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Title	National strategic guide for the implementation of simulation on clinical sites
Author(s)	Byrne, Dara; O'Dowd, Emily; Lydon, Sinéad; Reid McDermot, Bronwyn; O'Connor, Paul
Publication Date	2021-06
Publication Information	Byrne, Dara, O'Dowd, Emily, Lydon, Sinéad, Reid McDermot, Bronwyn, & O'Connor, Paul. (2021). National strategic guide for the implementation of simulation on clinical sites. Galway: National University of Ireland Galway. doi: 10.13025/cn0z-bp50
Publisher	National University of Ireland Galway
Link to publisher's version	https://doi.org/10.13025/cn0z-bp50
Item record	http://hdl.handle.net/10379/16815
DOI	http://dx.doi.org/10.13025/cn0z-bp50

Downloaded 2024-04-19T08:06:06Z

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THE IMPLEMENTATION OF **SIMULATION** ON CLINICAL SITES



**A NATIONAL
STRATEGIC
GUIDE**



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ACKNOWLEDGEMENTS:

We would like to thank the many simulation experts from across Ireland who reviewed and commented upon an earlier draft of this strategy and the Chief Academic Officers Ireland for their support.

The guide was funded by development funding from National Doctors Training and Planning.

Cite this document as: Byrne. D., O'Dowd, E., Lydon, S., Reid McDermott, B., & O'Connor P. (2021). The National Simulation Strategic Guide for the Implementation of Simulation on Clinical Sites. Galway, NUI Galway. doi: 10.13025/cn0z-bp50

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KEY DEFINITIONS USED IN SIMULATION-BASED EDUCATION

Faculty: Anyone designing or delivering educational content. Oftentimes these are people that are not part of the simulation centre staff but come from elsewhere to deliver simulation.

In-situ simulation: Simulations that occur in the real clinical environment, generally with participants who work in that environment.

Interprofessional education: A collaborative educational approach that brings together health care professionals of varying specialties in a simulation environment engaging learners in an interprofessional teamwork model.

Manikin simulators: The use of manikins to represent a patient using heart and lung sounds, palpable pulses, voice interaction, movement (e.g. seizures, eye blinking), bleeding, and other human capabilities that may be controlled using computers and software.

Psychological safety: The perception of members of the team that the team is safe for risk taking, and mistakes will be considered learning opportunities rather than there being embarrassment or punitive consequences.

Simulation: A technique that creates a situation or environment to allow persons to experience a representation of a real event for the purpose of practice, learning, evaluation, testing, or to gain understanding of systems or human actions.

Simulation based education: The use of any simulation in the formative or summative education of healthcare professionals.

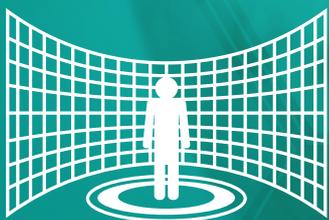
Simulation technician: An individual whose primary role is the implementation and delivery of a simulation activity through the application of simulation technologies such as, computers, audio-visual (AV), or networking technologies.

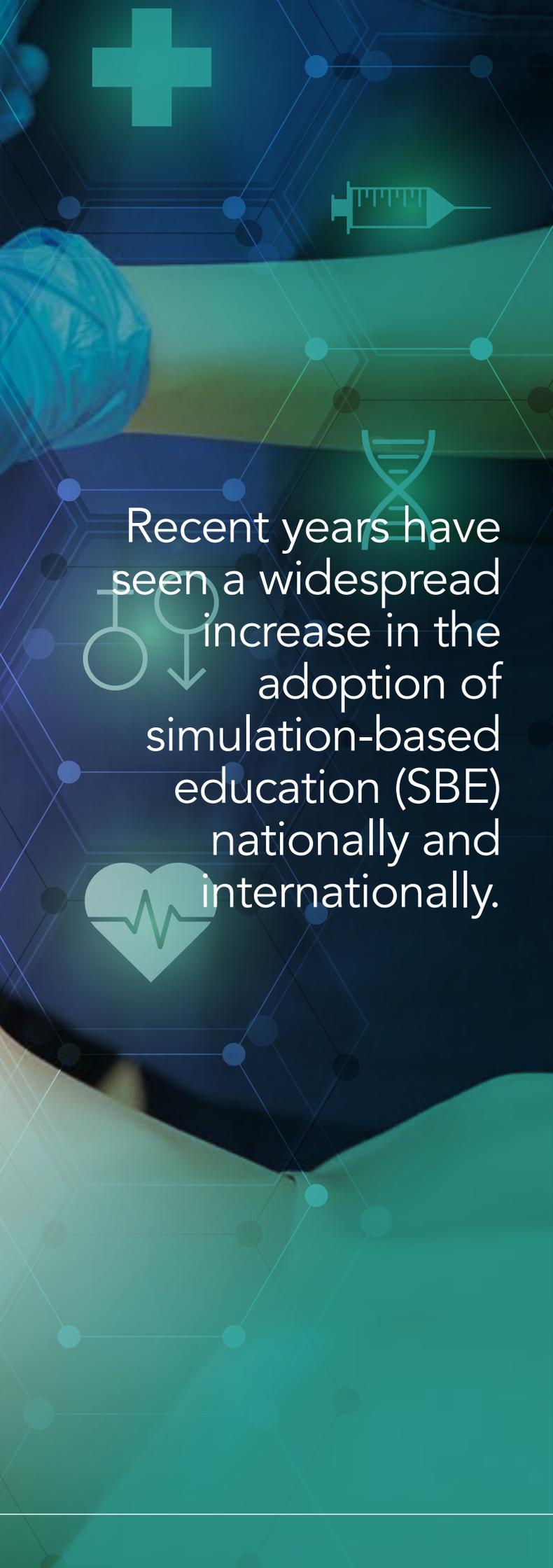
Task trainers: A device designed to train in just the key elements of the procedure or skill being learned, such as lumbar puncture, chest tube insertion, central line insertion or part of a total system. These trainers often represent a part or region of the human body (e.g. an arm, abdomen).

These definitions have been adapted from the Healthcare Simulation Dictionary (second edition) developed by the Society for Simulation in Healthcare. Available from: <https://www.ssih.org/dictionary>.



EXECUTIVE SUMMARY





Recent years have seen a widespread increase in the adoption of simulation-based education (SBE) nationally and internationally.

There is a wide variety in the facilities for the delivery of simulation in Ireland. Simulation can be in-situ within departments, or a suite of programmes delivered within a bespoke area or centre. This guide describes the development of simulation programmes within a simulation 'centre' which describes both a dedicated physical space and/or a virtual centre that supports multiple simulation programmes within a hospital or hospital group. Although there is no single formula for exactly how to set-up, implement, and run a simulation centre, it is possible to identify the priority areas that must be addressed, and to provide guidance as to how to run a sustainable simulation programmes.

The overall aim of this document is to provide clear guidance for clinical sites on how to develop a simulation centre and a strategic plan to support the delivery of simulation activities that meets standards of best practice.

The overall purpose of implementing simulation on clinical sites is to place an emphasis on interprofessional education to improve the safety, efficiency, and effectiveness of healthcare services.

The purposes of this document are therefore to:

1. outline the priority areas to consider when implementing simulation-based education and establishing and running a simulation centre on a hospital/clinical site;
2. provide guidance on how to complete a strategic plan to support simulation activities and centre development and growth; and
3. provide recommendations for consideration under a national HSE simulation advisory group.



PRIORITY AREAS

1. GOVERNANCE STRUCTURE

- the establishment of an appropriate governance structure is required both for a unified approach across the HSE and at each individual simulation centre.



2. PROGRAMME MANAGEMENT

- simulation programmes must be developed in alignment with organisational needs, user competencies and/or learning outcomes.



3. RESOURCE MANAGEMENT

- the simulation centre must have the ability to obtain, maintain, and support simulation equipment and relevant technologies to uphold the mission and/or vision of the centre.



4. PERSONNEL DEVELOPMENT

- personnel are critical to the success of the centre. It is crucial to have appropriately qualified and experienced with the authority and time to perform their designated roles.



5. PROGRAMME IMPROVEMENT

- there should be mechanisms in place to evaluate the programme delivered by the centre. This evaluation should include a record of the programmes delivered, dates delivered, number of attendees, learning objectives and resources required.



6. INTEGRITY

- it is important that the simulation centre is committed to ethical standards in education and training, as well as any other activities carried out by the centre (e.g., research, quality improvement).



7. PROMOTING THE ACTIVITIES OF THE SIMULATION CENTRE

- it is important that the activities of the simulation centre are promoted through local promotion, a website and social media, and other national and international promotional activities.



8. FOSTERING COLLABORATION ACROSS SIMULATION CENTRES

- collaboration across simulation centres is important in order to support, promote, and increase simulation-based education and training in the HSE.



DEVELOPING A STRATEGIC PLAN FOR A HEALTHCARE SIMULATION CENTRE

A strategic plan is a set of processes carried out to identify the future desired by those working in an organisation, and to develop guidelines for making the decisions leading to such a future. The importance of a strategic plan has been recognised by both the Society for Simulation in Healthcare and the Association for Simulated Practice in Healthcare. The process of developing a strategic plan consists of five stages.

- 1. Define the mission, vision and values-** the mission, vision, and values statements are the guiding forces behind the centre's administrative strategic planning and performance assessment activities.
- 2. Strategic formulation-** strategic formulation is concerned with forming a strategy in order to allow the simulation centre to meet the mission, vision and values established in stage one of the strategic planning process.
- 3. Operational planning-** the aim of this stage of formulating a strategic plan is to ensure that each strategic objective is specific, practical, and recognisable.
- 4. Assessing the results-** during the strategy implementation period, the simulation steering group must retain oversight of whether specific objectives are being achieved on time.
- 5. Reformulating the strategy-** the final stage is for the simulation steering committee to maintain oversight of the strategic and operational objectives.

RECOMMENDATIONS FOR THE HEALTH SERVICE EXECUTIVE

- Appoint a national simulation lead.
- Establish a national Health Service Executive (HSE) simulation advisory group with appropriate terms of reference.
- Develop generic HSE job descriptions for specific simulation centre roles (director, technician, manager) and for combined clinical and education/ simulation roles.
- Establish a simulation equipment procurement process and purchasing framework.
- Develop a national simulation roadmap that takes account of the priority areas outlined in part one of this document, and outlines requirements for centralised funding and support.

RECOMMENDATIONS FOR THE HOSPITAL GROUPS

- Appoint a simulation director/centre director with responsibility for the development of simulation on the clinical sites within their hospital group.
- Invest in faculty and core staff development and expertise.
- Establish a simulation steering committee.
- Establish a governance for supporting all simulation activities on a clinical site and across multiple sites within the group e.g., simulation leads on each clinical site and/or within disciplines, and local simulation implementation groups that feed into the steering committee.
- Establish funding/support mechanism for simulation activities and the simulation centre(s).
- Develop a simulation strategic plan for the hospital group that takes account of the priority areas outlined in part one of this document.

CONCLUSIONS

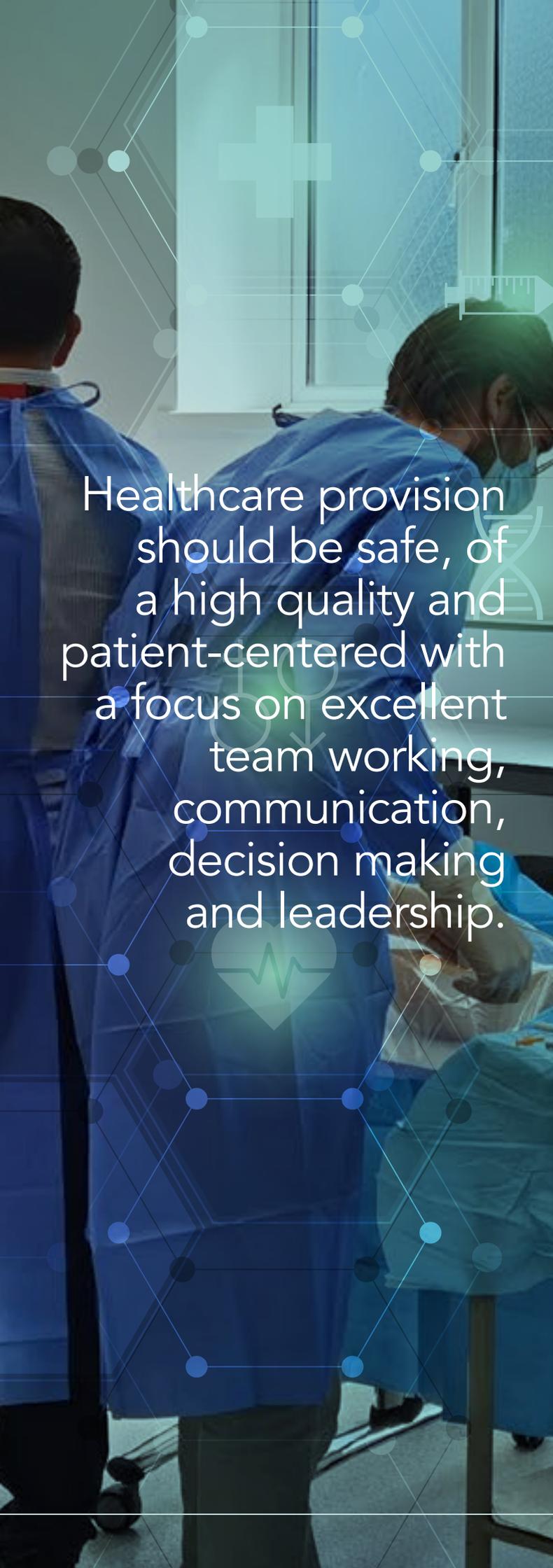
Just like any other organisation, if a simulation centre is to thrive it is important that it is adequately staffed and funded, and has the resources required to carry out its mission. The majority of these priority areas are relevant to simulation centres to address, however, if these centres are to be effective, there is also a need to address issues at a broader HSE level such as job descriptions, and equipment purchasing frameworks.

Strategic planning is also important to ensure that simulation centres have an understanding of future threats and opportunities so that they are well placed to address these challenges.

The guidance in this document applies to simulation activities on clinical sites where there is no physical simulation centre. With organisation and support, there are great opportunities to build on existing expertise in simulation in the HSE and continue to expand upon the positive impact of simulation-based education on patient safety.

INTRODUCTION





Healthcare provision should be safe, of a high quality and patient-centered with a focus on excellent team working, communication, decision making and leadership.

There has been an increased focus on quality and patient safety in healthcare in recent years, particularly on care delivered in hospital settings. Healthcare simulation education is a range of activities that share a broad, similar purpose- to improve the safety and effectiveness of healthcare delivery.

Simulation allows healthcare providers to learn, rehearse, and practice safely. Simulation also provides an environment to support the development of medical devices, the testing of procedures and protocols, support quality improvement and research activities, and for incident investigation. Many of the people that are involved in healthcare simulation have become so because they are passionate about delivering effective and impactful education and training, and probably not because they are interested in the business of running a centre. However, it is not possible to deliver simulation-based education unless the organisational process and supports are in place in order to support simulation activities.

