to provide opportunities for reflection and optimise the outcomes for learners.⁴

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3.2 | Telehealth skills and clinical adaptations

The experiential nature of simulation is well suited to telehealth education³; it is known that high levels of technology confidence do not translate to high levels of confidence to deliver telehealth, with learners requiring specific opportunities to practice telehealth skills.⁸

Telehealth simulations should be designed for learners to practice skills and to adapt these to clinical contexts. The skills that learners are required to develop during telehealth curriculum are well researched,⁹ and Table 1 details how educators can design simulations to build opportunities for learners to develop these skills. Educators are encouraged to consider the clinical case itself, including client demographics, their clinical condition, the involvement of other health professionals and the intended learning outcomes that can be achieved through the manipulation of such variables. The final variables for consideration in this toolbox include the script for the actor and the events planned by the educator that can be used as teachable moments to communicate telehealth knowledge and skills.

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3.3 | Delivery mode

The simulation preparation and debrief can be facilitated face-to-face with purely the client interaction completed via videoconference; alternatively, the entire simulation may be facilitated via videoconference. When completing the entire simulation via videoconference, the preparation and debrief can be completed in a main meeting room with breakout rooms created for each simulated client. This adaptability positions simulation for the learning of telehealth skills as a portable experiential activity resistant to the unpredictable requirements of the COVID-19 pandemic.

Additionally, the online nature of the simulation can be resource efficient given that authentic client interactions can be created with basic modern technology such as a laptop with a web camera. Given the significant costs that simulation can incur such as dedicated simulation facilities,¹⁰ online approaches without the need for physical infrastructure may offer a resource-efficient and thus sustainable approach to experiential learning.

3.4 | Actor portraying the client

During simulation, the client is typically portrayed by an actor, who may be a near peer.¹¹ Near-peer actors are shown to be effective in achieving learning outcomes, with both learners and actors benefiting from the simulation.¹¹ Role play between peers within a cohort presents another method of facilitating similar telehealth

TABLE 1 Telehealth specific knowledge and skills to incorporate into clinical case design (adapted from Davies et al. 2021)

Telehealth knowledge, skills and adaptations.	Design examples in response to core capabilities.
Domain 1: Compliance	Script the actors to ask questions regarding the laws around practicing across state jurisdictions via telehealth In a follow-up activity, encourage the learners to document the interaction and consider what additional information they might record with relevance to telehealth
Domain 2: Patient privacy and confidentiality	Script the case so that learners must get informed consent to take photographic stills of the client during the interaction Script the case so that the client must remove a shirt to expose their shoulder, and have the actors ask about the security of the platform that the learner is using
Domain 3: Patient safety	Script the clinical case so that the client is potentially at risk (i.e. during supervised exercise), and if the learner does not respond to this in a timely manner, have the actor experience an adverse event (i.e. fall) Script the clinical case to include an adverse event that the learner has to respond to (i.e. shortness of breath)
Domain 4: Technology skills	Script that the client has poor Internet connection and that their video is 'freezing' Script that the client cannot turn their camera on, and have the learner guide them through this Script a discipline-specific task that is complex via a two-dimensional camera (e.g. completing a functional assessment)
Domain 5: Telehealth delivery	Script that the client has the video facing the ground and continues to walk off screen, encouraging the learners to provide education about technology use needed for telehealth Script that the client is hearing impaired and unable to understand what the learner is saying, encouraging the learner to demonstrate the communication adaptations required of telehealth (e.g. increased use of non-verbal language)
Domain 6: Assessment and diagnosis	Script that the learner must conduct an appropriate assessment via telehealth. (i.e., mental health assessment, post-operative follow up, assessment of a musculoskeletal injury).
Domain 7: Care planning and management	Script that the learner must deliver an appropriate intervention via telehealth (i.e. repeat prescription consultation, health promotion through lifestyle change and exercise prescription)

experiential learning.¹² This may address concerns relating to financial viability of sourcing paid actors, without decreasing fidelity.

