

COVID-19: National guidance on the safe delivery of simulation-based education (SBE) Technology Enhanced Learning (TEL)



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Executive Summary

Health Education England recognises the importance of re-establishing simulation-based education and training in a safe manner that acknowledges latest guidance relating to COVID-19 and which considers all who will be involved in the design and delivery of this activity.

Following on from publication of the HEE TEL COVID-19 Toolkit for Safe Simulation, located [HERE](#), this document provides a more detailed description of the challenges being encountered and suggests methods for preventing or managing these issues in a safe and controlled manner.

In line with other documents that will be published on the HEE website and the Learning Hub over the coming months, this guidance sits within the HEE TEL Simulation Programme.

HEE TEL is extremely grateful to the authors listed and others who have contributed to this work.

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Introduction

Simulation has played a vital role in the preparation for, and ongoing support of, healthcare's response to the COVID-19 pandemic. It has provided continued training and development of current and future healthcare practitioners, both during and following lockdown.

Many simulation providers (in the broadest sense) halted all non-essential work to focus on this response during the early phase of the pandemic. As the need for process testing and 'just-in-time' training decreased, organisations are exploring how to restart routine simulation programmes for different staff groups and students. Furthermore, the increase in visibility of simulation as an effective learning and assessment technique, emphasised by the pandemic, will almost certainly invite new interest in both novel and traditional forms of simulation-based education.

Simulation, and education in general, has a positive effect on the workforce and demonstrates that they are valued by their employing organisation. In times of increased stress and anxiety, education is an important way of improving the wellbeing of the workforce. However, the COVID-19 era now presents multiple challenges in designing and delivering effective face-to-face simulation-based programmes, which will differ in detail depending on context, but include:

- **Being aware and responding to latest COVID-19 guidance from national and local bodies.**
- **Acknowledging issues related to accessing faculty (including volunteers and simulated people¹) and learners when (re)designing simulation-based education activities.**
- **Taking account of new constraints faced with access to teaching areas (including dedicated simulation areas or in the clinical environment).**
- **Social distancing requirements and the inherent risk of infection with face-to-face contact and training (patients, learners and staff).**
- **Safe decontamination of training equipment.**

This rapid response document is not intended to be fully comprehensive, but instead provides a framework for an iterative, risk assessed, collaborative approach that can aid in restarting and sustaining safe Simulation-Based Education (SBE) across a range of settings. These will include formal simulation areas as well as in the clinical environment that will be relevant to colleagues working in the NHS and Higher Education sectors.

One of the key principles highlighted is the importance of local discussions with relevant individuals from infection control, health and safety, education and learning, and other specific stakeholders. Local simulation providers should seek to ensure this process is proactive and sustained to engender effective communication, co-operation and co-ordination as a continuous process amongst all relevant stakeholders.

Who might use this document and how?

This document is written to support education leads and managers, clinical educators and faculty, and simulation technicians who are designing, delivering and monitoring the quality and safety of simulation-based learning within organisations, regardless of whether this is provided within dedicated centres, more generic learning spaces or the clinical setting itself. It is intended to be relevant for the higher education sector as well as NHS organisations.

The document recognises the broad application of simulation-based learning, allowing the reader to focus on elements applicable to their simulation practice. The document can be used to sense check existing arrangements, as well as highlighting elements that potentially may not have been considered in earlier planning.

Managing risk

It remains the responsibility of the local organisation and education / simulation leads to risk assess all simulation activities, confirm that risks have been described and controlled or mitigated, and that benefits of providing the activity outweigh any residual risks.

Remember that alternative, non-face-to-face ways to deliver learning should be considered along with acknowledgement of any learning outcomes that may not be achievable if different approaches are adopted.

The COVID-19 era remains dynamic, and this will require an iterative and agile approach to monitoring changing circumstances and learning needs.

Applying these three principles should help to identify existing and emerging learning needs, balance the benefits and risks of addressing them through previously established educational methods, and aid discussions regarding the potential to employ one or a combination of different approaches that can offer remote access to education and training. Examples include:

- Immersive technologies
- Augmented and Virtual Reality (VR)
- Video assisted simulation activities
- Video case-based discussions
- Virtual worlds.

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Whilst it will not be possible to deliver all Face-to-Face (F2F) simulation programmes remotely, it may be possible to run some programmes or learning activities as a blended approach that combines the use of different techniques according to local requirements and resources. The aim should be to reduce the frequency and volume of direct learner (and faculty/staff) contact, provide clearer guidance and opportunity for adequate decontamination between F2F sessions, and enhance access to expertise and resource that can enable or enhance remote access learning.

Such innovation may well require additional investment and faculty should be encouraged to share practice and resources. Currently HEE TEL is collating a series of specific case studies and best practice exemplars that can be shared openly on the Learning Hub to try and reduce the need for duplication of efforts locally and signpost access to expertise to aid local application of such resources.

Where to start?

We have seen the willingness and ability of healthcare staff to quickly adapt in their practice and systems of work during COVID-19 and the simulation community has demonstrated similar enthusiasm to adopt and embed innovation in SBE and its delivery.

The first step in considering future simulation delivery will be to ensure a thorough understanding of learning requirements in the form of a training needs analysis. This needs to identify the potential for online or remote delivery of part or whole programmes and consider curriculum integration, learning outcomes and available resources.

Different options can then be considered within a risk matrix that describes the issues to offering F2F SBE or not in the local context.

