



SINGAPORE NURSING BOARD

GUIDELINES ON THE USE OF SIMULATION BASED EDUCATION (SBE) TO REPLACE CLINICAL HOURS FOR PRE-ENROLMENT/PRE-REGISTRATION NURSING EDUCATION

(A) INTRODUCTION

The use of SBE has been shown to be an effective replacement of clinical placement hours for nursing students when clinical practice placements are not available and/or disrupted. The study done by the National Council for State Boards of Nursing (NCSBN) in 2014 and survey done in 2019 provide substantial evidence that substituting high-quality simulation experiences for up to half of clinical practice hours produces comparable end-of-program educational outcomes and new graduates that are ready for clinical practice.

The guidelines are intended for educational institutions equipped with simulation facilities and have adequate certified/qualified simulation faculty members/facilitators to support quality SBE delivery.

(B) CURRICULUM

Pre-enrolment / Pre-registration programmes may substitute clinical hours with simulated clinical experiences based on the following criteria:

- SBE may account for up to no greater than 25% of the total SNB required clinical hours at a 1:3 simulation-to-clinical ratio.
- The curriculum adopts a competency-based approach to meet clinical learning outcomes and expected competencies. Simulated experiences should prepare students for safe and competent nursing care in a variety of clinical settings.

(C) GOVERNANCE

Substituting clinical hours with clinical simulation will be based on the availability of:

- faculty members and/or simulation facilitators formally trained in the pedagogy of simulation
- faculty-to-learner ratio aligned with nursing simulation requirements
- equipment and supplies to create a realistic environment

The education institutions shall have policies to ensure the following simulation-based education standards are in place:

- Quality Outcomes – delivery of safe, effective care through workforce development
- Leadership and Governance
- Resource Allocation
- Faculty Development
- Quality Assurance

(D) TEACHING & LEARNING STRATEGIES

A variety of simulation modalities can be incorporated to create appropriate realism of the learning environment and achieve the learning outcomes. The utilisation of simulation to replace clinical hours will:

- utilize various types of simulation manikins e.g., manikin (high fidelity, low fidelity), standardized patients, partial task simulators,
- incorporate a variety of facilitation approaches, e.g., in-simulation debriefing, post-simulation debriefing and coaching with deliberate practice.
- include clinical nurses/educators/instructors assigned as content experts.

(E) ASSESSMENT STRATEGIES

Simulation based educational methods complement clinical education by helping learners to understand concepts and acquire new knowledge needed to deliver safe patient/client care.

Formative or summative assessments utilised for SBE should be aligned with the measurement of predetermined learning outcomes and the achievement of objectives or competencies.

(F) EVALUATION

SBE is to be continually assessed to ensure its appropriate use within the curriculum and should be included as part of the programme's evaluation.

(G) FACULTY PREPARATION

Simulation faculty/facilitators must be qualified/certified and have expertise and competence in managing simulation activities. Faculty/facilitators should ensure that SBE reflect actual clinical practice situations and the achievement of cognitive, psychomotor, and affective skills.

- Simulation facilitators are to undertake a formal simulation facilitation course, preferably recognised nationally or internationally.
- Simulation faculty engaged in SBE must maintain currency of practice with a minimum of twenty (20) hours per two (2) years of SBE delivery.
- Simulation facilitators should engage in SBE Continuing Professional Education events yearly.

(H) FACILITIES

Appropriate facilities, equipment, educational and technological resources to meet and achieve the intended objectives of simulation based clinical education must be in place.

The simulated learning environment and equipment should be protected, hazard-free and be a safe space for learners to explore and experience the learned concepts.

(I) CLINICAL PRACTICE REPLACEMENT USING SBE

Replacement for Pre-Registration Nursing Programme: not more than **8 weeks** of clinical hours to be replaced with SBE. Below are the recommended replacement caps for the mandatory clinical disciplines.

Disciplines	Minimum Duration (in weeks)	SBE Replacement Cap (in weeks)
General Medical (Acute or Community Hospitals with a minimum of 4 weeks in acute hospital, inclusive of Emergency Department)	7	2
Elder Care/ Intermediate and Long-Term Care (Community Hospitals, Nursing Homes, Eldercare/Rehabilitation Centres)	4	2
Community Health (Primary Care, School Health & Home Nursing)	2	1
Mental Health	2	1
Paediatrics or Obstetrics & Gynaecology	2	1
General Surgical (Operating Theatre, Surgical, Orthopaedics, Gynaecology & Day Surgical wards)	5	1
Consolidated Clinical Practice* (Medical-Surgical)	10	
Total	32	8

Replacement for the Pre-enrolment Nursing Programme: not more than **6 weeks** of clinical hours to be replaced with SBE. Below are the recommended replacement caps for the mandatory clinical disciplines.