Despite large initial financial investments, healthcare simulation centres may fail to thrive due to a lack of consideration of the long-term sustainability of the facility. Arguably, the initial establishment of a facility or centre is not the biggest challenge. Rather, it is how to engage facilitators and users to sustain and grow healthcare simulation activities across multiple user groups in a cohesive manner. This type of thinking may be quite alien to most healthcare professionals and educationalists. However, it is important to be able to manage the 'business' of the simulation centre if it is to be successful and sustainable. The same applies to simulation activities that occur in the absence of a centre such as in-situ simulation and simulation-based skills training.

There is a wide variety in the facilities for the delivery of simulation in Ireland. There are a number of large university-based simulation centres (e.g., RCSI, University College Cork), centres based in postgraduate training bodies (e.g., College of Anaesthesiologists of Ireland, RCSI), centres split between a university and hospital site (e.g., Irish Centre for Applied Patient Safety and Simulation, Galway), and centres based on hospital sites.

As compared to the university simulation centres, those on clinical site are smaller, do not have full-time members of staff to run simulation-based education and in some cases may not have a designated space in which to carry out simulation-activities. In hospitals without a designated space, much of the simulation will be delivered in-situ (i.e., occurs in the actual clinical environment) and hospitals may have in-situ simulation activities occurring in several locations (e.g., Emergency Departments, Intensive Care Units, Maternity Units). There also may be variation in the learners at the different centres. Nevertheless, the expectation of simulation activities coordinated through a simulation centre or otherwise, on a clinical site is to prioritise training of the staff on that site and promote interprofessional learning.

Although many of the challenges of resources and staff are common to all simulation centres, each unit is unique, and so will also have specific challenges and opportunities. Moreover, as discussed later, there is a need for a national unified Health Service Executive (HSE) simulation advisory group to support the development and growth of simulation activities on clinical sites. There is no single formula for exactly how to set-up, implement, and run a simulation centre. In many cases centre based, and in-situ simulation activities will coexist and prove to be the most effective

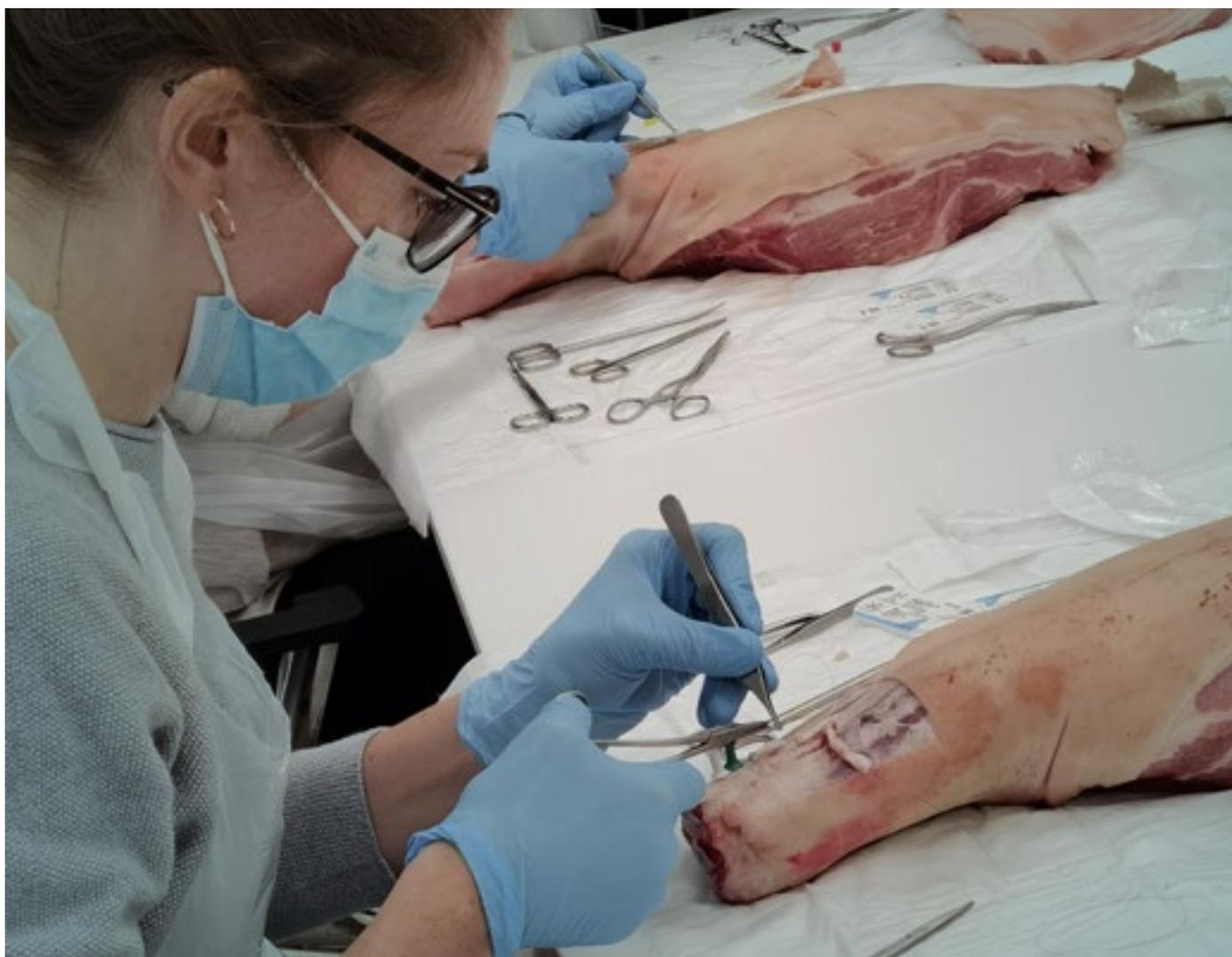
and efficient use of resources. However, it is possible to identify the priority areas that must be addressed for all simulation activities, and to provide guidance as to how to run and sustain simulation on a clinical site.

Therefore, the purposes of this document are to:

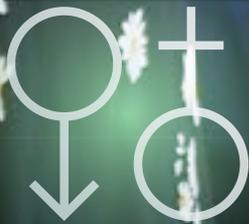
1. outline the priority areas to consider when implementing simulation-based education, and establishing and running a simulation centre on a hospital/clinical site;
2. provide guidance on how to complete a strategic plan to support simulation activities; and
3. provide recommendations for consideration under a national HSE simulation advisory group.

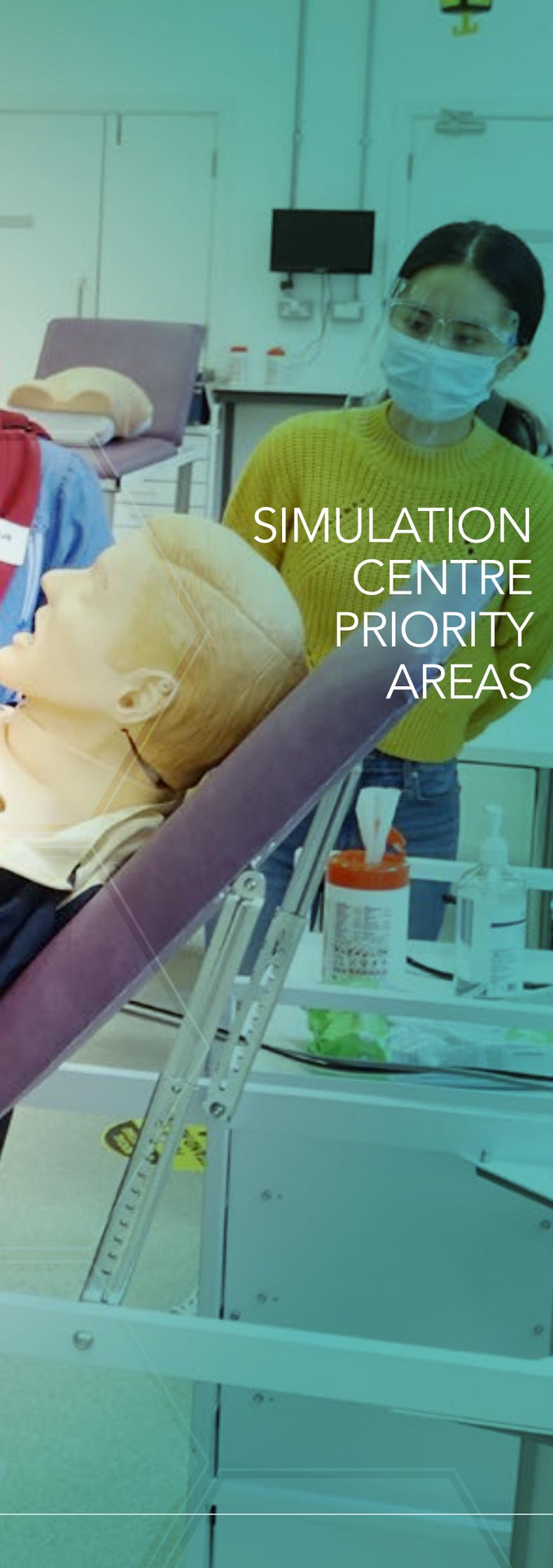
Although the document is relevant to the operation of any simulation activities or centre, this document has been written for simulation centres and activities that are situated on a hospital/clinical site and part of a hospital group. The purpose of developing simulation capabilities on clinical sites is to improve patient safety and the quality of care, enhance staff experiences and implement inter-professional education and team-based training. It is important to develop these capabilities in parallel with postgraduate training body needs and direction. It is also important to indicate that there should be an expectation that it will take time to address every priority area identified in this document. In addition, addressing some of the priority areas will require a unified national approach involving human resources, finance and procurement.

As discussed in the guidance on developing a strategic plan, there is a need to decide which priorities are most important and work on these, rather than attempting to address all of them. Which of these areas are the greatest priority will vary. Therefore, it is important that each simulation centre, through their own steering committee, decides on the priorities that they need to address with the greatest urgency.



PART 1:





SIMULATION CENTRE PRIORITY AREAS

There are eight priority areas that must be addressed in order for a simulation centre to run efficiently (see below). This document draws upon the core standards and criteria described by the Society for Simulation in Healthcare (2016), and the Association for Simulated Practice in Healthcare (2016), the strategic plans of a number of international simulation centres, and our experience of setting up the Irish Centre of Applied Patient Safety and Simulation (ICAPSS) in Galway. These priority areas are discussed within the context of a clinical site simulation centre and, where relevant, any implications for supporting simulation across the HSE through a unified national approach to simulation are delineated.



1. GOVERNANCE STRUCTURE

- 1.1 Leadership
- 1.2 Mission, vision and values
- 1.3 Steering committee
- 1.4 Strategic plan



5. PROGRAMME IMPROVEMENT

- 5.1 Programme evaluation
- 5.2 Facilitator evaluation
- 5.3 Opportunities for teamwork and interprofessional education
- 5.4 Accreditation



2. PROGRAMME MANAGEMENT

- 2.1 Needs analysis
- 2.2 Programme design
- 2.3 Simulation management systems



6. INTEGRITY

- 6.1 Code of ethics
- 6.2 Policies and procedures



3. RESOURCE MANAGEMENT

- 3.1 Selecting equipment
- 3.2 Procurement
- 3.3 Storage of equipment
- 3.4 Facilities



7. PROMOTING THE ACTIVITIES OF THE SIMULATION CENTRE

- 7.1 Local promotion
- 7.2 Website and social media
- 7.3 National and international promotional activities



4. PERSONNEL DEVELOPMENT

- 4.1 Job descriptions
- 4.2 Technical staff development
- 4.3 Facilitator training
- 4.4 Debriefing



8. FOSTERING COLLABORATION ACROSS SIMULATION CENTRES



GOVERNANCE STRUCTURE

The establishment of an appropriate governance structure is required both for a unified approach across the HSE and at each individual simulation centre. The governance for each centre will vary depending on funding, stakeholders, and users, as well as on current organisational reporting structures. This simulation governance structure should be supported by a strategic plan (discussed later in this document).



PRIORITY AREA 1 CONSIDERATIONS:

1.1 LEADERSHIP

Within a hospital group or organisation, a designated centre director should be appointed to lead on the delivery of simulation activities across the organisation. They should:

- have a job description with clear roles and responsibilities;
- have sufficient time to carry out the role;
- have organisational influence;
- be identified as part of any organisational/management structure;
- and be responsible for leading on the direction of the centre in consultation with stakeholder groups.

In the case of multiple sites within a hospital group, a designated simulation lead will support the implementation and engagement with simulation locally. For larger clinical sites, it may also be worth considering whether there is a need for designated simulation leads within each clinical discipline (e.g., a surgical lead, nursing lead, emergency medicine lead etc.). See Appendix 1 for example of roles and responsibilities for a centre director.

1.2 MISSION, VISION AND VALUES

There is a need for a clear vision and mission statement to demonstrate the aims and objectives of the simulation centre, and the direction in which it is heading. Value statements convey the priorities of the organisation or team it represents. These let users and staff know what's important to your centre, and the kind of culture it has. For example, the ICAPSS mission is, "to improve patient safety and quality of care through research and its application in clinical practice" and the vision is "to transform the delivery of healthcare through evidence-based quality improvement and education."

NUI Galway's core values are respect, excellence, openness and sustainability. Similarly, the HSE should also have a clear vision and mission for simulation nationally. To illustrate, the vision of the Central Simulation Committee of the U.S. Army is to "be a worldwide leader in managing and directing multidisciplinary simulation training to enhance graduate medical education, assist in redeployment training, and improve patient safety," Their mission is "to ensure that all Army providers are trained, competent, safe, and ready to care for our Soldiers and their families." (Deering, et al, 2012). Value statements should be embedded in both the mission and the vision and be part of all internal and external communications. Using or linking to the larger organisation's values or aligning with those outlined in the Society for Simulation in Healthcare (SSH) Code of Ethics are common approaches.

1.3 STEERING COMMITTEE

It is important to establish a simulation steering group with representation from all stakeholders, including centre staff, faculty, and learners, the organisation (deans, educational leads, programme managers, management and healthcare providers), and public/patient representatives. When forming a steering committee, it is also important to ensure representation across different disciplines and this may be done through the appointment of simulation leads in disciplines as previously mentioned. The role of the steering committee is to develop and implement an organisational strategic plan. If simulation is being delivered on multiple sites in the organisation (e.g., hospitals within a hospital group, undergraduate health professions' academies), each of these should be represented on the committee. The terms of reference of the steering committee should reflect the mission of the simulation centre, set goals and priority

areas, provide a mechanism for developing new programmes, scaling activities and engaging stakeholders. See Appendix 2 for an example of terms of reference for a simulation steering committee. A steering committee may also have an oversight function for activities to ensure consistency and quality across multiple sites (e.g., within a hospital group). Similarly, there is a need to consider the formation of a HSE simulation programme advisory group in order to provide centralised oversight and support to simulation activities and centres nationally. Such a group could also support collaboration between centres across the HSE.

1.4 STRATEGIC PLAN IMPLEMENTATION.

It is also necessary to implement a strategic plan that coordinates and aligns resources for simulation activities and centres to achieve goals. This involves defining a strategic plan that supports the mission and vision of simulation-based education (SBE) activities in a centre and larger organisation.