Risk matrix:

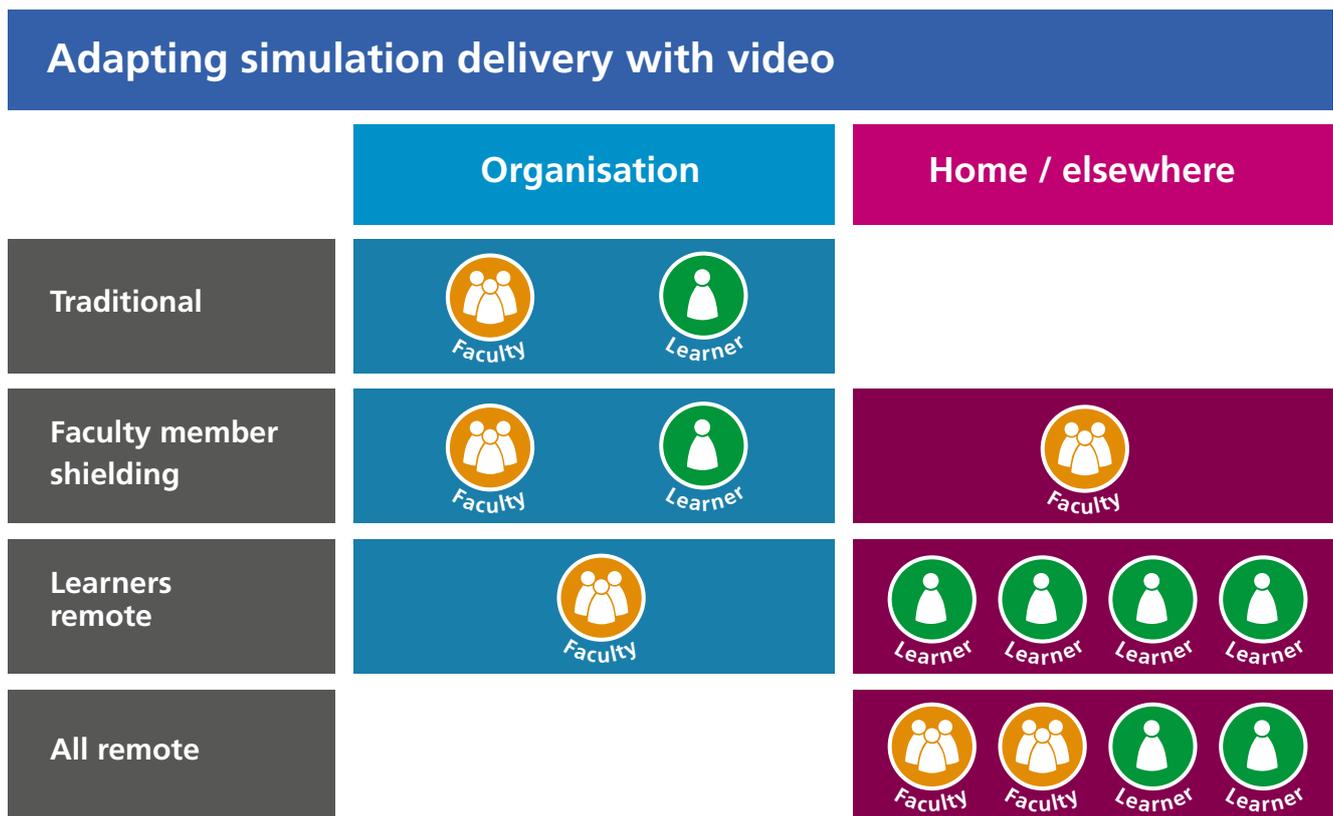
Potential risks of continuing or halting F2F SBE in the COVID-19 era

	Risks of halting F2F SBE	Risks of continuing F2F SBE
Educational	<p>Inability to deliver effective safety critical teaching</p> <p>Limitations to learning new skills</p> <p>Professional and regulatory requirements not delivered</p>	<p>Logistical challenges to deliver effective and safe learning opportunities to the same capacity</p>
People	<p>Compromises to workforce development when orientating to new roles, responsibilities, teams or work environments</p> <p>Limitations to supporting staff returning to training or practice</p> <p>Limited opportunities to share lessons learnt and have support from senior faculty</p> <p>Staff do not feel supported and valued by their employer with potential impact on retention</p> <p>Confidence decreases, and stress increases, as staff do not have an opportunity to practice in a safe setting with impact on their wellbeing</p>	<p>Increase in COVID-19 risks to simulation personnel and learners</p> <p>Potential for staff already under pressure to feel overburdened with accessing simulation activities as well (faculty, learners and local staff)</p> <p>Potential for faculty, technicians and managers to be overburdened with developing new, remote, programmes and simulations</p>
Patient safety	<p>Increased hazard of inadvertent harm to patients / service users when performing new skills or tasks</p> <p>Inability to rehearse safety critical drills in teams</p> <p>Loss of opportunity to test and improve system safety or support adaptations and transformation</p>	<p>Increased risk of infection with face to face simulation that might be transferred back to the clinical setting</p>

Some different approaches to consider

Video assisted simulation

The use of video equipment to stream scenarios during simulation sessions is well established. Historically this has been restricted to the local intranet, however there is potential to explore streaming over the internet to promote remote learning, increase capacity and reduce risks. This could be applied in several different situations as demonstrated below.