Disciplines	Minimum Duration (in weeks)	SBE Replacement Cap (in weeks)
General Medical (Acute, Community Hospitals or Nursing Homes with minimum of 4 weeks in acute hospital)	9	2
Elder Care / Intermediate and Long -Term Care/Palliative Care (Community Hospitals, Nursing Homes, Elder Day Care/Rehabilitation Centres)	4	2
Community Health (Primary Care, School Health, Home Nursing and Community Health Services)	1	
Mental Health	1	1
General Surgical (Surgical & Orthopaedics)	4	1
Consolidated Clinical Practice* (Medical-Surgical)	9	
Total	28	6

NB: Any variations to the above suggested replacements for the various disciplines would require SNB's approval.

References:

The National Council for State Boards of Nursing (NCSBN) (2014) The NCSBN National Simulation Study: A Longitudinal, Randomized, Controlled Study Replacing Clinical Hours with Simulation in Prelicensure Nursing Education Vol 5 (2) The Journal of Nursing Regulation

The National Council for State Boards of Nursing (NCSBN) (2019) Survey of Simulation Use in Prelicensure Nursing Programs: Changes and Advancements, 2010–2017 The Journal of Nursing Regulation

For more resources/references/best practices in relation to SBE, refer to Appendix A

1. Integrating SBE in the Nursing Curriculum

- 1.1 Integrating SBE in the nursing curriculum relies upon adopting a structured approach. All simulation-based experiences require purposeful and systematic yet flexible and cyclical planning. Institutions with SBE facilities shall identify a trained simulation core team to oversee the curriculum integration guided by the Simulation Standards of Best Practice from the International Nursing Association of Clinical and Simulation Learning (INACSL Standards Committee, 2021). The following steps are recommended for integrating simulations into the nursing curriculum.

SBE is explicitly indicated as a pedagogy in the nursing curriculum and guided by sound experiential learning theories, e.g., Kolb's experiential learning theory (Kolb, 1984).



Figure 1. Kolb's Experiential Learning Cycle mapped over a simulation activity

Source: adopted from Chiniara, G. (Ed.). (2019). *Clinical simulation: Education, operations and engineering*. Elsevier Science & Technology. p. 104.

1.2 Need for SBE Pedagogy

The education institution shall identify and apply SBE to meet the learning needs of targeted trainees according to their training and clinical needs and/or the clinical industrial demand.

1.3 Goals and Learning Outcomes

- Expected learning outcomes shall reflect the simulation philosophy and framework and are mapped across the curriculum according to the trainees' scope of practice.
- Learning outcomes shall be formulated using SMART (specific, measurable, achievable, relevant and timely) goals to measure learners' performance.

1.4 Assessments using SBE

- Standardised assessment tools shall be used to assess trainees' performance and evaluation of trainees' attitude, nursing skills and knowledge.
- For inter-rater reliability, the assessments of trainees shall be performed by SBE trained assessors who have the knowledge, skills and attitudes to evaluate the trainees' performance objectively.
- Formulated formative or summative assessment methods shall be congruent with predetermined learning outcomes.

1.5 Planning SBE Activities

- Select and use appropriate standardized patients (SPs), partial task simulators, or manikin-based simulation based on the predetermined learning outcomes and available resources.
- SPs if used, are trained to portray the roles in a consistent manner, give feedback, and assist in completion of any required assessment tools.
- Logistics such as personnel, location, equipment, audio-visual needs, moulage and supplies, shall be prepared before the start of simulation-based activities.

1.6 Scenario Design

- Develop scenarios with a starting point, structured learner activities and an end point appropriate to the level of trainees, with consideration of the physical, conceptual, and psychological fidelity.
- Indicate pre-determined progression cues for the scenarios which are appropriate to the type of modality, fidelity, the level of trainees, and outcomes of the simulation-based experience (INACSL Standards Committee, 2021).
- Materials issued to trainees are reviewed, current and are authenticated prior to implementation.

1.7 Learning Environment

The simulated learning environment is a protected and safe space for trainees to explore, experience and apply the learned concepts into observable actions. Trainees shall be guided in supervised reflection and debriefing.

1.8 Pre-briefing and Debriefing

- Pre-briefing guides shall contain information on the expectations, agendas, and logistics of SBE to establish a safe learning environment for trainees.
- Debriefing shall be structured based on theoretical frameworks, e.g., Promoting Excellence and Reflective Learning in Simulation (PEARLS) (Eppich & Cheng, 2015), Gather-Analyse-Summarize (GAS) (Phrampus & O'Donnell, 2013).
- Simulation educators shall conduct the debriefing using appropriate debriefing techniques, e.g., Plus-Delta, directive feedback, advocacy-inquiry, to promote learner-centred and reflective thinking.

1.9 Number of Trainees in SBE

- Trainees participating in simulation activities shall be given a role to be engaged in active learning, critical thinking and learning application.
- A class size of 1 facilitator to 20 trainees is recommended.

1.10 Clinical Practice Replacement Using SBE (Refer Para I, page 2)

2. Simulation Facilitators and Development

2.1 Responsibilities of Simulation Educators

- The recommended number of simulation educators in academic schools for the support of SBE integration to curriculum and delivery is 30% of the total nursing faculty.
- Simulation educators should receive a minimum of four (4) hours of SBE related training or Continuing Professional Education (CPE) per year
- Appointed simulation educators shall attend a simulation faculty programme and be trained in the following components:
 - SBE concept as a pedagogy for experiential learning
 - SBE scenario design
 - Debriefing techniques
- There is a structured process to orientate new and non-simulation educators to deliver content using SBE.

