Infection control in simulation-based education

London's Approaches to Delivering Simulation Based Education During a Pandemic

Document Aim

This document and the associated Risk Assessment Matrix (Appendix A), have been created to assist in in the risk assessment and implementation of risk management strategies necessary to enable the safe delivery of essential healthcare education during COVID-19 pandemic.

It details the strategies utilised by simulation centres in London to manage infection control risks and a risk assessment tool has been created. The document has been compiled with a dual focus, firstly, on the immediate need for robust infection prevention practices to protect staff, patients, and the general public from avoidable transmission, and secondly with the need to maintain a competent workforce surrounding our patients, for which experiential learning is essential.

It is hoped that this document will enable educators and decision makers to consider the impact of risk management strategies and the unintended outcomes and opportunities associated with a change in education practices. The interruption of workforce education and training compromises patient safety. There are no "risk free" strategies but this document should support informed decision making within each centre. Local and national infection prevention guidelines will also need to be adhered to.

Background

In responding to the COVID-19 pandemic, simulation centres across London have adapted differently in relation to local need. From complete closure, to cancellation of courses and last-minute COVID-19 trainings taking place.

Under normal circumstances, simulation centres operate at maximum capacity, therefore, social distancing creates major challenges in the delivery of post-graduate curricula and ongoing professional development. Centres have halved their capacity in order to safely deliver training, and presently some centres are unable to deliver any usual courses, having been repurposed for other activity or due to uncertainty around safe practice.

Responsibility for risk assessment and decision making around running face-to-face training is held locally.

Methodology

This document has been created through consultation with London Simulation Centres as to their approaches to managing infection control risks with risks of non-delivery of simulation-based education (SBE).

Simulation Centres within London submitted responses to a simple set of questions (Appendix B) in June 2020, either through email or telephone. These have been analysed by theme and the risk management strategies are outlined under three headings: social distancing ("1m+ rule"), risk

mitigation (such as PPE) and the development of innovative digital solutions to deliver training online.

Infection Prevention Risk Management

Many education interventions are multimodality and these recommendations are being utilised in different scenarios dependent on education priorities, infection prevention guidance, real estate, and faculty availability.

There is a clear need for all three approaches and centres articulated adoption of several simultaneously. Below are some recommendations of how to implement each approach, which should be considered in line with Trust guidance.

Social Distancing

Social distancing government guidelines state that "you should keep two metres apart from people who are not in your household or support bubble at all times" (this may change to 1 metre on July 4th in accordance with government advice). [1]

This distancing can be facilitated in simulation centres by creating a one-way flow system, restricting delegates and faculty to specific areas to avoid unnecessary contact and staggering breaks. This also includes minimising prolonged contact and adhering to social distancing in staff-only areas. To implement social distancing in most cases, either capacity must decrease, or venue spaces must be larger. It is essential that individual centres establish their own guidelines surrounding capacity limits for teaching spaces, as these will vary according to individual venue sizes. It is recommended to display social distancing signage throughout the centre and to mark crosses on the floor or on chairs to indicate this distancing. It is also advised to have minimal staff on-site and encourage working from home where possible.

BENEFITS:

- Can deliver training face-to-face
- Courses can continue more normally

CHALLENGES/RISKS:

- Increased risk of virus transmission
- Decreased capacity by 50% which means courses can take double the amount of time to be delivered
- Only time for more essential courses, which may lead to loss of income for some centres
- Increased faculty time required
- Learners who are shielding may not feel comfortable attending

Risk Mitigation

Risk mitigation is necessary when social distancing recommendations cannot be adhered to and therefore there is increased risk of COVID transmission via droplets. This mitigation can include utilising PPE and increasing cleaning and hygiene in simulation centres.

[1] https://www.gov.uk/government/publications/staying-alert-and-safe-social-distancing/staying-alert-and-safe-social-distancing#:~:text=You%20should%20keep%20two%20metres,a%20private%20vehicle%20where%20possible.

PPE

It is recommended that masks should be worn as per government guidelines and gloves and aprons should be made available to all faculty and delegates. In some cases, the use of walkie-talkies may be helpful to aid communication when wearing masks and talking at distance. Centres may ask for gloves to be put on before entering the simulation room and touching equipment and disposed of immediately after exiting. This could help reduce infection transmission risk through contact with equipment which is regularly used by a multitude of different people.