The ability to deliver video assisted simulation will depend on resources, technical ability and enthusiasm of faculty to deliver sessions in an innovative way. Some audio visual (AV) systems already have inbuilt technology to allow secure streaming to take place. Furthermore, it is often possible to use the software hosting remote meetings to facilitate this. The degree of complexity will vary, however a list of applications to facilitate video assisted simulation include:

Blackboard Collaborate
 CAE learning platform
 GoTo
 H5P
 Kaltura
 YouTube
 Moodle

MS Teams
 Panopto
 Periscope – via app store
 Skype
 SMOTs
 Zoom
 And others

As with all software applications, local advice should be sought from information governance and IT service teams.

At the extreme of video assisted simulation, where candidates and faculty are all remote, planning and design should consider how learners are enabled to participate in an experiential manner and allow them the active experimentation required to learn. This will involve innovative delivery that may well push the boundaries of simulation.

Using a 'chat' function, learners may have questions that occur to them in 'real time' during a scenario (live streamed or pre-recorded). These questions may then, for a variety of reasons, not arise during the debrief, but because the question has been logged using the chat function, the facilitator can still bring it up and maybe its omission is as strong a learning point as its subject.

There are often options for faculty moderators to decide if chats are shared, anonymised, etc. and so the function could be adapted for each learner group. This mimics video tagging and offers numerous opportunities for innovative work. Some platforms support file sharing, which again offers innovation (a screenshot of a behaviour or a PDF of a cognitive aid). For example, a group could watch fragments of a video-based case study, stopping regularly to discuss their interpretation, priorities and action plans, and then have a synchronous facilitated online debrief afterwards, or break-out groups could be employed in 'round-robin' cycles.

Video assisted simulation should not be regarded as a simple, quick way to deliver simulation. Indeed, with the technical support required, this may be more resource demanding than face-to-face delivery.

However, there may well be additional outcomes and benefits, including enhanced educational return on investment. Such videos may become the epitome of 'reusable learning objects' and could be available to share.

Imagine every student nationwide participating in the same event (perhaps at different times), then breaking off into individual and small groups to work through the scenarios again to allow the opportunity for discussion, debate and development through mastery learning, potentially as an inter-professional event.

These resources provide the opportunity for staff to access self-directed on-line learning specific to a practice area before they start, regardless of their rota, and allow them to return to elements as needed to prevent skill fade.

Delivery of skills teaching

Traditionally a significant amount of skills-based teaching, including those to deliver mandatory training would be delivered face-to-face. There is often a presumption that individuals cannot gain competence unless they get 'hands on'. However, these assumptions are open to challenge and many learning sessions will have some elements at least which can be delivered remotely. As an example, consider BLS (Basic Life Support); for a novice we would teach:

- Underpinning knowledge (what is a cardiac arrest?)
- Response to the collapsed patient (explain the process)
- Practice the process on a manikin (A-E assessment)
- Practice the process in a scenario (patient with chest pain who collapses)

Most learning outcomes could be delivered online – perhaps lacking only tactile sensation and physical activity – and innovative solutions to these challenges continue to be created, for example, using haptics or sensors in mobile devices to objectively assess the quality of chest compressions. Deciding whether to replace the 'hands-on' component is an example of the need for careful consideration of educational needs and risk assessments. Changes in delivery of mandated sessions may of course need to be approved by governance, professional, statutory and regulatory bodies as appropriate.

For programmes that have a significant percentage of skills training, especially for those likely to have to manage continuing restrictions for face-to-face training (for example dentistry), the use of augmented and virtual reality equipment providing haptic feedback may offer a solution. Resources, including faculty, that require funding should perhaps include allowing access at weekends or evenings to increase capacity.

Careful consideration should be given as to whether the equipment can be paired with a simulated (or non-human) didactic feedback component. Such equipment may be utilised as a stand-alone self-directed learning resource if the equipment capability extends to maintaining standards and providing appropriate objective feedback, reducing or even possibly eliminating the need for faculty and improving the cost/benefit for extended availability. There are already examples of virtual scenarios and interactions which will provide a degree of assessment and metrics for feedback.

A step back from this is a virtual (video) faculty presence, but this also offers some efficiency advantages and may be able to obtain support from faculty (for example, those that are shielding) from home.

There is a need for both a local consultative, collaborative approach to deliver guidance and agreement on best practice across educational programmes, supported by exemplars and sharing of innovation and adaption at a national level.

OSCEs/assessments

Some assessments can be facilitated over a video link, for instance, those focusing on communication or history taking. Careful consideration is again required to ensure the assessment remains both valid and reliable.

Faculty engagement

Faculty engagement is key. It is the responsibility of the simulation lead to engage with all faculty and outlier individuals in discussions around delivery, expectations, challenges and concerns. Individual risk assessments must be considered and performed, in conjunction with discussions with occupational health, for faculty with individual risk factors.

In addition to this, as faculty are responsible for the safe learning environment, including the physical health and wellbeing of all learners involved in the simulation delivery, it would be sensible to promote and distribute an agreed local Standard Operating Procedure (SOP) or guidance document on COVID-19 era simulation operations. This should include the actions to be taken if an individual (faculty, technical support or learner) displayed COVID-19 symptoms or required any form of organisational support; which may require the editing of a generic document developed at a strategic level in the organisation.

Personal Protective Equipment (PPE) for simulation

Local advice should be sought on PPE requirements for faculty and learners which will follow guidance from Public Health England (PHE).