2.2 Orientation and Structured Pre-briefing for Trainees

- Simulation educators shall conduct a structured orientation to the simulation-based learning environment and establish a psychological safe learning environment and fiction contract (Rudolph et. al., 2014), following the pre-briefing guide.
- The orientation for trainees shall be conducted prior to their involvement in SBE and shall include the following:
 - laboratory rules and regulations
 - familiarization to the learning environment
 - safe equipment handling (includes hazards identification, risk assessment and risk control practices)
 - safety briefing

- pre-briefing guides that contain information regarding expectations, agendas and logistics shall be provided
- educational materials that promote learners' readiness for SBE activities and experience
- expected learning outcomes, skills and behaviours that must be achieved and demonstrated based on the learning outcomes.

2.3 Evaluation Process

- There is a process (or mechanism) implemented in the institution to provide peer review and trainee's feedback on the simulation educator's performance.

3. Management of Trainees

3.1 Trainees Participating in SBE Activities must be able to:

- achieve their learning outcomes with feedback on their progress
- evaluate self and develop follow up plans to achieve competence
- critically analyse and apply learning to the simulated scenario (activity)
- demonstrate an increase in confidence in patient managing, interdisciplinary communication and nursing skill performances.

3.2 Distress Situations

- Identify situations that may cause distress to trainees during SBE participation.
- Develop a policy/workflow to render support and provide counselling to affected trainees.

3.3 Trainees' Engagement and Support in SBE

- Foster an environment of collaborative learning, determining each trainee's roles and responsibilities in SBE
- Use appropriate debriefing techniques and frameworks to provide feedback which is essential for performance improvement and to deliberate practice that promotes expertise (Eppich & Cheng, 2015).
- Implement processes to follow up on trainees' performance and for trainees to provide feedback on their SBE experience
- Programme Evaluation – there shall be a process to review and follow up on feedback from trainees related to SBE. Feedback platform shall be provided for learners to evaluate the effectiveness of SBE, and related operation matters after each semester

4. Simulation-Based Education Operational Matters

Institutions equipped with simulation facility shall ensure a functioning team and facility to sustain the SBE activities. The following considerations shall be in place:

4.1 Operational Support

- Simulation technician (SimTech) shall be employed to assist in the delivery of SBE.
- They shall be trained to operate simulators (inclusive of moulaging) and relevant equipment such as audio-visual aids, video recording safely.
- SimTech shall achieve at least 4 hrs of relevant skills yearly in the safe operation of simulators and related equipment.

4.2 Governance

- There is organisational support and governance to ensure goals and outcomes of SBE programmes are met.

4.3 Workload Management

- Allocate time for simulation core team members to support the goals and outcomes of the SBE.
- Incorporate plans that describe and identify the activities, training, progress of the core team members in achieving the vision and mission of the Simulation Centre.

5. Policy on Management of Facilities, Equipment and Resources to meet Learning outcomes

5.1 Facilities

- Have written policy/guidelines in place that includes the following:
 - Facilities and the physical space (include the labs, storage, and debriefing areas) that shall be utilised by the simulation programmes for conducting simulations.
 - Identification of fire safety and hazard assessment. Include:
 - fire safety policy and escape routes and plans for the simulation centre and the personnel
 - fire hazard identification, risk assessment and risk control policies for use of electrical devices, proper handling of equipment and instruments e.g. sharps, electrical devices, and overhead audio-visual equipment

5.2 Equipment

- Plan the acquisition, maintenance and storage of simulation equipment and supplies
- Ensure preventive maintenance of all equipment and simulators are carried out every six monthly
- Include a list of the simulation equipment, consumables, resources, and the various simulation modalities that will be used to support the programme
- Provide training of simulation educators and simulation technologists involved in simulation activities and the handling of equipment and simulators
- Conduct safety orientation for all trainees and the safe and proper handling of simulation equipment.

5.3 Resources

- Have in place:
 - a process on the allocation of resources and the evaluation of current and future needs of the programme
 - day-to-day oversight and/or coordination of various simulation activities and allocation of resources to meet the learning outcomes.
 - policy for use of low-fidelity or high-fidelity simulations, face to face and recorded session.

5.4 Video Recording and Data Retention

- Obtain written consent from trainees' for taking and use of photography, videography and social media use during the course of SBE programme.
- Ensure confidentiality is maintained by all trainees for simulated scenario performance and scenario content.

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RESOURCES

<p><u>Simulation Dictionary</u></p> 	<p><u>Simulation for Healthcare Code of Ethics (Book)</u></p> 	<p><u>Simulation for Healthcare Code of Ethics (Poster)</u></p> 
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Source: Society for Simulation in Healthcare (<https://www.ssih.org/>)