Cleaning and Hygiene

Cleaning and hygiene within centres are key factors which must be considered. Regular handwashing is essential. It is recommended that the importance of this is emphasised in briefs and debriefs. Simulation centres must factor in more time for cleaning between scenarios/ at the end of the day and may even wish to reduce the length of scenarios to minimise capacity for contact. All equipment, surfaces, manikins, computers and laptops should be thoroughly cleaned with Clinell wipes after use. If a microphone is needed for the course, it is recommended that only one person uses this throughout the day, then it should be cleaned using Clinell Wipes at the end of the day.

It is recommended that consumables be provided by the simulation centre and disposed of at the end of the day, and individuals should not bring their own. Clinell wipes (or a suitable alternative) should be available to wipe down all chairs and equipment between sessions and/or at the end of the day, and where possible, there should be a break of at least 30 minutes between cleaning and use. It is also advised to dedicate specific equipment for in-situ training to reduce capacity for transmission between different types of training. Centres should actively encourage delegates to wash their hands regularly throughout the day, especially when entering or leaving a room, and should provide alcohol gel in every room.

There are various other solutions to reducing unnecessary transmission, for example, all delegates and educators should: use their own stationary wipe down their own chairs after use, clean any equipment between usage by different people, avoid use of unnecessary props which may usually assist and immediately dispose of any paperwork used during a training. Simulation centres must also consider the safest methods to dispose of any consumables.

Catering is another element which must be considered as buffet-style catering (or similar alternatives) are no longer safe. Where simulation centres are running face-to-face courses and wish to offer catering/refreshments, they may choose to provide vouchers for participants to use in a canteen.

BENEFITS:

- Enables delivery to continue face-to-face
- Use of the same PPE as in practice allows participants to experience the same barriers to communication
- Good alternative if social distancing is less possible
- Courses can still be delivered relatively normally, with minimal time/effort for re-design

CHALLENGES/RISKS:

- MITIGATES the risk, but does not eliminate it
- Potential challenges in communication when wearing masks
- Faculty required for longer for extra cleaning
- Increased procurement costs

- Quality of training may suffer – loss of non-verbal communication/reduced engagement
- Learners who are shielding may not feel comfortable attending
- Discomfort of wearing masks for duration of training

Online Learning

Online simulation learning enables delegates to receive some, or all their training online. This can be facilitated by a variety of digital options, from videoconferencing and e-learning packages to virtual reality simulation.

Videoconferencing platforms

Videoconferencing platforms such as Zoom or Microsoft Teams are viable modes for delivering training as well as leading debrief sessions and running webinars. It is advised to film scenarios or utilise pre-recorded videos which can be utilised to reduce the need for face-to-face training. On many videoconferencing platforms such as MS Teams, it is possible to simultaneously live-stream a simulation as well as record it, for future use as a training video. Platforms such as Zoom have features such as the 'annotations' which can be utilised in debriefs to facilitate group learning and the sharing of ideas.

E-learning packages are another solution for delivering training which does not require real-time interaction. There are also potential solutions in use of virtual reality technologies, however these avenues have not been explored extensively and are resource-dependent for many simulation centres.

The Oxford Medical Simulation Distance Simulation programme is a platform which is currently being offered free of charge which may temporarily aid centres in trialling online/virtual methods before needing to invest in a programme more permanently.

There are some concerns surrounding decreased levels of engagement when utilising video-based platforms and the loss of ability for facilitators to connect with delegates and vice versa. It is recommended that in order to maximise engagement, all delegates should have both their videos and microphones on, and facilitators should, where possible, direct questions to specific participants, for example in a debrief, to ensure full engagement. Furthermore, as virtual interactions do not always allow facilitators to interpret human factors such as a trauma-induced reaction to a simulation scenario, it is important to increase psychological support.

BENEFITS:

- Allows remote delivery which eliminates risk of transmission
- Less faculty required
- Can accommodate higher numbers of learners
- Reduced cost of consumables/cleaning products/waste disposal
- Learners who are shielding can attend without concern
- Faculty can focus their attention on the learners rather than distancing/safety
- Potentially better communication than when wearing masks

CHALLENGES/RISKS:

- Potential challenges in communication
- Quality of training may suffer
- Reduced engagement/experiential participation
- Can only be used for certain training
- Resource dependent
- Technology dependent
- Depends on faculty skillset/ enthusiasm to learn new methods
- Requires all learners to have IT devices/internet access
- May not be able to satisfactorily meet all learning outcomes with online delivery

It is likely that a combination of all approaches will be able to formulate the most robust and most importantly, safe training programmes. In all cases, it is essential that faculty and delegates encourage open communication between one another so concerns surrounding safety, quality and engagement are addressed. This will enable centres to continuously review and improve the delivery of training in line with any feedback received.

Risk Assessment

The decision-making process around infection prevention measures, is one of managing risk. Risk is managed by elimination, mitigation, transference. For the safe delivery of education, decision-makers should take active decisions where risks are known.