Consideration will need to be given to both PPE worn during scenarios and during other elements of simulation, for example, observing and the debrief. Whilst it would be potentially possible on occasion to use a lower level of PPE, for most simulations, social distancing will not be possible and there is a risk that using different PPE to that in practice could confuse learners and omit learning outcomes.

Conversely, translational benefit of using the same PPE as in practice will be to provide the same barrier to communication (for example) that is obvious in practical use, and facilitate staff developing ways to mitigate this.

It may be feasible to use level 2 PPE in place of level 3 PPE, for simulations in which the greater barrier to communication posed by respirators, etc. would detract from the intended learning outcomes of the scenario. It may also not be possible for simulation providers to be equipped with every kind of Filtering Face Piece (FFP)³ which learners may have been fit tested for, and so the lower fidelity of using an alternate mask may have to be accepted.

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Donning and doffing of PPE may be an additional specific learning outcome, allow ongoing education and may prompt streamlining and ergonomic assessment of the process, especially when delivered in practice areas.

Consideration of how achievable this is, including cost, availability and potential impact on the learning event will feed into discussions about the requirement to deliver face-to-face simulation versus remote opportunities.

Hand hygiene should be rigorously encouraged, and gloves always worn during the scenario.

Wellbeing

A high degree of awareness must be maintained around wellbeing for everyone participating in, or witnessing, simulation. As people have been highly stressed, often working long hours, it is important that simulation continues to be seen as a safe event – and now, more than ever, the faculty should seek to ensure that learners are supported and do not feel that simulation is an extra burden, but rather a way for them to learn safely in a non-threatening environment and to continue to test their practice arena as part of organisational development.

The same consideration needs to be applied in respect of the simulation faculty and not merely recognising those who have been working in practice during the pandemic.

One of the very positive elements during the pandemic is how wellbeing has become a proactive responsibility for all of us; both faculty and the learners should be encouraged to continue to support each other. The underpinning notion of 'it is ok to not be ok' must be embraced. The Clinical Human Factors Group (CHFG) has produced a document that covers key human factors messages when working under pressure – these may inform additional learning outcomes and provide an additional resource for learners and faculty (see appendix 3).

It is common to encounter a range of responses to simulation, now potentially amplified because of the pandemic, and indeed sessions could trigger a range of reactions – this is completely normal with individuals working in such stressful situations. Faculty should recognise the limitation of what they can offer in respect of psychological support and be able to signpost learners and other faculty to clear pathways for further support.

Examples of wellbeing support:

Local	Organisational	Regional/national
Buddy process Shift / line manager Wobble rooms Peer support	Psychological first aid On call support Chaplaincy Occupational health	e-Learning material School support

Working with individuals from outside your organisation

Extra consideration should be given to all individuals external to the organisation, including trainees, simulated people, undergraduates on placement and external faculty. Guidance for the delivery of education may differ from one organisation to another and therefore it is important that external individuals are informed how simulation will be delivered to achieve risk management solutions/requirements and ensure they are afforded the same level of support.

Cleaning simulation equipment

Consult manufacturer's guidelines and infection control advisers to formulate SOPs for cleaning equipment between scenarios and after sessions. This will include manikins but also other handled objects, for example: phones, monitoring equipment and general surfaces, cupboards, and door-handles, sinks, etc.

Equipment will require cleaning as soon as is reasonably practical following simulation sessions. If for some reason this is not possible, as an ad hoc temporary solution, equipment should be labelled as dirty and removed from use until it can be decontaminated - if this is acceptable in that specific location. Adequate time should be allowed to enable thorough cleaning to take place between sessions. Educationally valuable and relevant tasks should be designed into the session to accommodate extended intervals.

Currently, basic CPR should be taught compressions only. Further details on training on resuscitation are available on the Resuscitation Council (UK) website: www.resus.org.uk.

Careful consideration will need to be given whether to use and how to clean augmented/virtual reality (AR/VR) equipment and headsets especially those with porous foam components. Where 14 headsets can be allocated to single person use, this is preferable. Sharing of equipment should be discouraged unless adequate decontamination can be done and, due to the risk of virus transmission, certain equipment may be identified that cannot be effectively cleaned between uses. This information must be reviewed as part of the risk assessment when considering which technology can be utilised and how.

Bed sheets, blankets, gowns, pillows, etc. will need to be regularly replaced so adequate stocks will be required. If linen is used by simulated people, this will need changing immediately and the bed, etc. cleaned down and remade between simulations. Risk assessment may well conclude that it is inappropriate to work with simulated people in live events at the current time.

Simulation in a dedicated learning area

Consideration should first be given to the possibility of running sessions virtually or providing access to online learning, as this will minimise risk to staff and faculty.

Planning for sessions that are run in learning areas which are dedicated to the delivery of simulation-based education will need to include social distancing provision, by determining the maximum numbers of candidates that can be accommodated. It is, however, unlikely that scenarios can be delivered whilst observing social distancing and thus it is anticipated that PPE must be worn for most scenarios.

This will also apply to faculty – social distancing again may not be compatible with current practice, for example, in control rooms, and with additional concerns around shared technical equipment, result in the faculty needing to wear PPE. Consideration should also be given to clothes worn by faculty and by simulated people (SPs). Where no uniform is provided, consider providing hospital scrubs for them to wear rather than their own clothes.

Delivery may need to be redesigned to manage the resultant reduction in learner numbers and perhaps faculty. Although some learners may benefit from more exposure during sessions, without careful redesign it is likely to negatively impact outcomes, especially those which have previously focused on multi-disciplinary or multi-specialty interactions.