Implementation of the strategic plan supports the simulation centre to:

- Develop plans for immediate, short and long-term strategic goals.
- Use an organisational chart that supports the goals and outcomes of the SBE programme, identifying, at a minimum, roles for simulation leadership, simulation operations and simulation education.
- Involve key stakeholders in the strategic planning process.
- Incorporate an ongoing professional development plan for simulation personnel with associated competency validation. The development plan should be programme- and personnel-specific to meet identified needs and may include such things as attendance at local, regional, and/or national conferences, completing online or in-person SBE-focused courses, joining regional networks to share resources and skills.
- Implement a systematic plan for evaluation, with a prescribed review/revision cycle, allowing for more frequent review and/or revision as evidence, regulation, and/or programmatic changes occur; including ongoing review of simulation literature for best practices.
- Articulate the value proposition/return on investment of the simulation programme.
- Identify justifiable capital expenditures including facility improvements and expansion and SBE equipment.
- Use a communication plan to report the progress of the strategic goals to key stakeholders.



PRIORITY AREA 2

PROGRAMME MANAGEMENT

Simulation programmes must be developed in alignment with organisational needs, user competencies and/or learning outcomes. For some organisations there may simply be a requirement to fulfil a certain number of hours in simulation. For others it may be a defined academic year, programme learning outcomes, or competencies which must be defined, demonstrated or assessed. For departments and disciplines it may be interprofessional learning opportunities, rehearsal and protocol training. Beyond education and training, needs may include policy development for standardisation across clinical sites, or to support quality improvement projects. In addition, the simulation centre must have adequate resources to support the mission of the centre and to be able to deliver programmes and activities. This includes the fiscal resources required to operate the centre. Consideration should be given to the operating and capital expenses, the individual(s) responsible for fiscal affairs, and the centre's financial sustainability over time.



PRIORITY AREA 2 CONSIDERATIONS:

2.1 NEEDS ANALYSIS

The SBE programme may be used by various groups to address quality, patient safety, inter-professional education, research, and risk management for the improvement of system activities. Centres should perform a needs analysis that includes an examination of knowledge, skills, attitudes, and/or behaviours of individuals; organisational initiatives; systems analysis; clinical practice guidelines; quality improvement programmes and/or patient safety goals. Next, use the results to guide the development of an overarching goal or broad objective for a simulation programme which in turn can help develop simulation-specific objectives. The results of the needs assessment can also be used to create innovative and interactive simulation-based experiences that aim to;

- enhance curriculum in the classroom and/or clinical areas;
- provide opportunities for standardised clinical experiences;
- address competencies;
- improve quality of care and patient safety;
- and promote preparedness for clinical practice.

2.2 PROGRAMME DESIGN

Creating a standard operating procedure or formalised process for simulation programme development which facilitators can use, will streamline the process of programme design. This may take the form of an initial meeting with the content expert and completion of a template that will inform resource requirements, number of learners, type of equipment required and available faculty.

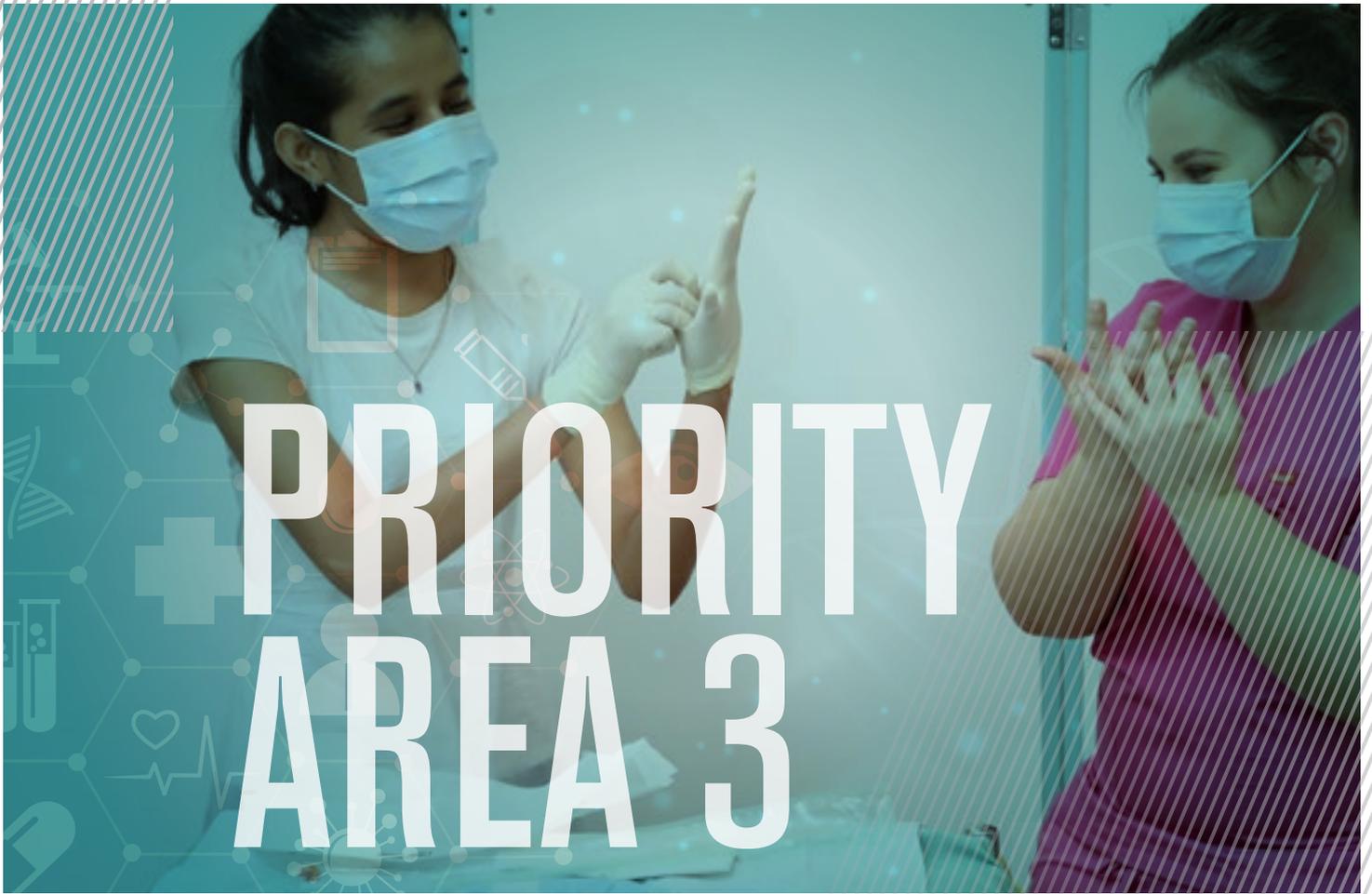
Using templates and having a process for developing content promotes excellence and a multidisciplinary approach to programme design. See Appendix 3 for an example of a template for programme design. The design of effective health care simulations facilitates consistent outcomes and strengthens the overall value of the simulation-based experience in all settings. All simulation-based experiences, including in-situ simulations, require purposeful and systematic, yet flexible and cyclical planning. To achieve expected outcomes, the design and development of simulations should consider criteria that facilitate the effectiveness of simulation-based experiences.

SBE programmes are designed and developed in alignment with formal curriculum mapping, or learning/training needs analysis undertaken in clinical or educational practice. A content expert facilitator with expertise in simulation-based education must oversee the simulation programme design and ensure that it is regularly peer reviewed, kept up to date and relevant to the organisation goals, clinical needs and curriculum to which it is mapped. Scenario templates should be used for manikin-based simulation and standardised patient encounters, and task analyses for procedural skills simulations to ensure high standards and to create resources for sharing. See Appendix 4 for an example of a template to develop a simulation scenario. At a national HSE level, considerations should also be made as to how to support collaboration and the sharing of resources such as simulation scenarios and templates, in order to prevent duplication of efforts across sites.

2.3. SIMULATION MANAGEMENT SYSTEMS

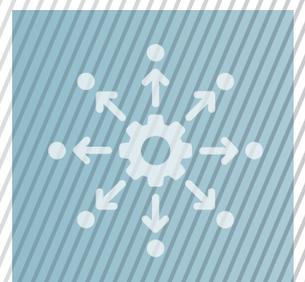
There are simulation management systems (SMS) available that are combined learning management and audio-visual (AV) systems. An AV system can support simulation activities physically by improving space utilisation and access to simulation activities. In addition, an AV system can also support remote learning, performance review, assessment and feedback. These systems can be configured so that programme details and feedback can all be collated and aligned to governing body domains (e.g., the Medical Council's 8 Domains of Good Professional Practice). Such systems can also be used to manage space, equipment, and personnel resources. A SMS can be used to support the process to prioritise requests, reserve rooms, equipment, and ensure personnel are available to operate and support each simulation-based activity. The system is used to maintain an inventory control to manage purchasing, shipping and receiving, tracking, storage, and reordering of equipment and supplies.

Furthermore, the SMS can be used to maintain and manage the financial resources to support stability, sustainability, and growth of the SBE programme's goals and outcomes. It is important to sustain a defined SBE budget with a quantified, formalised plan to analyse and control costs and to be able to plan an operating budget for the programme's revenues and expenses on a year-to-year basis.



RESOURCE MANAGEMENT

The simulation centre must have the ability to obtain, maintain, and support simulation equipment and relevant technologies to support the mission and/or vision of the centre. This requires consideration of the selection, purchasing and use of simulation equipment and resources (e.g., consumables), and the facilities (e.g., space, storage) to deliver on the mission of the centre.



PRIORITY AREA 3 CONSIDERATIONS:

3.1 SELECTING EQUIPMENT

Understanding the usability, durability, cost of replacement parts and cost of warranties is critical to selecting equipment. This equipment includes simulators, manikins, audio-visual equipment, instrumentation, consumables, and any other equipment required to allow simulation-based training to occur. There are selection tools available to support this process and speaking to experienced simulation staff on other sites can help with selection. Factors outside of cost need to be considered, such as durability, cost of replacement parts, compatibility and ease of storage, as part of the decision-making process. Consideration should be given to choosing a service provider and their lead in and response times.

3.2 PROCUREMENT

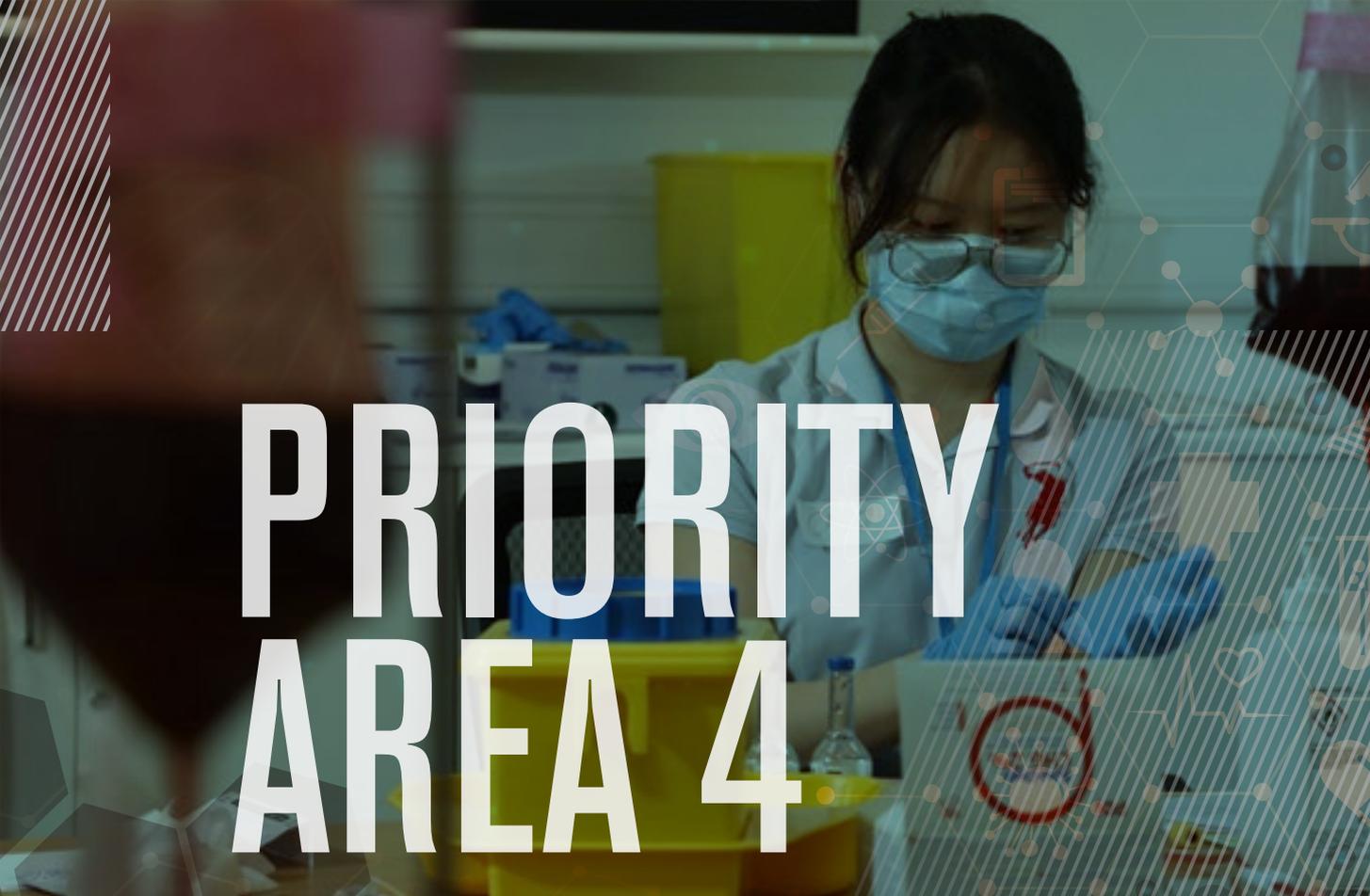
Centres must maintain and manage the financial resources to support stability, sustainability, and growth of the SBE programme's goals and outcomes. This involves sustaining a defined SBE budget with a quantified, formalised plan to analyse and control costs. Purchasing frameworks and contracts to purchase simulation equipment that are in line with the organisations' procurement processes should also be used. This ensures that your simulation centre gets the best value for money and good service contracts. Establishing a national simulation equipment purchasing framework is a priority for a unified HSE simulation approach. This is required for both simulators (manikins and task trainers) and specialised audio-visual equipment incorporating centre management systems.

3.3 STORAGE OF EQUIPMENT

Ensure adequate storage space is allocated when designing a simulation centre. The minimum storage space requirement is 20% to 25% of the floor space. Storage type and design should be considered in the context of the activities in the centre. For example, cold storage may be required if animal parts are being prepared or used for surgical skills training, roller storage may be required for larger simulators and manikins require bespoke storage space that is accessible for a hoist. A decontamination room and preparation area are essential areas that can often be overlooked. An inventory of all equipment, the purchase cost, the date of purchase, and the duration of warranty should be maintained with the specifications/ user manuals.