Furthermore, during role play, learners can experience telehealth from the client's perspective, which may improve their understanding of the client experience of telehealth and subsequently their communication skills. Client role play amongst health professional students has been established to promote reflection, facilitate a greater understanding of the client's point of view, and improve learner self-efficacy and communication skills.¹³

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3.5 | Guiding questions

Following the authors' experiences at the University of Queensland, the following guiding questions (Box 1) are provided to assist the design and delivery of simulation for telehealth skills.

BOX 1 Guiding questions for simulation design

Guiding questions for simulation design

Will learners join remotely or are room bookings required?

If on campus, what type of teaching space is needed to facilitate the simulation?

Will the simulation use trained actors or will the actors be near peers or peers?

If using actors, are they remote or will they be on campus?

What type of training will the actors require, and if they are remote, can they receive this via videoconference?

If the actors are remote, how will they be contactable in the instance of technological difficulties?

How will the learners and the actors access the videoconference?

How many students will be completing the simulation?

What ratios of staff and actors are appropriate for the clinical case?

Who is designing the clinical case, and will it be peer reviewed?

4 | IMPLEMENTATION OF TELEHEALTH SIMULATION

4.1 | Learner preparation

Preparation for the simulation, commonly referred to as a 'briefing orientation',⁴ is time dedicated to cover case details and planning for the interaction. Relevant case-based information can be used to introduce the learners to the simulated client and their presenting complaint. Furman and Miller advocate that providing learners with unambiguous instructions and adequate client information is important for alignment of expectations amongst both learners and educators.⁴

When preparing students for telehealth simulation, educators are encouraged to consider the additional information that learners require prior to the interaction, for example, instructions for the chosen videoconference platform, adverse event procedures and protocols to ensure correct client identity, ongoing safety and privacy. This information should be made available, in addition to traditional simulation briefing information, for example, client demographics, the presenting complaint, reason for healthcare engagement, past medical history and expected outcome of the interaction. Encouraging learners to respond to both the telehealth specific information and traditional simulation information may increase the efficacy of the learners' simulated client engagement.

Once provided with this information, learners are encouraged to work in small groups to plan the interaction, and it is recommended that these are the same groups for the simulation interaction.¹¹ Whilst planning the interaction, learners are prompted to consider how engaging with a client via telehealth may differ from routine practice, and subsequently, the adaptations they may need to adopt to respond to these differences.

Learners are prompted to consider how engaging with a client via telehealth may differ from routine practice.

4.2 | Telehealth simulation

Simulations via telehealth present unique pragmatic challenges, requiring some prior consideration. One such challenge when completing the simulation with learners on campus is noise control, as learners intuitively increase their volume to overcome the communication challenges presented by an online medium. Educators should consider small, separate spaces for the simulation or decreasing group

size as resources allow. Another challenge is the connection of the learners to the actor, that being the reliability of the Internet connection and the functionality of the chosen platform. Considerations regarding the platform used during the simulation can include how both parties will access the meeting (i.e. who establishes and controls the meeting) and the balance between authenticity and resource limitations. Although authenticity is encouraged during simulation for telehealth teaching and learning,² the cost-benefit of using a clinical telehealth platform is yet to be established. Platforms such as Zoom® have been recommended as useful and effective for clinical skills teaching.¹⁴ Training is recommended to be performed on the platform most likely to be used in practice, as some skills may not be transferable between platforms.

The resources recommended for use during simulation for telehealth are detailed in Table 2.

4.3 | Debrief and feedback

Following the interaction, structured debriefing is indicated amongst learners to facilitate further knowledge and skill development that may have been overlooked during the simulation.⁴ An example of one such framework is that of Eppich and Cheng.¹⁵ This scripted framework achieves the three educational strategies being '(1) learner self-assessment, (2) facilitating focused discussion, and (3) providing information in the form of directive feedback and/or teaching' (p. 1), which assists learners in assimilating the knowledge and skills developed during the simulation.