The reduction in numbers of faculty and candidates permitted is also likely to result in a need for more sessions. The learning area should be reviewed to optimise people flows for social distancing, i.e. by one-way routes and staggered start times, etc. Changes may offer further opportunities for learning innovations, for example, a staggered start may give time to quiz a learner subset or give them the chance to practice in another suitable location. Educationally valuable and relevant tasks should be designed into the session to accommodate extended intervals.

An important part of the risk assessment of the area is a review of cleaning schedules of common areas and toilets including identification of all high contact points such as code locks and doors which may need to be cleaned before and after sessions or even more regularly.

If risk assessment identifies insufficient hand washing facilities, the installation of these may need to be explored or provision of hand gel as a minimum to allow hand hygiene. PPE donning and doffing areas should be appropriately placed to allow the learners and faculty to don their PPE safely and appropriately. Donning and doffing may be additional learning outcomes for the session.

In-situ simulation

There is concern about the risk of transmission to service users and staff in practice areas. The same applies to faculty and learners. Areas which treat suspected or confirmed COVID-19 positive service users are of higher risk to faculty and learners than 'green' areas. However, delivering teaching in green areas puts service users and local staff at risk from the faculty, equipment and learners. This is particularly important to think of when considering running simulations within a practice area treating vulnerable service user groups.

The practice area and equipment will need the same level of cleaning before and after the simulation as if the simulation had been a real event. Actions should be taken to prevent equipment transfer around the organisation, to reduce the risk of equipment becoming a vector for the transmission of infection.

Consideration should also be given to warning and alerting service users and visitors that simulation is occurring, particularly if numbers of staff will be donning PPE – this may be accomplished via suitable signs and conversations before the simulation starts. This should be a specific item of risk assessment and risk management – not merely the preference over an 'Unannounced In Situ Simulation'.

Time must be given to undertake a robust and objective risk assessment and implement all actions forthcoming, including (re)consideration of the intended learning outcomes and the event design, to justify the need to deliver the simulation before delivering education in a high-risk environment (high risk to patients/service users and/or faculty and/or learners).

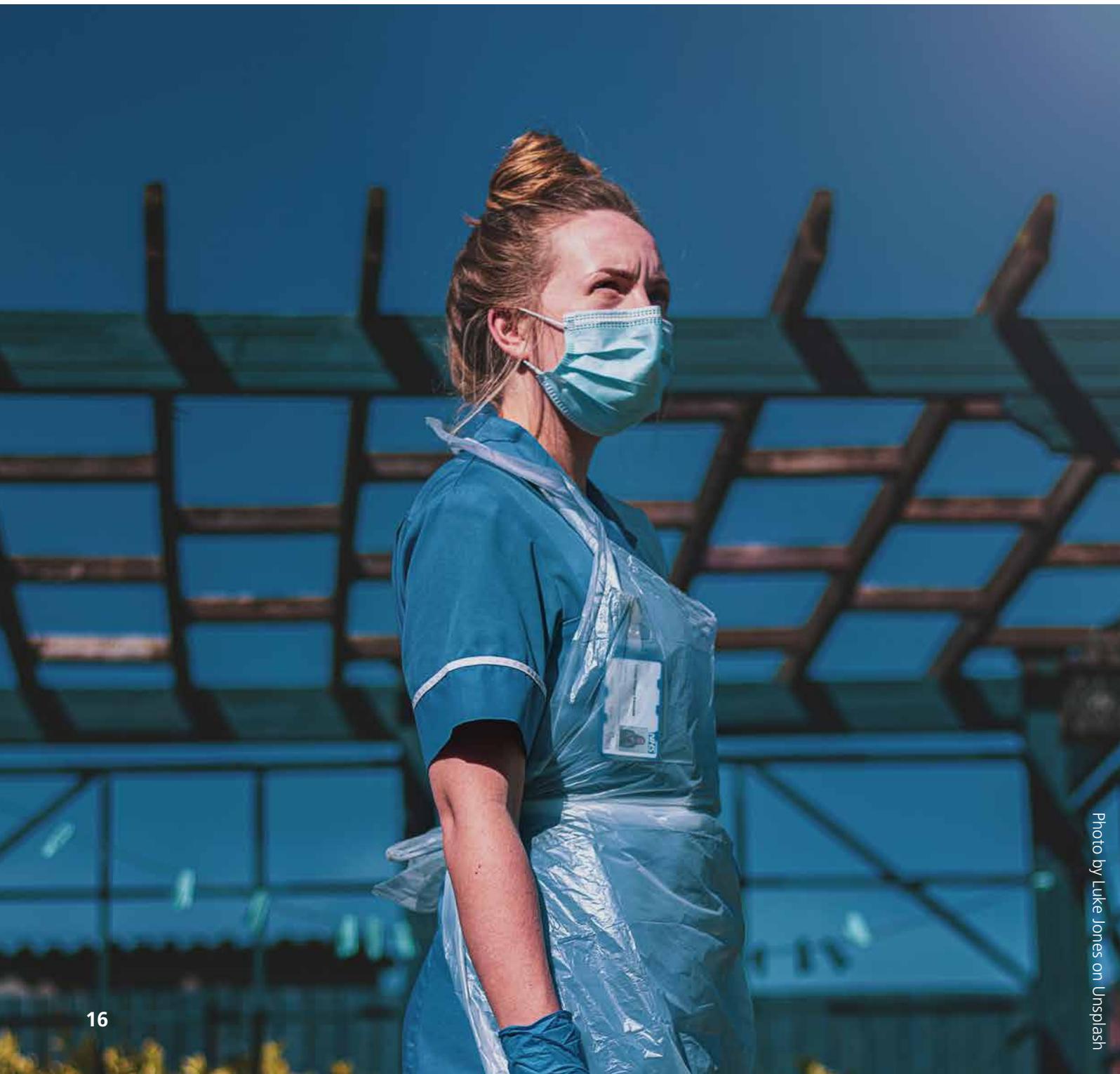
However, this does not rule out in situ delivery as it may be both practicable and impossible to deliver the session elsewhere. Part of the demonstrated application of simulation during the COVID-19 response has been to support both the rapid development of team skills and to interpret and train new policies and procedures. The strengths of the simulation community include the focus of organisational development through the lens of human factors and ergonomics, the ability to support team non-technical skills, improve patient safety and reduce risk to staff. This needs to be communicated to individuals at a strategic level to support the case for simulation, including in situ simulation.