Risks can be managed in different ways; the risk can be 'avoided' and instead a new solution is adopted (e.g. online learning), the risk can be reduced by putting certain measures in place to lessen the severity (e.g. risk mitigation and social distancing), the risk can be shared/transferred or the risk can be retained.

The following risk assessment matrix is an attempt to display a London consensus for risk management in simulation-based education. In order to capture this, simulation practitioners across the capital were interviewed to understand different individual experiences and limitations of delivering sim-education during the COVID-19 pandemic. We hope this risk assessment matrix will support and inform decision-making in simulation centres, with an awareness of the various risks posed by each approach.

The risks presented are not exhaustive, and the order in which they are presented in the matrix does not connote advised prioritisation between risks, but serve illustrative purposes.

Explanation of risks illustrated in matrix:

1. **Risk of COVID transmission**: This risk should be a key consideration in deciding which approach to opt for, as it is, by essence, a risk associated with face-to-face delivery.
2. **Participant engagement**: All aspects of online learning face challenges with participant engagement as the nature of virtual communication and learning hinders faculty's ability to directly engage with participants and the lack of physical togetherness often inhibits communication and focus. Furthermore, the dependence on videoconferencing technologies – many of which enable participants to hide videos or mute microphones – has potential to create greater distance and disconnect amongst both faculty and participants.
3. **Requires programme re-design**: Whilst the redesign itself will likely be a helpful outcome, the pressure on faculty to adapt training programmes at short-notice - whether for an online platform or for reduced capacity - is high.
4. **Requires new faculty skills**: Whilst face-to-face delivery may involve more simple risk mitigation strategies in order to safely deliver training, various online avenues will be dependent on faculty having specific digital-based skillsets which they may not have previously needed in order to deliver simulation education.
5. **Number of faculty required**: Where centres are to continue face-to-face delivery, an increased number of faculty may be required, and longer hours may be necessary to account for increased cleaning.
6. **Venue space required**: A large challenge with social distancing is the necessity to either increase venue space or reduce capacity, whereas online learning enables participants to be virtually present, putting less strain on the capacity of a simulation centre.
7. **Delay to education delivery**: Each approach to infection control has potential to delay the delivery of courses – whether due to decreased capacity resulting in courses taking double the time to be delivered, or due to the necessity for programme redesign - which may have an impact on patient safety.

8. **Total training capacity**: Like venue space, the number of courses which can be run will differ dramatically between each approach.
9. **Access to technology:** Online learning is dependent on both the technology provided by Trusts to facilitate delivery, and participants' access to technology and secure internet connection.
10. **Skills transfer (from classroom to clinical environment)**: The ability to transfer the skills learnt in the classroom to a clinical environment varies between face-to-face learning and online learning. This also encompasses the ability to assess competence.

Appendix A

Risk Assessment Matrix for simulation-based education during the COVID-19 pandemic

Approach		1. Risk of COVID transmission	2. Participant engagement	3. Requires programme redesign	4. Requires new faculty skills	5. Faculty required	6. Venue space required	7. Delay to education delivery	8. Total training capacity	9. Access to technology	10. Skills transfer
Face-to-face	Social distancing										
	Risk Mitigation										
Online learning	Live virtual simulation										
	Pre-recorded sessions										
	Remote debriefing										
Baseline (Face-to-face pre-COVID)											

= Low risk
= Moderate risk
= High risk

Local risk assessments are still necessary as local practices and government guidance will affect how these risks could be manifested, and as such the potential severity of each risk.

Appendix B

1) What social distancing measures are in place in the hospital/community health care environment your learners are coming to you from?

2) What are the options for remote learning/working for your existing core activities? What resources would this require?

3) What would be the implications of implementing social distancing in your centre on time, faculty, space, quality of education? (If you are able to model the impact on the number of learners through your centre if you implemented social distancing and the effect of a loss of income on your centres ability to deliver essential services, this would be very helpful)

4) Are there activities which are non-essential?

5) What risk mitigation steps could you put in place to deliver essential programmes where social distancing is not reasonable/sustainable/possible?

Glossary

Term	Definition
Online learning	Online simulation learning enables delegates to receive some, or all their training online. This can be facilitated by a variety of digital options, from videoconferencing and e-learning packages to virtual reality simulation.
Risk mitigation	Risk mitigation is necessary when social distancing recommendations cannot be adhered to and therefore there is increased risk of COVID transmission via droplets. This mitigation can include utilising PPE and increasing cleaning and hygiene.
Social distancing	Keeping two metres apart from people who are not in your household or support bubble.