3.4 FACILITIES

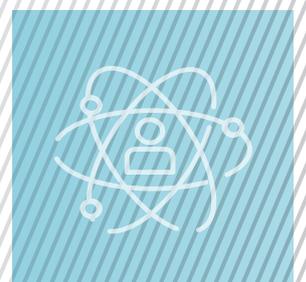
Address simulation facility essentials like sound proofing, use of piped gases, adjacencies, one-way mirrors and lighting, room size, flexible furniture, audio visual systems and flow with building contractors and architects, and seek advice from experts who have developed simulation spaces previously in a facility of similar size and location. Obtaining advice from architects who have developed clinical spaces is useful when it comes to replicating those spaces in your centre, and in sourcing equipment. Design of a new build is more straightforward than a building retrofit, which may have specific challenges such as sound proofing and access limitations.



PRIORITY AREA 4

DEVELOPMENT OF PERSONNEL

Personnel are critical to the success of the centre. As outlined under priority area 1, the centre director must be appropriately qualified and experienced with the authority and time to perform the role. The administrative and technical staff who work in the centre must also have job descriptions with clearly defined roles and responsibilities. Consideration should be given to how these positions align with the pay scales of the larger organisation in which the simulation centre is situated. In addition to technical staff, larger centres may also have a number of other positions such as a centre manager, simulated patient (SP) manager and SP educators, and a centre business manager. However, for smaller centres, these activities are often carried out by the centre director.



PRIORITY AREA 4 CONSIDERATIONS

4.1 JOB DESCRIPTIONS

Nationally, HSE job descriptions and salary scales need to be developed for specific simulation centre roles such as: centre director, standardised patient educators, technical staff and centre managers. In the case where centre directors and simulation leads/educators are clinicians, protected time should be built into their contracts and new contracts that have a dual clinical educational/simulation role should be developed. Job descriptions should include clear roles and responsibilities and evidence of expertise and experience. See Appendix 5 for example roles and responsibilities for a simulation technician.

4.2 TECHNICAL STAFF DEVELOPMENT

The largest barriers to growth in simulation centres worldwide is lack of financial support and technical staff. Dedicated, trained simulation personnel are necessary to ensure consistent and reproducible SBE outcomes. At this time, there are no specific training or education courses for simulation technicians, but personnel with on-the-job training and relevant prior experience are preferred when competency and proficiency can be demonstrated. Once hired, the development and training of technical staff is important in ensuring the success and growth of a simulation centre. Technical staff should be supported to complete courses and obtain qualifications in simulation. Moreover, simulation technicians may also require development in specific areas in order to perform their role effectively (e.g., audio-visual, online learning, simulated patient (SP) education, simulator maintenance). Technical staff with more than one year of experience in simulation should register with a Science Council and record their CPD

activities to maintain their registration. The Society of Simulation in Healthcare (SSH) offers certification in the form of a certified healthcare simulation operative specialist (CHSOS) and an advanced CHSOS <https://www.ssih.org/Credentialing/Certification/CHSOS>.

4.3 FACILITATOR TRAINING

Facilitation of a simulation-based experience requires a facilitator who has the education, skill, and ability to guide, support, and seek out ways to assist participants in achieving expected outcomes. To maintain skill as an effective facilitator, one must pursue continuing education and assessment of facilitation skills. Attaining qualifications in simulation education and/or related skills such as human factors, patient safety, health professions education, and technology enhanced learning, should be supported by the HSE. Examples of funding streams available include professional development opportunities in the Centre for Nursing and Midwifery Education (CNME) and the NCHD training support scheme or the National Doctors' Training and Planning (NDTP) Lead NCHD fund. Within Universities, funding support schemes exist for undertaking part time study. See Appendix 6 for examples of courses for professional development in simulation.

Simulation facilitators should become accredited in the delivery of simulation activities by an international simulation body such as the US based Society for Simulation in Healthcare (SSH), the UK based Association for Simulated Practice in Healthcare (ASPiH) or the European Society for Simulation in Europe (SESAM). The SSH offers certification as a healthcare simulation educator (CHSE) or an advanced CHSE for

those with extensive experience in simulation design and delivery <https://www.ssih.org/Credentialing/Certification>.

4.4 DEBRIEFING

All simulation-based experiences include a planned debriefing session aimed at improving future performance. Facilitators should acquire specific initial education through a formal course, a continuing education offering, and/or targeted work with an experienced mentor. To maintain their skill, they should seek feedback from both participants and experienced debriefers, and through active engagement in simulation-based experiences.



PROGRAMME IMPROVEMENT

There should be mechanisms in place to evaluate the programme delivered by the centre. This evaluation should include a record of the programmes delivered, dates delivered, number of attendees, learning objectives and resources required. Feedback from learners on the education and training contributes to the improvement process. Feedback should also be sought from faculty, and periodic peer assessment should be carried out of the faculty delivering training, particularly of their debriefing skills. It is also important to have a robust system in place to address any concerns and complaints from staff, faculty, or learners. In 2016 the International Nursing Association for Clinical Simulation and Learning (INACSL) developed a set of standards for simulation best practice. They provided a detailed process for evaluating and improving simulation operating procedures and delivery methods that every simulation team will benefit from. Adoption of the INACSL standards demonstrates a commitment to quality and the implementation of rigorous evidence-based practices in healthcare education to improve patient care by complying with practice standards.



PRIORITY AREA 5 CONSIDERATIONS

5.1 PROGRAMME EVALUATION

The INACSL standards for simulation provide a framework for centres to structure the development and evaluation of their programmes with a view to ongoing improvement. The eight themes in the INACSL standards are: (1) simulation design;

(2) operations; (3) debriefing; (4) facilitation; (5) outcomes and objectives; (6) participant evaluation; (7) professional integrity; and (8) simulation enhanced inter-professional education <https://www.inacsl.org/inacsl-standards-of-best-practice-simulation/>.

Centres should collate participant feedback using online or paper-based surveys circulated at the end of an education activity. This can be completed by faculty and learners. Include free text areas for suggestions on how the programme can be improved and how the learning from simulation can be applied in clinical practice. See Appendix 7 for an example of a feedback form.

5.2 FACILITATOR EVALUATION

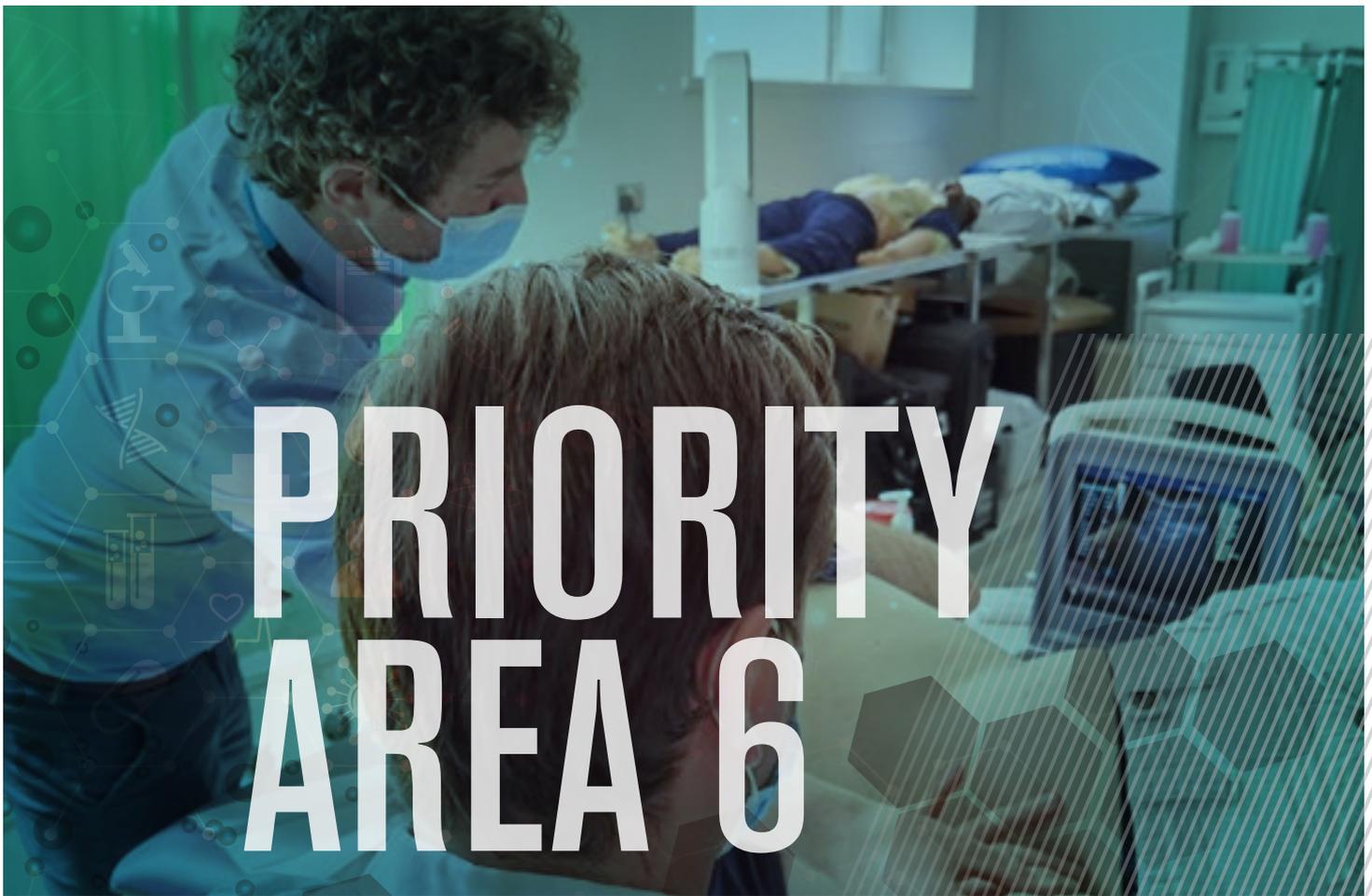
Periodic formative evaluation of the facilitators is important to assess how the faculty are delivering the training, and to give feedback to them on what they are doing well and where improvements could be made. Debriefing assessment tools such as the Debriefing Assessment for Simulation in Healthcare (DASH) have been designed to assist in evaluating and developing debriefing skills <https://harvardmedsim.org/resources/dash-raters-handbook-en/>.

5.3. OPPORTUNITIES FOR TEAMWORK AND INTER-PROFESSIONAL EDUCATION (IPE)

The complex health care needs of today's society require health care professionals to work as a collaborative team. Safe, quality health care depends on the ability of the health care team to cooperate, communicate, and share skills and knowledge appropriately. Simulation-based experiences are recognised as an effective way to promote IPE and teamwork. The simulation centre should promote and engage with stakeholders in IPE. To overcome barriers to IPE, utilise Sim-IPE champions and stakeholders throughout the development, planning, and implementation processes. Best practices for Sim-IPE should consider multiple experiences to achieve expected outcomes. Incorporate authentic, challenging, reality-based activities/scenarios developed and reviewed by the professions involved in the simulation, and develop mutual goals among the professions involved in the experience. Departmental in-situ simulation activities naturally promote IPE within the care delivery team.

5.4 ACCREDITATION

In addition to accreditation of centre staff, it is also worth considering accreditation for simulation programmes and the centre. This can be done through simulation societies such as ASPiH, SESAM, or SSH and all information re the requirements and application process is available on their websites. The accreditation process combines evidence of activities aligning to standards of best practice and a visit to the centre from the accreditation team.



INTEGRITY

It is important that the simulation centre is committed to ethical standards in education and training, as well as any other activities carried out by the centre (e.g., research, quality improvement). Despite one's role in a simulation-based experience, whether as a participant, facilitator, debriefer, technician, or other role, all involved with the simulation-based experience are responsible for acting with professional integrity and developing self-awareness of how one's personal and professional behaviour affects those around them. As previously mentioned, it is important to ensure the psychological safety of the learners. There may also be a need to consider the psychological safety of people working in the simulation centre such as the facilitators, staff and standardised patients (SPs). Good examples of this are the provision of clear instructions to all on the importance of maintaining confidentiality and recognising that everyone becomes vulnerable to a certain extent when they are placed within a simulation-based experience; it is therefore imperative that an unequal power balance be recognised, and professional boundaries maintained so that the knowledge obtained from the simulation learning outcomes are not compromised. Other teaching and learning ethical concerns could include in-situ 'code blue' training and its impact on patients and families in the ward area where the training is ongoing and ensuring that procedures are taught in accordance with best practice guidelines. If the centre is leading or collaborating with others on research or quality improvement activities, it is important that an ethical or other form of approval is in place, and that the centre has proof of this approval, a record of the activities that occurred, and any findings.



PRIORITY AREA 6 CONSIDERATIONS

6.1 CODE OF ETHICS

The Society for Simulation in Healthcare (SSH) has developed a code of ethics for simulation centres <https://www.ssih.org/SSH-Resources/Code-of-Ethics>. A code of ethics is an essential milestone in the maturation of a profession. In general, codes of ethics are self-imposed, aspirational, express key values in professional relationships, identify general standards of conduct and responsibility, and assert a professional identity. Their content includes values and standards that are important to the welfare of all parties involved.

6.2 POLICIES AND PROCEDURES

Consideration should also be given to the policies and procedures required to deliver on the mission of the centre. Simulation activities should be safe from the learner and staff perspectives. While consideration is often given to the physical safety of the learners, the psychological safety of the learning activities requires training and management. Examples of policies/procedures to ensure physical safety include storage and maintenance of equipment, drugs and supplies, operation of electrical equipment (manikin and defibrillators), set up and tear down procedures, fire and manual handling policies. Examples of policies/procedures to ensure psychological safety of the learners include confidentiality; the use of video recording (e.g., consent, retention, and destruction/deletion of recordings); protection and storage of personnel data and accessing the centre/facility. Importantly, establishing clear guidelines on how simulation activities are delivered and the qualifications of those delivering them is something that falls into this priority area.

Records should be kept ensuring simulation staff have evidence of health and safety training to include fire safety training, manual handling etc.

The Society for Simulation in Healthcare's Simulation Centre Policy and Procedure Manual and Template can be found in their resource library.



PROMOTING THE ACTIVITIES OF THE SIMULATION CENTRE

It is important that the activities of the simulation centre are promoted. This is particularly the case for a new centre, or for a centre that may have changed its role/mission.



PRIORITY AREA 7 CONSIDERATIONS

7.1 LOCAL PROMOTION

It is important to use a formal process for effective systems integration in your organisation. You can direct your simulation activities with the strategic needs of the larger organisation. Think about how to develop the programme's mission and/or vision along with written policies and procedures to articulate the role of the SBE programme in relation to other stakeholders and the larger organisation or region. At a local level, it is important to demonstrate how the centre can support the delivery of education and training, as well as research and quality improvement activities. The centre director should give regular updates in the form of an activity report to the senior management of the organisation(s). It is also important to inform members of the organisation what the centre has done, and what it can do to support teaching, research and quality improvement activities. This can be done through engagement with relevant boards and committees and through presentations (e.g., grand rounds). Through the steering group, communicate with stakeholders about how the SBE programme's mission, vision, and goals align with the overall improvement of health care education and eventually health care delivery. Demonstrate how a SBE programme can be used by various groups within the hospital to support their KPIs and to address quality, patient safety, inter-professional education, research, and risk management for the improvement of system activities.