If it is not possible to supply all areas that would normally require manikins with one for their dedicated use, then the use of lower fidelity manikins and part task trainers, which could stay in that area, should be considered within the risk assessment to reduce movement of equipment around the organisation. The preference is for the relevant department to provide faculty rather than central faculty having to visit a practice environment where they do not normally work. Learners should likewise be restricted to staff who would normally work with that practice environment.

Evaluation of learning

Evaluation is an essential part of the learning process that allows us to refine and adapt sessions and demonstrate that individuals and organisations have benefited. This is even more crucial when delivery methods are being redeveloped and/or there is an escalating demand/resource mismatch.

Electronic documentation is preferable for attendance lists, feedback and evaluation data. It is recommended to keep a back-up copy of attendance lists, should these be required for track and trace purposes. GDPR requirements must be followed.



FAQs

As mentioned, this document has been produced rapidly to help support the simulation community and a number of FAQs have been included below.

Should I be delivering simulation?

Although there are currently risks to delivering simulation there are also risks to not delivering it – it is important that a robust risk assessment is undertaken to minimise risks and justify simulation. Currently, it will be easier to justify remote simulation and learning where the infection risks to learners, faculty and service users are removed.

I can't deliver face-to-face simulation, so there is nothing I can do.

This is an opportunity to think of how to adapt simulation delivery to remote learning.

But simulation should be experiential?

Depending on the interaction, many elements – for example, decision-making and communication – may still be able to be delivered remotely.

How can I socially distance in simulation?

For some simulations it will not be possible to socially distance and appropriate PPE will need to be worn. This will feed into the risk assessment, i.e. the availability of PPE versus risk of not delivering training.

What is appropriate PPE for simulation?

This will need careful local consideration. Where resources allow, the appropriate PPE should be worn that would be worn for that practice case. If that is not achievable the risks of confusing staff, reducing realism and missing PPE focused learning outcomes may support not delivering face-to-face simulation.

Is an Aerosol Generating Procedure (AGP) simulation actually an AGP?

No, on a clean manikin performing an AGP simulation is not an AGP, however, it would be best practice to treat it as such, so as not to confuse staff about PPE requirements and require the team to perform wearing PPE.

The manufacturer suggests cleaning with an item we cannot get / do not stock.

Consult with your local infection control to determine if there is another appropriate substance to use to clean the equipment. The aim is to collate cleaning requirements from manufacturers and make this available as a separate document held online.

How can people be safe in face-to-face simulation?

We can reduce the risks but cannot remove them – key to reducing the risks is good hand hygiene and ensuring that people do not come to training if they are unwell.

Some examples to review

1. Restart simulation education plan

The University of Minnesota has shared a good example of a plan to restart simulation-based education:

https://www.simulation.umn.edu/sites/ahcsimcenter.umn.edu/files/m_simulation_flexible_operations_plan-final.pdf.

2. Modifications to a skills and simulation course

For an example of modifications following a risk assessment, please see appendix 4.

Your feedback

We are keen to receive feedback on the document including any other elements that you may feel are unanswered. Please contact tel@hee.nhs.uk