Outcomes of learning should be evaluated to understand the effectiveness of the simulation. One example of a framework for evaluation is outlined in Table 3, which has been informed by an

TABLE 2 Recommended resources

Resource	Details	Recommended troubleshooting
Videoconference platform	Used for the telehealth interaction between actors and learners If conducting the simulation remotely, the main meeting is used for the briefing orientation and debrief Break out rooms can be used for the simulation	Assign a staff member to create break out rooms and allocate learners and actors to break out rooms with specific timings
Educator staff: 1. Actors 2. Clinical educators	Ratio of learners to actors approximately 3:1 Higher ratios will crowd the number of learners who can be positioned on the telehealth video Ratio of learners to clinical educators approximately 10:1 Ensure that clinical educators are not supervising more than three groups of students at once	A staggered timetable is recommended, for example, two separate groups that stagger start their 30-min briefing orientations, simulations and debrief This allows one staff member to coordinate the briefing orientations and debrief, whilst another coordinates the simulations
Documents: 1. Clinical case notes 2. Script (actors)	To communicate required information to the clinical educators, actors and learners (e.g. schedule of the simulation, the expected learning outcomes and relevant clinical information)	Extra access (either electronically or hardcopy) to documents on the day of the simulation is recommended
Device with videoconference capability	Learners are encouraged to bring their own device	Remind learners prior to the simulation that their device should be ready for use Ensure that students have licencing for the relevant platform and have it downloaded

TABLE 3 Self-efficacy scale of telehealth competency domains (adapted from Davies et al., 2021)

Competency domains (Please circle your agreement with the following)	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I am confident that I can maintain the legal compliance requirements of telehealth	1	2	3	4	5
I am confident that I can maintain patient privacy and confidentiality during telehealth service delivery	1	2	3	4	5
I am confident that I can maintain patient safety during telehealth service delivery	1	2	3	4	5
I am confident that I can have the technology skills required for telehealth service delivery	1	2	3	4	5
I am confident that I can successfully provide telehealth services	1	2	3	4	5
I am confident that I can undertake effective assessment and diagnosis via telehealth	1	2	3	4	5
I am confident that I can provide care planning and management via telehealth	1	2	3	4	5

BOX 2 Lessons learned regarding telehealth simulation

Lessons learned regarding telehealth simulation

Scaffolding the use of telehealth simulation on previously applied clinical skills allows learners to focus specifically on adapting their skills to a telehealth setting without overwhelming them with new clinical content

Encourage critical reflection amongst learners during the telehealth simulation debrief. This should focus on the learners' performance during the simulation or the role of telehealth in improving health equality

Prioritise a methodically rigorous approach to the evaluation of telehealth simulation. These should include the use of psychometrically rigorous outcome measures

empirically derived set of core capabilities for the delivery of quality care via telehealth.⁹ These competencies can either be used to evaluate self-efficacy via a Likert scale as demonstrated in Table 3 or alternatively converted into competencies and used for formative assessment.

The lessons learned following the authors' experiences of designing, implementing and evaluating a telehealth simulation at the University of Queensland are summarised in Box 2.

5 | CONCLUSION

Telehealth simulation presents an opportunity for education providers to meet the telehealth skill needs of their students and thus future healthcare professionals. Teaching the next generation of clinicians to use telehealth through the use of simulation can be cost efficient and offers an authentic approach to prepare learners for practice. Educators are encouraged to consider the discipline-specific adaptations required to conduct clinical service delivery via an online format, and to design their simulations to encourage student action in response to these competencies. Furthermore, the toolbox encourages educators to consider the use of competencies, in addition to structured debrief for the feedback and evaluation of learner performance.

Simulation can be cost efficient and offers an authentic approach to prepare learners for practice.

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CONFLICT OF INTEREST

This project does not have any competing interests to declare.

ETHICS STATEMENT

This work was approved by the University of Queensland Human Research Ethics Committee: approval number 2020002213.

ORCID

Romany Martin  <https://orcid.org/0000-0003-4837-8048>

Roma Forbes  <https://orcid.org/0000-0002-9959-3875>

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