7.2 WEBSITE AND SOCIAL MEDIA

A website or webpage that displays the centres mission and vision and code of ethics should be developed. This website should include details of key staff members, equipment available, educational and research activities. It is also important to consider the use of social media (e.g., twitter) to promote training and other activities carried out in the centre.

7.3 NATIONAL AND INTERNATIONAL PROMOTIONAL ACTIVITIES

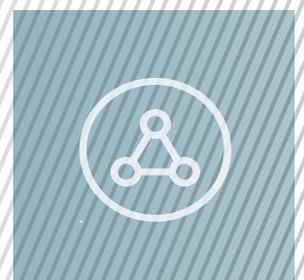
Having a website and active social media feed are useful for national and international promotion of the centre. However, the centre should consider national and international recognition through presentations at simulation conferences, publications in simulation journals, such as Simulation in Healthcare, BMJ Simulation and Technology Enhanced Learning (STEL) and Advances in Simulation or achieving accreditation from a simulation society such as SSH, SESAM or ASPiH.

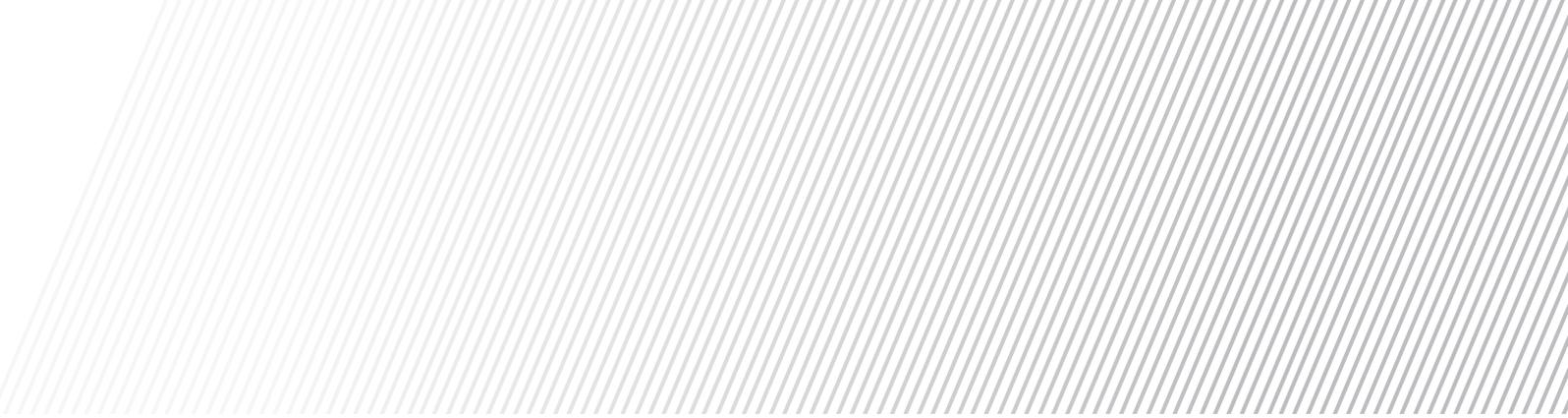


PRIORITY AREA 8

FOSTERING COLLABORATION ACROSS SIMULATION CENTRES

In addition to a collaborative approach to the setting up and organisation of simulation activities on a clinical site, collaboration across simulation sites is very important in order to support, promote, and increase simulation-based education and activities in the HSE. The simulation activities and centres at different sites are likely to be at very different levels of development. Each centre will also have different clinical and simulation expertise, equipment, training programmes, and learners. As such, it is important to develop a culture of collegiality and support across the centres in order to foster learning and sharing of knowledge and equipment. Within a particular healthcare group collaboration may be more formalised with a larger centre that supports simulation at other smaller centres. However, it is important that there is sharing across every simulation centre. This collaboration can be supported through a HSE simulation programme advisory group as outlined in priority area 1.3.

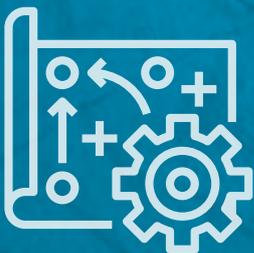


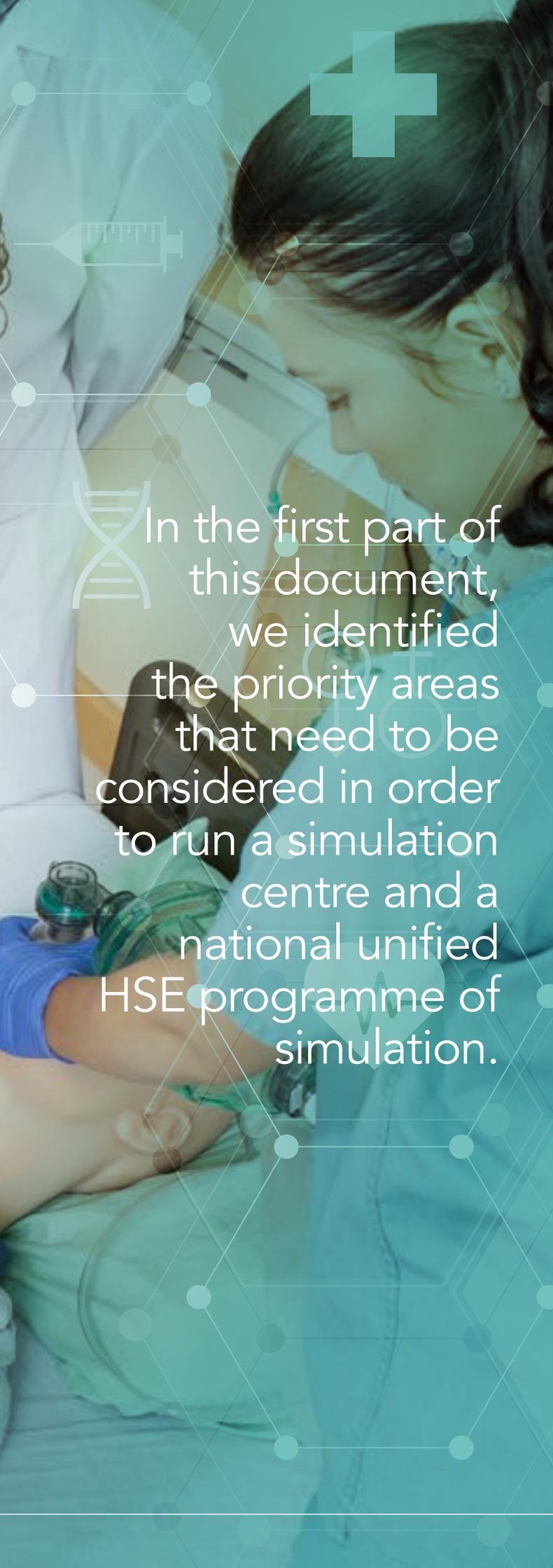




PART 2:

DEVELOPING A STRATEGIC PLAN FOR A HEALTHCARE SIMULATION CENTRE





In the first part of this document, we identified the priority areas that need to be considered in order to run a simulation centre and a national unified HSE programme of simulation.

In the second part, we will outline how to develop a strategic plan in order to support the future sustainability of the centre. This approach to strategic planning also has relevance for the development of a national HSE strategic approach to simulation.

A strategic plan is a set of processes carried out to identify the future desired by those working in an organisation, and to develop guidelines for making the decisions leading to such a future (Perera and Peiro, 2012). A strategic plan supports an organisation to move from its current situation to a desired situation in the future (Ginter et al. 2002) through identifying opportunities and threats to an organisation so these can be addressed. It is suggested that strategic planning is particularly important for healthcare simulation centres. As the delivery of healthcare is constantly changing, simulation centres must ensure that they are in a position to meet the evolving training needs of the healthcare professionals they support. Further, as simulation technology itself also changes rapidly, it is important that simulation centres are forward thinking in order to identify future needs and opportunities.

The importance of a strategic plan has been recognised by both the Society for Simulation in Healthcare (SSH, 2016) and the Association for Simulated Practice in Healthcare (ASPiH, 2019). As part of the accreditation of healthcare simulation programs by SSH, the centre must provide a written strategic plan including the goals of the program for the next three to five years, and detail on how these will be achieved (SSH; 2016).

Similarly, as part of the ASPiH (2019) standards and framework document, it is recommended that 'the facility has a clear strategic plan which addresses wider organisational and stakeholders' needs' (p.19). However, specific guidance on how to develop a strategic plan for a simulation centre is lacking. Therefore, the purpose of this guide is to offer clear guidance on how to write a strategic plan for a simulation centre.

We have adapted an approach to strategic planning for healthcare organisations (Perera & Peiro, 2012). We will also reference examples of existing healthcare simulation centre strategic plans. Following a systematic internet search, a total of six exemplar strategic plans for simulation centres were identified. The details of the search strategy as well as a summary of these plans is provided as Appendix 8.

PREPARATION FOR DEVELOPING A STRATEGIC PLAN

At the outset, it is important to make the point that a strategic plan cannot, and should not, be developed by one person. Although the strategic planning process can be led by the simulation centre director or manager, it is ultimately a team effort that will require the formation of a steering group with representatives of all stakeholders in the centre. It will also take some time in order to go through the process and solicit input from all those involved. The steering group will also have to remain engaged as the strategic plan is implemented.

THE PROCESS OF DEVELOPING A STRATEGIC PLAN FOR A SIMULATION CENTRE

The guidance offered herein takes a 'classic' approach to developing a strategic plan in five stages. Each of these stages is described below within the context of developing a strategic plan for a simulation centre. Within each stage, we also offer supporting illustrations taken from existing healthcare simulation centre strategic plans.

Stage 1: Define the mission, vision and values

- 1A. Mission statement
- 1B. Vision
- 1C. Values

Stage 2: Strategic formulation

- 2A. Analysing the external environment
- 2B. Analysing the internal environment
- 2C. SWOT analysis
- 2D. Strategic alternatives
- 2E. Strategic areas and objectives

Stage 3: Operational planning

Stage 4: Assessing the results

Stage 5: Reformulating the strategy

STAGE 1: DEFINE THE MISSION, VISION AND VALUES.

An organisation's mission, vision, and value statements are the guiding forces behind the centre's administrative strategic planning and performance assessment activities (Ingersoll, et al, 2005). The mission, vision, and values should be relevant to all stakeholders in the simulation centre. Therefore, it is important that their formulation is given careful consideration by the steering group.

1A. MISSION STATEMENT

The mission statement offers a brief summary of the purpose of the simulation centre and why it exists. For example, the mission statement for the Steinberg Centre for Simulation and Interactive Learning (2015) is:

“to employ simulation in a health care context, focused on the education of health care professionals, patients and the public.”

1B. VISION

The vision captures the aspirations of the simulation centre. It is a statement of what the simulation centre hopes to be once the proposed changes in the strategic plan have been implemented. To illustrate, the vision of the Waldron College of Health and Human Services Clinical Simulation Centre (2019) is

“to be the premier, innovative and student- centred simulation program with a keen focus on teaching, research and interprofessional education preparing competent, compassionate, professional clinicians to meet the needs of the local and global community.”

1C. VALUES

Values are the core beliefs of the centre and those affiliated with it. They are the guiding principles under which the centre operates. For example, the core values of the University of California, Irvine, Medical Education Simulation Centre (2018) are:

“accountability, respect, integrity, excellence, service. through teamwork, and innovation.”

STAGE 2: STRATEGIC FORMULATION

Strategic formulation is concerned with forming a strategy in order to allow the simulation centre to meet the mission, vision and values established in stage one of the strategic planning process. The five parts of the strategy formulation process described below provide a systematic and analytical process of selecting a course of action to achieve the mission of the simulation centre.

2A. ANALYSING THE EXTERNAL ENVIRONMENT

This analysis is concerned with identifying any external factors that can impact the centre and its efforts to achieve the mission, vision, and values. These external factors are those that directly impact the centre, but over which the centre has no control (as opposed to the internal environment, discussed next). There are four components of the external environment to consider (Perera & Peiro, 2012):

- **Clients.** In a simulation centre context, the clients are the learners that come to the centre, and the external faculty that use the centre's facilities for teaching.
- **Competitors.** Competitors can be considered to be other nearby simulation centres. These centres are not necessarily competitors in a business sense. However, competitors are a major source of learning (Perera & Peiro, 2012). It is important to identify the features of these competitors that distinguish them from the centre carrying out the strategic plan, and to consider what makes these competitors better or worse. At this stage, it is often beneficial to visit and learn from other simulation centres.
- **Providers.** In the context of healthcare simulation, the providers are the suppliers of the equipment required to carry out

simulation. These may be companies that supply simulators, or the providers of consumables required to carry out the simulation.

- **Owners.** Simulation centres are not generally independent entities and are typically part of a larger education and training organisation (e.g., a university), or a hospital. Therefore, it is important to consider how the centre fits within these larger organisations and aligns with their goals and strategies.

2B. ANALYSING THE INTERNAL ENVIRONMENT

The internal environment is concerned with factors that affect the performance of the simulation centre which the centre has the ability to change and influence. ASPiH (2016) identifies a number of areas which are relevant to the internal environment:

- **Faculty.** Faculty members may be experienced in simulation-based education, content experts in the subject being delivered, or both (ASPiH, 2016). For example, consideration should be given in terms of how the faculty are supported (e.g., need for faculty training) or recruited, and faculty accreditation with an organisation such as SSH or ASPiH.
- **Technical personnel.** Technical personnel are crucial for the maintenance, preparation, operation and delivery of simulation-based education (UK Department of Health, 2011). Much of the training for technical staff is on-the-job. Therefore, consideration should be given to the skills required by technical staff to support the centre's operations, and how these skills can be developed. Again, consideration should be given to accreditation of technical staff. There is

also a need to explore whether there are sufficient staff to deliver on the activities carried out by the centre. Finally, a concern for smaller centres that may only have one or two technicians, is how to ensure that the centre can still operate if a technician takes a permanent or temporary leave of absence.

- **Activity (program, procedural skills, assessment, and in-situ simulation).** An analysis should be undertaken on the education and training programs delivered at the centre, how these programs could be improved, and a consideration of what future programs could/should be delivered.
- **Activities (research, quality improvement).** Although the focus of most simulation centres is on education and training, there is great potential for simulation to support research and/or quality improvement efforts (O'Connor, 2020). Consideration should be given to how the centre might be able to support, or lead, research and quality improvement projects.
- **Resources.** An analysis of the current and future resource needs is arguably the most important consideration, as it underpins everything that is done at the simulation centre. This analysis should consider personnel, finances, facilities, and equipment, as well as organisational resources.

2C. SWOT ANALYSIS

As part of the process of analysing the external environment (part 2A) and the internal environment (part 2B), the steering group will have generated a range of actions for improvement. A Strengths, Weakness, Opportunities, and Threats (SWOT) analysis

subsequently provides a structured process to inform which actions the centre should focus on achieving. Table 3 provides an example of a SWOT analysis of a potential action. In addition to carrying out the SWOT analysis, the actions could also be broadly classified (i.e., high medium, or low) in terms of importance/priority.