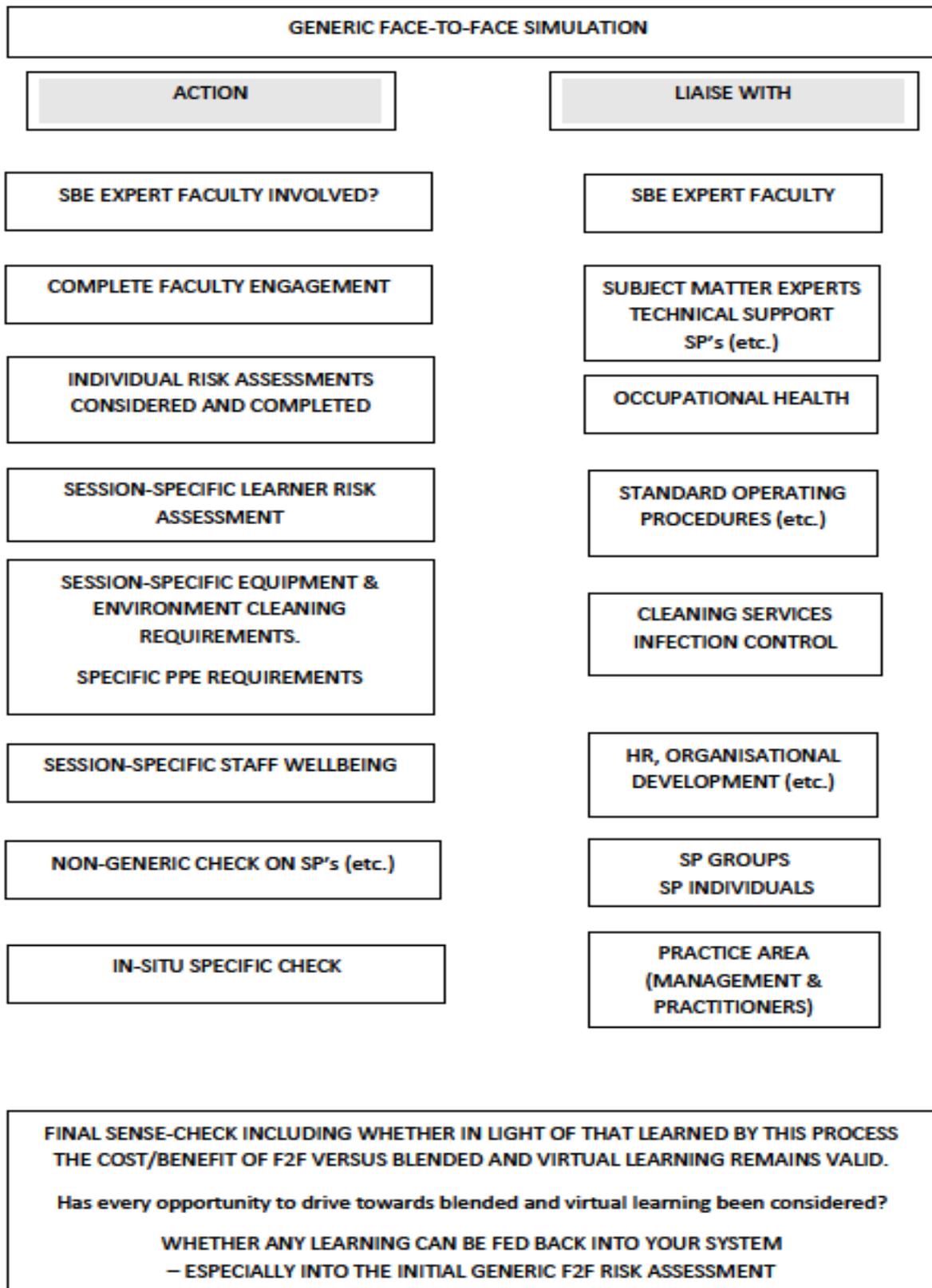
Summary

It is the responsibility of those delivering simulation to ensure that the risks have been mitigated. It is clear in this dynamic and developing situation that simulation has and continues to be used to support healthcare's response to COVID-19.

Although the situation is dynamic, simulation will continue to support frontline staff in preparation for future surges as well as supporting more planned activity.

The following pages contain appendices that will support decision-making and planning around simulation activity.

Appendix 1: COVID-19 safe delivery of simulation toolkit



Appendix 2: Candidate information example



Davis Global Center/Sorrell Lab: General Access Safety Guidelines*

These guidelines align with the UNMC campus guidance but provides specific protocols for the Davis Global Center and/or Sorrell Lab.

Controlling Access: Access to the Davis Global Center and/or Sorrell lab is currently by approved schedule appointment only.

Entrance to Davis Global Center: All faculty / students / visiting staff will enter through the front entrance on Emile Street. Please arrange for participants to gather in the Davis Global Center Atrium.

Entrance to Sorrell Simulation Lab: All faculty / students / visiting staff will enter through the front doors using the SW entrance by the "stethoscope" and wait in the atrium where you will be met by an iEXCEL staff member.

Wearing Masks and Gloves: Masks will be required and please ensure UNMC guidance is followed. All participants in simulation must don clean, non-sterile gloves upon entry into the simulation lab spaces and stations. Once simulation is complete, gloves must be removed and discarded correctly.

Hand Hygiene: Each person is required to perform hand hygiene before and after training sessions, when removing masks and after removing PPE if leveraged. iEXCEL will provide alcohol-based hand rub and will be located throughout each location. If hands are visibly soiled, soap and water will be used prior to alcohol-based hand rub.

Buffer: The iEXCEL staff will place buffers between sessions which will allow for proper cleansing of the environment including equipment. Once your session is completed we request participants promptly exit the buildings.

*These iEXCEL Guidelines are closely aligned with **University of Nebraska Medical Center Interim Return to Campuses Guidance for Summer Session.**

Appendix 3: Key human factor messages – when working under pressure



Key human factors messages – when working under pressure

Good teamwork, leadership and communication – non-technical skills – will give you, patients and colleagues a **better chance of staying safe**.

1. Brief the whole team, even if rapid and short

Best at the start of a shift but can be done at any stage. Check their understanding – don't assume they know what to do, don't make assumptions about shared insight and knowledge.

Tips

- Agree clear language protocols to avoid ambiguity and speed-up responses.
- Check staff skills before assigning roles. Ensure clarity of roles: Who, how & what if?
- Agree a way to share concerns.
- Brief prior to donning PPE if possible.

2. Take deliberate action when under stress

Anxiety and stress drive action in simple situations, but our current situation is not simple. Take a moment before trying to think about what to do.

You're hard-wired to act – when there's high stress:

Tips

- Take deep breaths or count to 10.
- Pause the team – with an agreed action or word.
- Use a mnemonic such as ABCDE to guide initial action.
- Ask an open question – What do *you* think is happening?
- Use a task, such as, donning PPE, to pause.

3. Lead by being open and inclusive for rapidly changing scenarios

'Ask questions first and lead second'. Listen to expertise based on who knows what's happening now. Listen to staff from different disciplines and levels of seniority for further insight to threats and error.

Tips

- Ask open questions before acting – What do we think is happening?
What do we need to do?
- Focus on *what's* right, not *who's* right.

4. Help staff unfamiliar with the work

New staff, such as, retired staff or non-ICU and emergency staff, may feel under-prepared or insecure if unfamiliar. Ensure protocols are clear and practices and equipment are explained. If time, give new staff the opportunity to practise using simulation.

Tips

- Be kind and empathise and anticipate stress triggers.
- Explain why things are done in a specific way.

5. Use checklists and aide memoires to support tasks

Do the action, then check output not input, for example, turn oxygen on and check the flow, not the position of the switch. Don't move-on until you've checked the output or received the appropriate response. Try to avoid interruptions, these significantly increase errors.

Tips

- Make each action deliberate and thoughtful.
- If interrupted, stop and consider if starting from the beginning is safer.

6. Encourage staff to speak-up

Encourage all staff to speak-up about their concerns; they might be the one who prevents an avoidable disaster. A low authority gradient makes it easier for junior or new members to speak-up, for example, making sure everyone has been introduced by name and ensuring eye contact.

Tips

- Praise and don't belittle anyone who asks a question or raises issues.
- Give permission explicitly for all staff to raise concerns.

7. Recognise performance limiting factors

Good team players recognise colleagues who are under stress and support them by sharing workload and giving emotional support. Look out for the stresses that affect performance, such as, tiredness, worries, other's poor behaviour, illness, noise, distractions and hunger.

Tips

- Remind each other to take a break – we may not recognise this ourselves.
- Adhere to break schedules and ensure staff eat, drink and use the bathroom, especially if wearing PPE for long periods.

8. Debrief as a team to learn from experiences

Your experiences can play on your mind, especially the mistakes you think you might have made. At the end of a shift debrief as a team and share thoughts to enable learning and maintain mental wellbeing. Sign-post staff to available support measures and check the Open Disclosure Policy.

Tips

- Ask open questions – What were we proud of? What were the challenges?
- Use huddles to listen to each other and establish learning.

9. Think about the wider healthcare team and the hospital as a system

All staff will be under pressure, for example, reception, pharmacy, porters, but they may not have the training and experience for this situation. They may look to you for ideas and support. And they may have critical insights that you don't have.

Tips

- Listen to questions and issues they raise about patients - they may have crucial information.
- Support them with their PPE use and listen to their concerns about contact with potential COVID patients.

Appendix 4: Example of session modifications following risk assessment

Following a risk assessment of the area and the course, the following modifications have been applied for:

- Pre-course
- Social distancing
- Equipment and practice areas
- Auxiliary refreshments, washrooms

Pre-course checklist

- COVID-19 risk information and consent to participate sent to the candidates.
- Prior to 48 hours, screening and proceed to delegate places appropriately.
- Three learners in the waiting list to back fill.
- Only the candidate will be provided with accommodation, travelling with family is discouraged.
- Hospital accommodation will be arranged to avoid unnecessary travel.
- On arrival learners should report to a registration table with screen, repeat screening with temperature, and social distance on both days (elaborated below).
- Screening for faculty in a similar format.
- Hand hygiene and application of mask.
- Use of dedicated pre-course learning to avoid multiple lectures.
- Electronic documentation of pre, post-course questionnaire and feedback to minimise handling paper.
- Agreed SOP for core training faculty to minimise risk.
- Social distancing.
- Faculty meetings on Zoom.
- Empty waiting rooms to minimise lingering.
- Ensure a screen at reception.
- Implement a one-way flow system.

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- ✓ Ensure a limited number of participants based on room size (split the group in half to accommodate the number) - to 'ensure social distancing can be achieved'.
- ✓ Run the skill stations and lectures simultaneously on day one.
- ✓ Four candidates per group for lectures and one skill station. Skills will be one-to-one.
- ✓ Four candidates doing four skill stations (one-to-one in separate rooms).
- ✓ Outside green area for refreshments with benches two metres apart.
- ✓ One-to-one skill stations with masks and hand hygiene.
- ✓ Reduce the number of scenarios (multiple learning objectives included in one scenario) and facilities to watch other candidates on screen from different rooms.
- ✓ Minimum required faculty without compromising quality.

Equipment and areas

- ✓ SOP for cleaning areas including surfaces, doors, handles, floors.
- ✓ Reduce number of scenarios to allow thorough cleaning as advised by the cleaning provider.
- ✓ Cleaning of equipment after each session – skill stations.
- ✓ Single use disposable for skill training and simulation.
- ✓ Video assisted learning techniques, for example, for Awake Fibre Optic Intubation (AFOI).
- ✓ Hand hygiene stations, masks and appropriate facilities for disposal.

Auxiliary

- ✓ Pre-packed individual meals and refreshments to be provided in outside areas with social distancing measures.
- ✓ Pre-packed dinner provided to any candidates using accommodation to facilitate social distancing.
- ✓ Being flexible to consider the changing risk and situation due to second surge of COVID-19.