Action

Ensure that the centre is not overly reliant on single individuals to deliver particular training programmes.

Strengths

- Ensures that the centre is always able to deliver particular training programs- even when certain members of faculty or staff may not be available.

Weaknesses

- May not be possible for everyone to be proficient in all tasks.
- Time consuming to ensure that all staff/educators know how to perform all the tasks required to deliver a particular training program.

Opportunities

- Cross-train to increase flexibility.
- Provides variability and job enrichment.
- Allows a consideration as to whether there may be a more efficient way to perform certain tasks or deliver the training.

Threats

- Lack of time to write protocols and train staff and faculty
- May impact the delivery of training in the short-term.

2D. STRATEGIC ALTERNATIVES

In this part of the strategic formulation stage, all of the potential actions for improvement generated in the SWOT analysis are collated. Initially, the purpose is not to make a judgment as to which actions should be carried out, but rather to start to group the actions in particular themes (e.g., grouping all the actions concerned with faculty training). Once this theming has been achieved, the steering group can start to combine actions that are similar, or discard those that are simply unfeasible. It is recommended that this step should conclude with no more than 20 areas of potential action (Perera & Peiro, 2012).

2E. STRATEGIC AREAS AND OBJECTIVES

The final step in this particular stage is to take the potential actions from step 2D (strategic alternatives) and decide which of these actions should be specifically addressed in the strategic plan. The actions that are selected for inclusion in the plan are subsequently called strategic areas. It is recommended that:

- there should be a limited number of strategic areas (five or six) to ensure that the centre can still operate effectively while carrying out the related actions;
- it must also be possible to address the strategic areas within the time frame of the plan; and
- the name of the strategic areas should be generic. For example, 'faculty development', rather than 'improving the debriefing skills of faculty'.

Once the strategic areas have been identified, a set of four or five strategic objectives should be assigned to each area. For example, a strategic area identified by the University of California Medical Education Simulation Centre (2018) is "create

simulation-based educational programs to assist in maintenance of certification, to improve and enhance learner competence, and to serve as outreach to professional organisations" (p.22). The associated strategic objectives are:

- "ensure proper staffing and learner experience;
- aligning with simulation industry best practice; and
- foster a system(s) that entrench simulation- based competency into the medical school curriculum" (p. 22-23).

Similarly, one of the strategic areas delineated by the Royal College of Anaesthetists (RCoA, 2018), is to support anaesthesiologists through the availability of online-learning resources. The associated strategic objectives are:

- "Develop an online area where existing and new learning resources can be shared and developed as part of the RCoA education portfolio.
- Encourage access to this online environment and a forum developed that promotes a blended approach to the use of e-learning materials, other technology enhanced and simulation-related learning resources where appropriate.
- Signpost, develop or commission materials where significant gaps in learning resources exist.
- Identify and encourage innovations in practice and facilitate the sharing of good practice across the UK and global anaesthesia community" (RCoA, 2018: 4).

Together the strategic areas, and associated strategic objectives, constitute the strategy formulation. This is the strategy of the simulation centre.

STAGE 3: OPERATIONAL PLANNING

The aim of this stage is to ensure that each strategic objective is specific, practical, and recognisable (Perera & Peiro, 2012). This is achieved by assigning operational objectives to each strategic objective. These operational objectives should be very clear in terms of what they should achieve. So, for example, if the strategic objective is 'improving the debriefing skills of faculty', one of the operational objectives could be 'deliver four debriefing courses annually for faculty'. Operational objectives should: be of a fixed and recognisable duration; be quantifiable; be achievable; have someone designated as responsible to ensure the objective is completed; and be costed with sufficient resources allocated to facilitate their completion (Perera & Peiro, 2012).

STAGE 4: ASSESSING THE RESULTS

During the strategy implementation period, the steering group must retain oversight of whether specific objectives are being achieved on time- and progress should be assessed at least quarterly. Based on this assessment it may be that changes are made to a number of the operational objectives or timescales of delivery in order to support their completion.

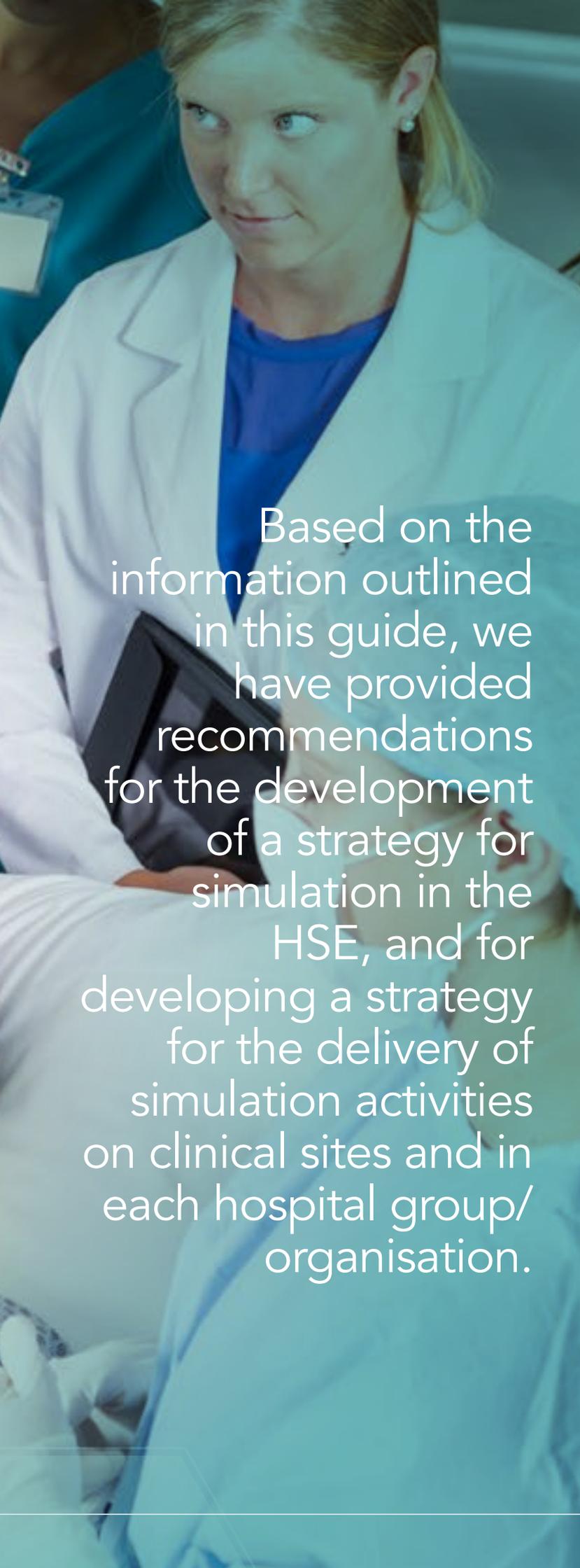
STAGE 5: REFORMULATING THE STRATEGY

The final stage is for the steering committee to retain oversight of the strategic and operational objectives. If there are issues with a particular group of operational objectives (e.g., the implementation is slower than expected) associated with a particular objective, it may be that the objective needs to be changed. If this is the case, it is important that time has been given to see if the objective could be achieved, that potential modifications that might allow for completion have been explored, and that any changes should be documented.

PART 3:

RECOMMENDATIONS



A woman with blonde hair tied back, wearing a white lab coat over blue scrubs, is looking down at a tablet computer. She is in a clinical setting, possibly a hospital or clinic. The background is slightly blurred, showing other people in white coats. The overall lighting is soft and professional.

Based on the information outlined in this guide, we have provided recommendations for the development of a strategy for simulation in the HSE, and for developing a strategy for the delivery of simulation activities on clinical sites and in each hospital group/organisation.

Ideally this should be done with as many stakeholders as possible, in association with postgraduate education and training goals, academic partners in the Universities and across disciplines. This development process will ensure engagement and sustainability, establish more secure funding models, and support inter-professional education and team-based training.

RECOMMENDATIONS FOR THE HEALTH SERVICE EXECUTIVE (HSE)

- Appoint a national simulation lead.
- Establish a national HSE simulation advisory group with appropriate terms of reference.
- Develop generic HSE job descriptions for specific simulation centre roles (director, technician, manager) and for combined clinical and education/ simulation roles.
- Establish a simulation equipment procurement process and purchasing framework.
- Develop a national simulation roadmap that takes account of the priority areas outlined in part one of this document and outlines requirements for centralised funding and support.

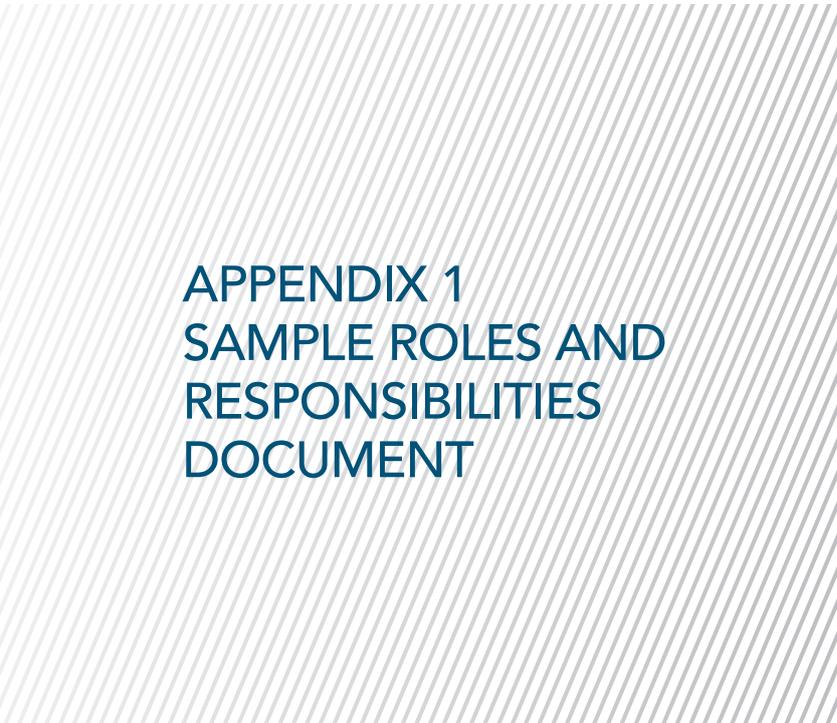
RECOMMENDATIONS FOR THE HOSPITAL GROUPS

- Appoint a simulation director/centre director with responsibility for the development of simulation on the clinical sites within their hospital group.
- Invest in faculty and core staff development and expertise.
- Establish a simulation steering committee.
- Establish a governance for supporting all simulation activities on a clinical site and across multiple sites within the group e.g., simulation leads on each clinical site and/or within disciplines, and local simulation implementation groups that feed into the steering committee.
- Establish funding/support mechanism for simulation activities and the simulation centre(s).
- Develop a simulation strategic plan for the hospital group that takes account of the priority areas outlined in part one of this document.

CONCLUSIONS

Just like any other organisation, if a simulation centre is to thrive it is important that it is adequately staffed and funded, and has the resources required to carry out its mission. This document has described the priority areas that must be addressed in order to successfully run a simulation centre. The majority of these priority areas are relevant to simulation centres to address, however, if these centres are to be effective, there is also a need to address issues at a broader HSE level such as job descriptions, equipment purchasing frameworks and funding support. The latter will require simulation centres

focus on programme development and improvement priority areas and follow a set of best practice standards to ensure high quality education. Strategic planning is also important to ensure that simulation centres have an understanding of future threats and opportunities so that they are well placed to address these challenges. With organisation and support, there are great opportunities to build on existing expertise in simulation in the HSE and continue to expand upon the positive impact of simulation-based education on patient safety.



**APPENDIX 1
SAMPLE ROLES AND
RESPONSIBILITIES
DOCUMENT**

Selection of Roles and Responsibilities of a Simulation Director and/or Academic Simulation Lead:

Teaching

General:

To give instruction and supervision, as directed by the [insert organisations' educational lead e.g., Dean, Head of School, Chief Academic Officer etc.] to faculty and students and trainees in the [insert organisation]. Such duties to include simulation curricula and course/programme design, preparation and delivery of lectures, tutorials, project supervision and general examination and other assessment responsibilities in collaboration with subject matter experts.

Specific:

- Develop a simulation-based education (SBE) curriculum and training programme that supports learners (staff, trainees and faculty).
- Participate in ongoing review and ensure quality assurance of the simulation programmes and facility.
- Put processes in place to ensure SBE activities comply with international standards.
- Identify opportunities for and promote, interprofessional collaboration in the design and delivery of simulation.
- Identify opportunities for and promote workshops and train the trainers simulation programmes to a wider audience.
- Support staff development in the design and delivery of simulation-based education.
- Have responsibility for the continuous professional development of technical and support staff working in the simulation facility.
- Formulate and present education activities and evaluations to [insert name of group e.g., executive, school board etc.]

Research

General:

To engage in research and other creative and innovative activity as appropriate to the organisation. The post-holder is required to disseminate their research in academic publications, other outlets as appropriate and to participate in postgraduate supervision. The post-holder is encouraged to engage in initiatives to seek research funding, as appropriate. The post-holder is also encouraged to promote and engage in the development of collaborative research.

Specific:

- To develop an international reputation in the organisation in patient safety and simulation-based research.
- To promote the [insert organisation] as a partner of multicenter simulation research.
- To secure research funding from external bodies.
- To publish in high quality simulation, patient safety and quality improvement journals.
- To use simulation for activities that are prioritised by [insert organisation] that are beyond education and training e.g., quality improvement, device testing, engagement with medical device companies.

Contribution and Scholarly Activity

General:

To contribute to the [insert organisation] strategic working groups in [insert organisation] To engage with the wider community regionally, nationally and internationally from a civic, economic, social and cultural perspective as a contribution to the life of the University. In representing [insert organisation] externally, the post-holder is expected to maintain the highest professional standards, thereby enhancing the reputation of the University. The post-holder is expected to engage in scholarly activity such as, but not limited to, refereeing of journals, membership of discipline related advisory bodies and peer review panels and work associated with external examinership.

Specific:

Leadership

- Support the strategic development of SBE across [insert organisation].
- Make recommendations on the implementation and growth of SBE across [insert organisation].
- Lead on the accreditation of a simulation facility.

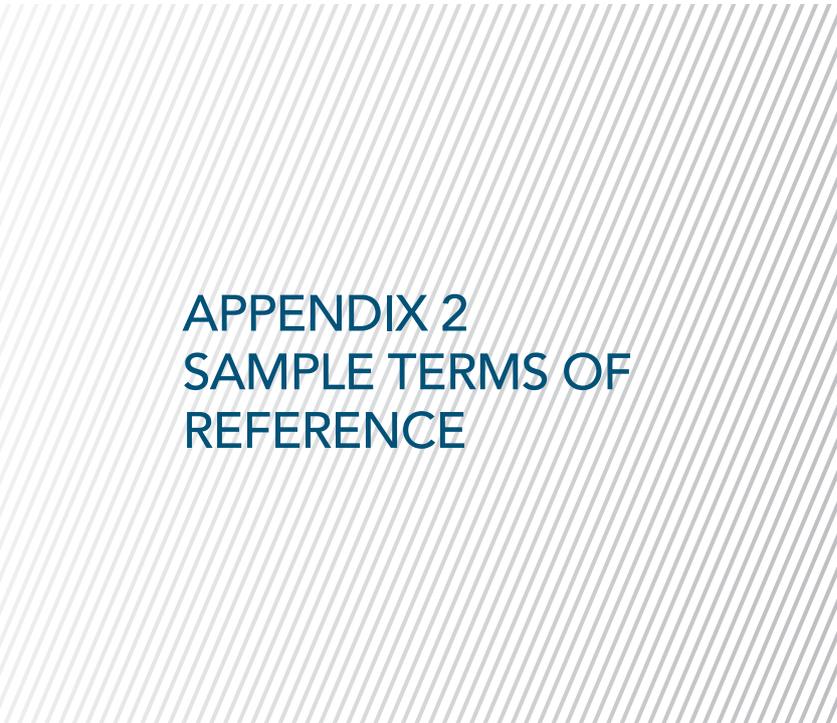
- Develop programmes and a facility that meets international accreditation standards.
- Develop strategic SBE partners nationally and internationally.
- Grow and develop simulation educators and faculty and develop simulation fellowships in partnership with training bodies.
- Engage and liaise with the [insert accreditation body name] to co-ordinate simulation activities that align with their domains of professional practice.
- Engage and liaise with the national postgraduate training bodies to deliver simulation activities that align with their outcomes and competencies.
- Provide leadership and mentorship to educators in [insert organisation] and nationally.

Scholarship

- Know the current trends in healthcare simulation education and technology.
- Develop a research programme that demonstrates outcomes in the health service and contributes to the literature.
- Participate (and represent [insert organisation]) in relevant national and international health professions education, simulation education and patient safety conferences such as simulation, education, patient safety and quality improvement journals.
- Participate in relevant national governance and regulatory bodies for undergraduate and postgraduate education and training (Medical Council, Training bodies, HSE National Doctors Training and Planning, HSE patient safety and quality group).
- Be aware of developments in the areas of curriculum design and new approaches to assessment and developments in competency based curricular frameworks.

Administration

- To advise/support the [insert names] in financial planning, resource management and plan implementation particularly in relation to the development of facilities and resources in simulation.
- Contribute to and provide data to the collation and completion of returns to governance bodies in education and research, and training bodies [insert].



APPENDIX 2 SAMPLE TERMS OF REFERENCE

Sample of Terms of Reference for a Simulation Steering Committee [and or an Oversight Group/Committee]

1. Purpose

The Simulation Steering Committee provides strategic direction for simulation activities across multiple sites and disciplines. The overall purpose of this steering committee is to make decisions for the implementation of healthcare simulation strategic plan across the [insert organisation]. The group will support an integrated approach between [insert organisations] in supporting and developing interprofessional simulation activities both at undergraduate and postgraduate levels across all disciplines.

These terms of reference approved by the Committee on [day month year] are effective from [day month year]. The Committee will meet quarterly.

2. Roles and Responsibilities of the Committee

1. Strategic

- a. Make decisions on the simulation strategic goals.
- b. Develop and implement the strategic goals for healthcare simulation.
- c. Engage with management (University and Hospital) and external stakeholders e.g., training bodies, NDTP, MedTech companies etc., in a strategic manner to guide programme development and funding.
- d. Review and assess alignment with curricular and training standards and requirements.
- e. Link with the simulation steering and implementation groups in the organisation and nationally.

2. Operational

- a. Monitor financial activity.
- b. Support accreditation of facility and programmes.
- c. Support the development of transparent, accountable structures and functionality.
- d. Oversee and ensure efficient shared utilisation of resources i.e., equipment, staffing, finance etc.
- e. Ensure consistency of delivery of SBE across multiple sites.
- f. Support the development and implementation of quality improvement activities.
- g. Support the growth of patient safety research activities.
- h. Receive reports from other sites within the organisation delivering SBE.

The Director/Professor of Simulation will chair the meetings. The simulation operations manager will submit an agenda and keep minutes. It is expected that updates from all

hospital sites and academic sites pertaining to simulation activities will be submitted by the chair of relevant simulation implementation and project groups on each site.

3. Membership

Shall be for 3 years with option to reappoint.

Chairperson: Professor of Simulation/Director of Simulation

The chairperson is responsible for coordinating the meetings and ensuring the steering group remains within its remit.

Suggested Representation from some/all of the following:

1. Professor of Simulation/Director of Simulation
2. Head of School of Nursing and Midwifery
3. Head of School of Medicine
4. Director of Undergraduate Programme Board
5. Head of School of Health Sciences
6. Director of Strategy College of Medicine Nursing and Health Sciences
7. Representation from the Deans on Academic Sites
8. Chief Operations Officer
9. Director of Nursing
10. Director of Centre for Nursing and Midwifery Education
11. Director of Midwifery
12. Director of Postgraduate Education in Medicine or Chief Academic Officer
13. Surgical Training Lead
14. Medical Training Lead
15. Simulation Lead from each Simulation Project Implementation Groups
16. Representation from Quality Improvement Group
17. Representation from Patient Safety Group
18. Patients/Public representation

4. Accountability Reporting Relationships

Quarterly updates from the Committee shall be furnished to the College Executive, the Academic Office and the Office of the Director of Nursing. Updates will be included in the Executive Report to the [insert name] Executive Council, and to the College Executive and to the hospital/academic liaison group.

5. Frequency of Meetings

Initially monthly meetings, and thereafter the frequency will be decided by the committee, with regard to the throughput and workload of the simulation department. A minimum of six meetings will be held each year.

- 6. Attendance at Meetings** The Committee may review the membership of any member that has not attended for the previous four consecutive meetings. A quorum of 50% of the members is required at a meeting for the decisions voted on to be valid.

7. Minutes

The simulation coordinator shall minute the proceedings and resolutions of all meetings including recording the names of those present and in attendance. Minutes of the meetings shall be circulated to all members.

8. Approval and Review Date

The terms of reference are prepared by [insert] and communicated and accepted by each member of the committee and made available on Q Pulse and Sharepoint. The terms of reference should be reviewed every 2 years, or sooner, if necessary, by the Committee and Executive.



**APPENDIX 3
SAMPLE PROGRAMME
DEVELOPMENT
TEMPLATE**

Target audience_Name of programme_Month_YYYY

When labelling this document for saving, please name it in the following format:

Target audience_Name of programme_Month_YYYY

This document should be saved in a OneDrive folder which contains all other relevant materials to the workshop in folders labelled e.g. scenarios, equipment, feedback etc.

1. Programme Overview		
(a)	Title of programme	
(b)	Type of simulation e.g., Manikin-based simulation, procedural skills, simulated patient scenarios	
(c)	Target Audience e.g., Undergrad/Postgrad, discipline/specialty	
(d)	Local/National	
(e)	Faculty involved with development/delivery	Academic
		Clinical
		Technical
		Administrative
(f)	Number of learners per session	
(g)	Date of programme	
(h)	Description/overview of purpose and learning objectives	
(i)	Recurrent session? Yes/No – if recurrent, indicate frequency	
2. Requirements		
(a)	Attendance record	
	Assigned (initials)	

(b)	Consent	For photos, for simulation, for zoom broadcast, for recording.	
(c)	COVID related	Pre-course declaration? Masks? Visors?	
(d)	Feedback	Generic/to be generated	
(e)	Catering	To be delivered at what time? What food/drinks/tea/coffee? For how many? Dietary requirements (coeliac/vegetarian etc)	
(f)	External/Internal CPDs required?	Application to be made to RCPI/RCSI/NMBI min. 6 weeks before programme and certs to be issued OR for faculty etc – internal CPD cert	

3. Communications			Assigned (initials)
(a)	Marketing	Flyer/social media graphic etc required?	
(b)	Pre-course email to participant to include	<ul style="list-style-type: none"> - Details of location - Consent - Schedule/outline of day - Covid requirements - Pre-course learning - Lunch etc (provided or bring it) - 	-
(c)	Post course email to participants include	<ul style="list-style-type: none"> - Feedback link - CPDs - Etc 	
(d)	Reporting process	Feedback to be sent to... Pics shared on social media.	

Target audience_ Name of programme_ Month_ YYYY

4. Funding		Assigned (initials)
(a)	Source of Funding	
(b)	Account to be used for purchasing	
(c)	Aligned to grant?	

5. Schedule	
Room bookings:	
Meeting log:	Date: Attendees:
	1.
	2.
Date for dry run:	

	<p>e.g.,</p> <p>09:00 – 10:00 Scenario 1</p> <p>10:00 – 11.00 Scenario 2....</p> <p>09:00 – 10:00 Station 1 ROTATE</p> <p>09:00 – 10:00 Station 2 ROTATE</p> <p>Consider: Prebrief time (usually 20m), Welcome time, Feedback time, lunch, break etc</p>
Session schedule:	

6. Stations/Scenarios

Station/Scenario Name:			
Location:			
Description:			
Number of Learners:			
Faculty:			
REQUIREMENTS:			
Item	No. required	To be ordered:	Assigned to:
1			
Simulator(s):			
Consumables:			

Target audience_ Name of programme_ Month_ YYYY

Equipment:			
Paperwork/printing:			

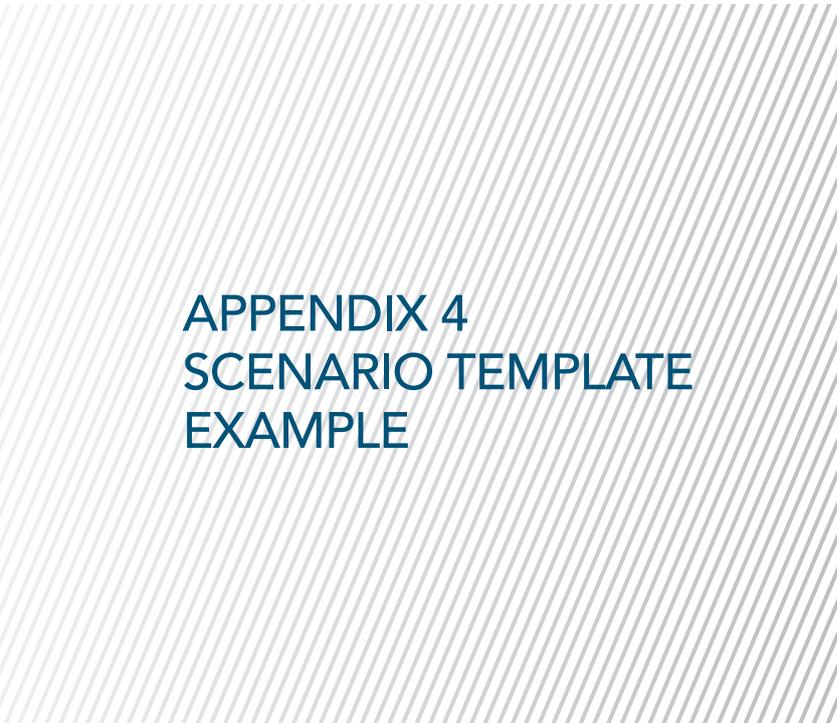
Station/Scenario Name:			
Location:			
Description:			
Number of Learners:			
Faculty:			
REQUIREMENTS:			
Item	No. required	To be ordered:	Assigned to:
Simulator(s):			
Consumables:			
Equipment:			
Paperwork/printing:			

Station/Scenario Name:			
Location:			
Description:			
Number of Learners:			
Faculty:			
REQUIREMENTS:			
Item	No. required	To be ordered:	Assigned to:
Simulator(s):			
Consumables:			
Equipment:			
Paperwork/printing:			

3

Target audience_Name of programme_Month_YYYY

<p>7. Post-Sim: points to consider for next time</p>	
--	--



APPENDIX 4
SCENARIO TEMPLATE
EXAMPLE

SCENARIO TITLE

SPECIALTY:

TARGET AUDIENCE:

OVERALL PURPOSE:

INFORMATION FOR FACULTY

LEARNING OBJECTIVES:
(at the end of the scenario, the
learners should be able to...)

-
-
-
-

Location:

Number of participants per scenario:

SCENE INFORMATION:

Expected duration of scenario:

Expected duration of debriefing:

SUMMARY PLOT FOR
FACILITATORS:

MANIKIN / SIMULATED PERSON
(how they will look, what they will be wearing, etc.)

ADDITIONAL PERSONS REQUIRED

Confederates

Technicians

EQUIPMENT & CONSUMABLES

PAPERWORK AND ADDITIONAL MATERIALS
(eg. clinical notes, imaging, lab results, etc.)

**ALL MATERIALS TO BE SOURCED AND PROVIDED
WITH ALL PATIENT IDENTIFIERS REMOVED**

Available to learners at start:

Made available throughout the scenario:

PARTICIPANT BRIEFING:
(to be read aloud to participants
before entering the simulation)

**CONFEDERATE
HANDOVER TO
PARTICIPANTS:**
(to be told to participants as they
enter simulation)

**KEY POINTS FOR
CONFEDERATE ON
PHONE:**

PATIENT HISTORY
BRIEFING FOR VOICE OF
THE MANIKIN OPERATOR:

PATIENT DEMOGRAPHICS

Name: _____ **Address:** _____

DOB and age: _____

Sex: _____

Weight: _____

Height: _____

PATIENT HISTORY
(as written in medical notes)

ID: _____ **Medications and allergies:** _____

PC: _____

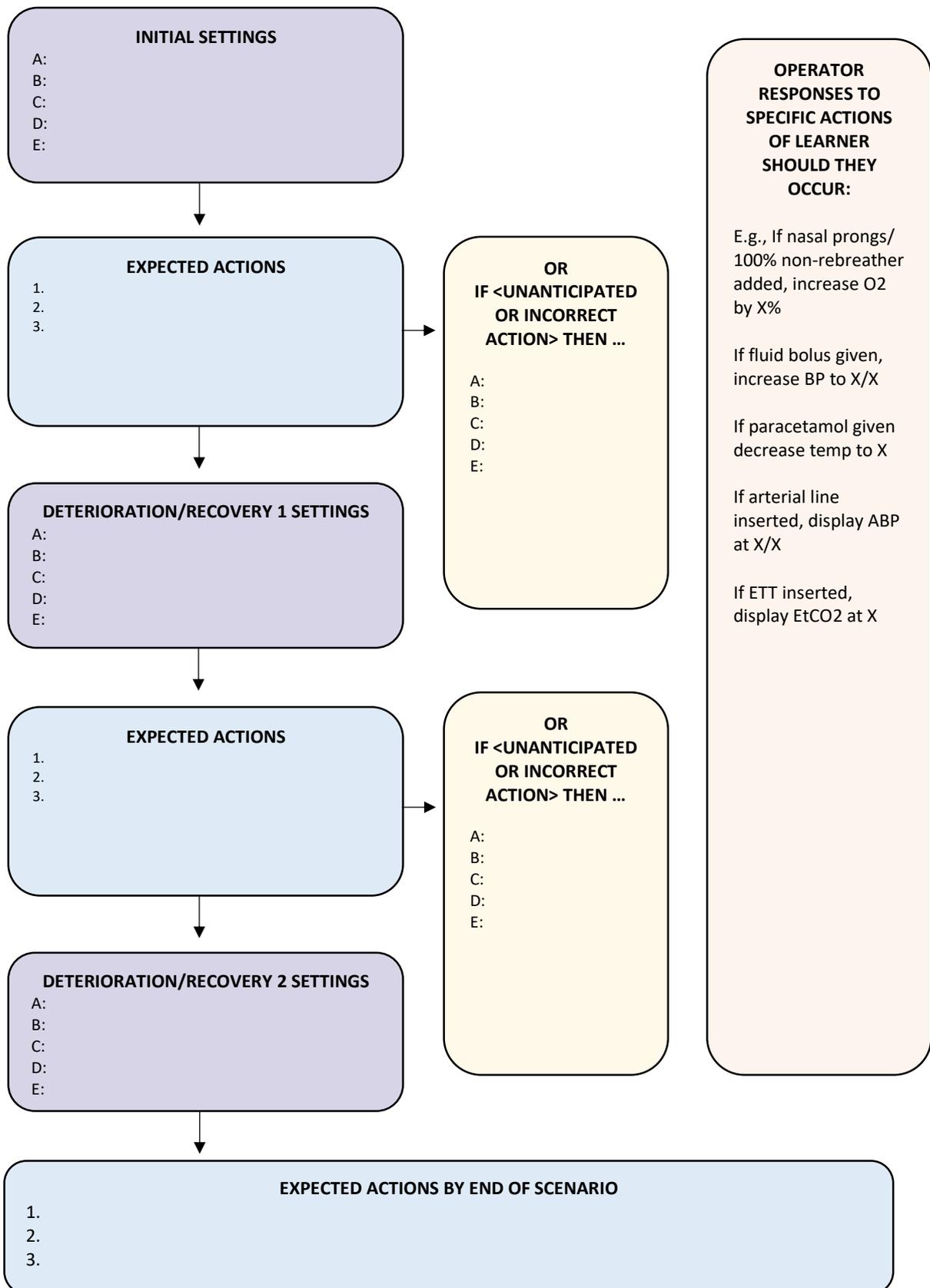
HPC: _____ **Social Hx:** _____

Family Hx:

PMHX:

ROS:

CONDUCT OF SCENARIO



RESULTS

Please indicate using brackets when the results are available to the learner. For example at the start of scenario, if requested, after 5 minutes etc.

ABG1:

ABG2:

VBG1:

VBG2:

RESULTS

CXR 1:

CXR2:

ECG1:

ECG2:

Blood Tests Results:

Other (E.G, blood glucose, urine dipstick, culture result, etc):

PLEASE NOTE THAT ALL RESULTS MUST BE SOURCED AND ATTACHED TO THE END OF THE SCENARIO

DEBRIEFING

DEBRIEFING TEAM:

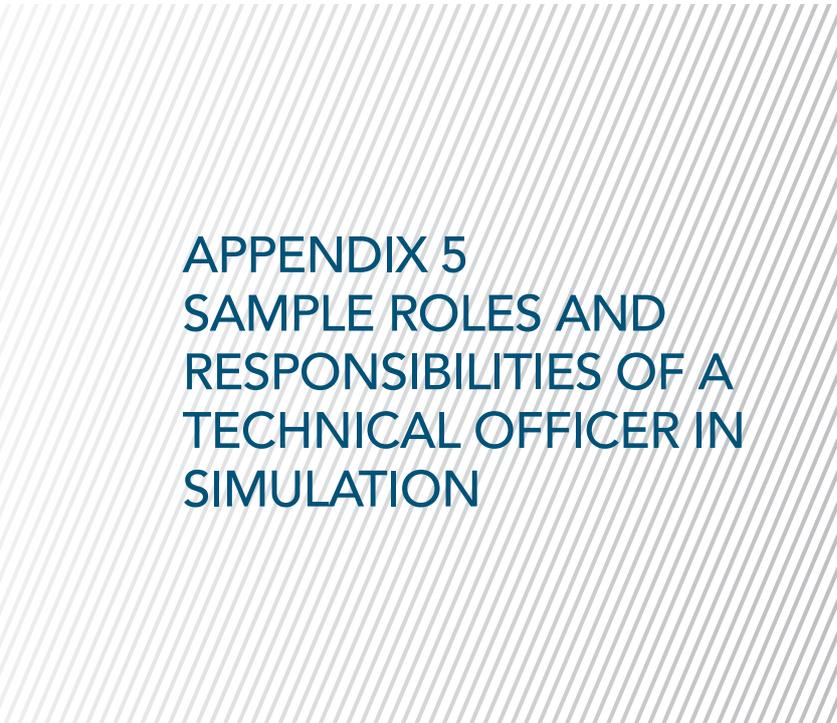
-
-
-

POINTS TO INCLUDE IN
THE DEBRIEF:

-
-
-
-
-

RESULTS

NAME OF RESULTS: AVAILABLE @ START/AVAILABLE ON REQUEST



**APPENDIX 5
SAMPLE ROLES AND
RESPONSIBILITIES OF A
TECHNICAL OFFICER IN
SIMULATION**

Sample Roles and Responsibilities for a Simulation Technician (Technical Officer):

Main Purpose of the Role

The main purpose of the post is to provide technical support to simulation activities at the [insert organisation] to support the delivery of quality simulation-based education programmes to students and staff.

Using simulation standards and established best practice, the technical officer in simulation will support the running of the simulation facility, the collation and maintenance of the inventory as well as the care of the manikins and other equipment used in the simulation program. Occasional evening or weekend shifts may be required.

Main Duties and Responsibilities

- Assisting with the planning and organisation of the day-to-day operations of the simulation facility and programmes, to ensure the smooth running and optimal usage of resources, space and equipment.
- Supporting the ongoing implementation and renewal of the [insert organisations name] simulation strategy.
- Providing technical support to colleagues and other stakeholders in respect of simulation services.
- Developing, testing and delivering new simulation services.
- Developing simulation practice, policies and procedures.
- Maintaining current knowledge of simulation/lab equipment catalogs and operation manuals.
- Operating simulators for the duration of simulations.
- Setting up and taking down simulation laboratory equipment which may involve rapid turnover of simulation lab set up.
- Maintaining and repairing all simulation equipment.
- Providing technical support for task trainers.
- Providing recommendations on equipment, supplies and materials.
- Maintaining simulation activities and learner confidentiality.
- Soliciting and acting on feedback to ensure a quality simulation programme and an excellent user experience.
- Performing other job-related duties as required.

Special Features of Job

The successful candidate will demonstrate the eligibility requirements below:

Decisions made at shortlisting and interview will be made based on the following criteria for appointment.

- A qualification in a related area.
- Experience in healthcare simulation including use of simulation equipment.
- Proficient in Microsoft Word, Excel and PowerPoint
- Experience in creating spread sheets and in using social media platforms.
- Strong interpersonal and communication skills (written and oral) to interact with and work effectively with other faculty, staff, students, and vendors in a positive, helpful and cooperative working relationship.
- Organisational and time management skills to keep materials in order, track various projects, maintain files, and follow through assignments to completion.
- Ability to maintain confidentiality of information.
- Ability to quickly learn new technology.



**APPENDIX 6
COURSES FOR
FACILITATOR
TRAINING**

Appendix 6: Examples of Courses for Facilitator Training

1. RCSI MSc Human Factors in Patient Safety
<https://www.rcsi.com/dublin/postgraduate/taught-courses/human-factors-in-patient-safety/course-details>
2. NUI Galway MSc Healthcare Simulation and Patient Safety
<https://www.nuigalway.ie/courses/taught-postgraduate-courses/medical-healthcare-patient-safety.html>
3. Scottish Centre for Simulation & Clinical Human Factors courses
<https://scschf.org/courses/>
4. Dundee Institute of Healthcare Simulation (DIHS)
<https://dihs.dundee.ac.uk/courses/general-surgery/simulation-based-education-surgeons-sbes>
5. Centre for Medical Simulation Instructor Training:
<https://harvardmedsim.org/training/simulation-instructor-training/>
6. Great Ormand Street Hospital for Children Debriefing course
<https://www.gosh.nhs.uk/working-here/gosh-learning-academy/clinical-simulation-centre/simulation-courses/introduction-debriefing-course/>
7. Royal College of Physicians UK 'Getting the most out of simulation: debriefing and scenario writing in simulation'
<https://www.rcplondon.ac.uk/education-practice/course/getting-most-simulation-debriefing-and-scenario-writing-simulation-0>

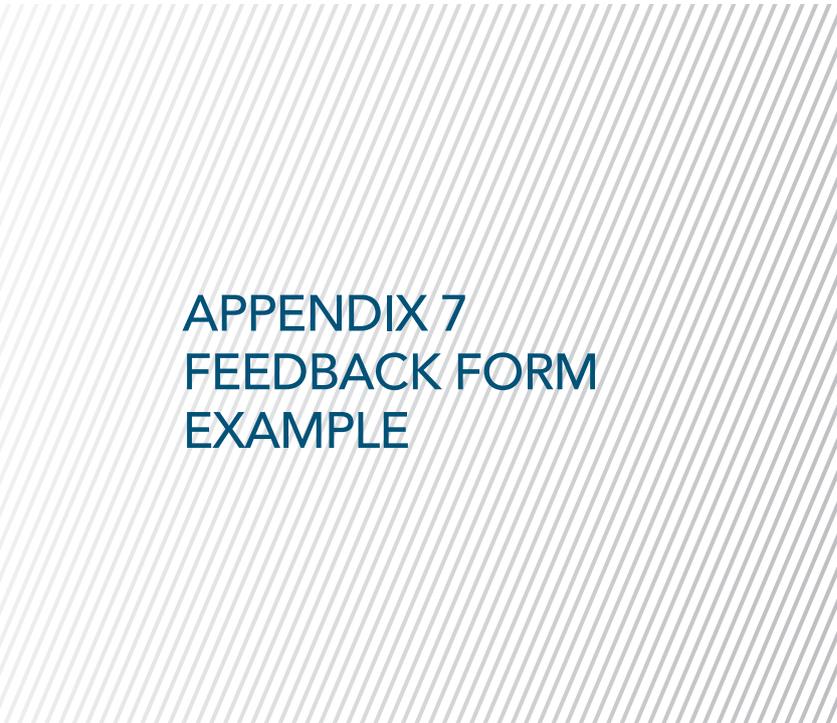
The website <https://www.healthysimulation.com/> provides links to upcoming courses and gives a good overview of different debriefing tools used in healthcare simulation.

The Society for Simulation in Healthcare (SSH) has a live learning centre which offers various courses relating to simulation, ranging from debriefing and scenario development to 3D printing and the use of VR

<https://ssh.sclivelearningcenter.com/MVSite/default.aspx>

SSH also has a webinar series which are free to attend <https://www.ssih.org/Professional-Development/Online-Learning/SimSeries-Webinars> and a healthcare simulation education and training directory where you can

search for courses <https://www.ssih.org/HC-SIM-Training-Directory>



**APPENDIX 7
FEEDBACK FORM
EXAMPLE**

Simulation Workshop Feedback

We would be very grateful if you could provide some information about the training. It will take less than 5 minutes to complete. Your feedback will help us improve the quality of our training.

* Required

1. I enjoyed the workshop. *

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

2. The facilitators were well organised. *

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

3. The facilitators were helpful and approachable. *

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

4. I understood the content as presented in the workshop. *

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

5. The workshop was useful in addressing my needs. *

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

6. The workshop improved my ability to use skills related to the topic. *

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

7. The knowledge and skills I learned will be useful to me in my job. *

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

8. What did you like about the workshop? *

9. What do you think could be improved? *

10. What elements from the workshop could you implement in your own practice? *

11. What other workshops would you like to see offered? *

12. Please share any other comments you may have. *

This content is neither created nor endorsed by Microsoft. The data you submit will be sent to the form owner.

 Microsoft Forms



**APPENDIX 8
IDENTIFICATION OF
EXEMPLAR SIMULATION
CENTRE STRATEGIC
PLANS**

Identification of Exemplar Simulation Centre Strategic Plans

The purpose of the search was to identify exemplar open-source simulation centre strategic plans. On the 7th of December 2020, a google search was run with the terms “Medical simulation” AND “Strategy”. On the 20th of December 2020, a google search was run with the terms “Simulation centre” AND “Strategic plan”. These searches led to a total of 659,000 results. The first 100 pages of each search results were scrutinised by one researcher (EOD), after which no relevant or new search results were emerging.

To be considered for review, the websites or documents must explicitly describe the “strategy” of a specific simulation centre. Websites or documents were excluded if they described the mission or vision of the centre without explicitly referring to a strategy, or if only described the centre facilities without reference to a strategy. Moreover, the strategy must refer to a specific simulation centre, not a simulation organisation or certifying body. Using these criteria, 42 potential strategies were retained for further scrutiny. These 42 websites or documents were screened by two researcher (EOD and POC), and six strategic plans were deemed to be strategic plans in accordance with the criteria described above. These six strategic plans are summarised in the table on the following page, and the aspects of the strategic planning process that are reported in these strategic plans are indicated.

Name	Medical education simulation centre	The Steinberg centre for simulation and interactive learning	Otago Medical School	Royal College of Anaesthetists Simulation Strategy	Waldron College of Health and human services Clinical Simulation center	Ingham institute clinical skills and simulation centre
Date retrieved	20/12/20	20/12/20	20/12/20	20/12/20	20/12/20	20/12/20
Country	USA	Canada	New Zealand	UK	USA	Australia
City	Irvine	Montreal	Dunedin	London	Radford	Sydney
Affiliation	University of California, Irvine	McGill University	University of Otago	Royal College of Anaesthetists	Radford university	University of New South Wales Sydney
Year publication written	2018	2015	2018	2018	2019	2019
URL	https://sites.uci.edu/medsim/files/2018/07/sim-center-Strat-Plan-Public.pdf	https://www.mcgill.ca/medsimcentre/files/medsimcentre/strategic_reportfinal.pdf	https://www.otago.ac.nz/medicine/otago698524.pdf	https://rcoa.ac.uk/sites/default/files/documents/2019-07/Simulation-Strategy-FINAL.pdf	https://www.radford.edu/content/wchs/home/simlab/about-us.html	https://swcssc.med.unsw.edu.au/about-us/strategic-plan
Document or website	Document	Document	Document	Document	Document	Website
Number of pages	43	36	62	21	6	1

Name	Medical education simulation centre	The Steinberg centre for simulation and interactive learning	Otago Medical School	Royal College of Anaesthetists Simulation Strategy	Waldron College of Health and human services Clinical Simulation center	Ingham institute clinical skills and simulation centre
1A.Mission	✓	✓		✓	✓	
1B.Vision	✓	✓	✓	✓	✓	
1C.Values	✓		✓		✓	
2A.Analysis of external environment						
2B.Analysis of internal environment		✓ (strengths only)				
2C. Strategic analysis	✓					
2D. Strategic alternatives	✓					
2E. Strategic areas & objectives	✓	✓	✓	✓	✓	
3.Operational plan	✓	✓	✓	✓	✓	✓
4. Assessing results					✓	
5.Reformulating strategy						

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