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Healthcare Simulation Standards of Best Practice™ Operations

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As the science of simulation continues to evolve, so does the need for additions and revisions to the Healthcare Simulation Standards of Best Practice. Therefore, the Healthcare Simulation Standards of Best Practice™ are living documents.

Standard

All simulation-based education programs require systems and infrastructure to support and maintain operations.

Background

Simulation operations encompass the infrastructure, people, and processes necessary for implementation of effective and efficient simulation-based experiences (SBE). The interactions of these pieces must form a system that integrates with larger educational and health care entities to realize the goals of SBE. SBE is no longer an adjunct to health care education, training, and/or professional development programs, but an all-inclusive integrated program requiring business acumen and technically knowledgeable personnel who serve as team members providing leadership and support in the delivery of SBE. The required knowledge, skills, and attributes to implement evidence-based best practices for simulation experiences are evolving rapidly.[1-4] Specialists with business, education, and technical skills promote growth, sustainability, fidelity, and achievement of goals and outcomes.[5-7] Successful simulation operations are curated as dynamic collaborations among leaders, simulationists, educators, learners, and adaptive relationships between departments.

SBE operations begin with a strategic plan which creates the structure and defines the function for a SBE program.[8,9] The needs of the SBE program's stakeholders are supported by this strategic plan.[10] A complete strategic plan has realistic goals and fits within the organiza-

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tion's mission, vision, and capacity for implementation.[8] The plan provides a foundation to inform change and outlines the desired outcomes, activities to meet those outcomes, and evaluation metrics to document the SBE program outcomes.

Personnel are an integral part of SBE programs. Several organizations have recommended that dedicated, trained simulation personnel are necessary to ensure consistent and reproducible SBE outcomes.[4,11-14] With simulation education programs, graduate level certificates and degrees, and simulation education certification available, it is necessary to recognize formal simulation education and training as the preferred requirement for hire; however, personnel with on-the-job training and relevant prior experience can be substituted when competency and proficiency can be demonstrated.[15]

Financial resources are also required to sustain a SBE program. The SBE program business plan must budget for, and use, appropriate fidelity, space, equipment, resources, and the expertise necessary to operate and meet outcomes for all facets of the program.[16,17] The SBE budget and human resource requirements must foster and support expertise and professional development of SBE personnel. Proficiency, competency, and expertise in SBE pedagogy leads to improved outcomes in the regional and/or global delivery of health care.[11,18–21] Well-designed SBE programs require a large investment of money, resources, and time, often with limited capacity to yield equal immediate monetary return on investment.[22,23] Ultimately, the goal is improved competency metrics among novice learners, clinicians transitioning to practice, licensed/registered/certified clinicians engaging in continuing education, and a positive effect on learner, patient, and systems outcomes.

As the evolution of SBE programs continues, administration, education, coordination, and technical implementation must be addressed.[19,24-26] Written policies and procedures define role delineation, job requirements, accountability, safety, contingency, effectiveness, and efficiency [4,27,28,] These processes are continually evolving, requiring management and business knowledge to successfully support the needs of the SBE program, key stakeholders, and affected healthcare systems.[4,29-33]

Potential consequences of not following this standard place programs at risk of not achieving the SBE strategic goals or failing to create an effective and efficient SBE program. If fiscal resources cannot meet the strategic needs of the SBE program, sustainability will be at risk and/or growth stifled.[29]

Criteria Necessary to Meet This Standard

1 Implement a strategic plan that coordinates and aligns resources of the SBE program to achieve its goals.
2 Provide personnel with appropriate expertise to support and sustain the SBE program.
3 Use a system to manage space, equipment, and personnel resources.
4 Secure and manage the financial resources to support stability, sustainability, and growth of the SBE program's goals and outcomes.
5 Use a formal process for effective systems integration.
6 Create policies and procedures to support, sustain, and/or grow the SBE program.

Criterion 1: Implement a strategic plan that coordinates and aligns resources of the SBE program to achieve its goals.

Required Elements:

- Perform a needs assessment. Methods include, but are not limited to:
  - Surveys
  - Focus groups
  - Practice guidelines or best practices
  - Job mapping
  - Direct observation
- Define a strategic plan independent of, but in alignment with, the governing institution that supports the mission, vision, and values of both the SBE program and any larger organization associated with the SBE program.[9,10]
- Develop strategic plans for:
  - Immediate needs (up to 1 year).
  - Short term needs (1-5 years).
  - Longer term and future sustainability or growth needs (5-10 or more years).
- Create an organizational infrastructure that supports the goals and outcomes of the SBE program, identifying, at minimum, roles for:
  - leadership, administration, and/or management.
  - operations and/or technology specialists.
  - educators, instructors, or facilitators.[33]
  - other simulationists.
- Involve key stakeholders in the strategic planning process.[20,28,29]
- Implement a systematic evaluation plan of operations with a prescribed review/revision cycle. As evidence, regulation, and/or programmatic changes occur, more frequent review and/or revision should be completed to promote ongoing SBE program improvement and ensure best practices are implemented.[3,34,35] This is somewhat distinct from program evaluation referred to in other standards. This review is specific to life-cycle and curricular needs with respect to operational considerations (space, technology, modalities, etc.)
- Articulate the value proposition or return on investment and return on expectation of the simulation program.[22,36-38]
- Identify justifiable capital expenditures[16,1736] including:
  - Facility improvements and expansion
  - SBE equipment

- Durable medical equipment
- Replacement of assets that have exhausted their useful life

- Report the progress of the strategic plan to stakeholders and/or simulation advisory board/committee at regularly scheduled intervals and seek feedback on performance and outcomes[9,13,37]

Criterion 2: Personnel with appropriate expertise support and sustain the SBE program.

Required Elements:

- Design job descriptions for the SBE program that align with the organizational structure.
- Articulate scope of practice and educational requirements for each role.
- Ensure that personnel can perform the job skills or be trained to meet expectations.[1,38]
- Accurately portray responsibilities within the SBE program. These roles may be held by one or more persons with different titles.
  - Operational role responsibilities may include:[4]
    - Audiovisual
    - Information technology/systems
    - Manikin operation and programming
    - Standardized/simulated patient coordination, communication, and portrayal
    - Virtual systems operations and support
    - Management and maintenance of the schedule
    - Set up/break down of simulated environment
    - Moulage
    - Data collection
    - Creation, manipulation, and revision of graphic and video content
  - Leadership and/or management role responsibilities may include:
    - Policy and procedure creation, oversight, revision, and enforcement
    - Program oversight and management of daily operations
    - Liaison with stakeholders [39]
    - Coordination of personnel and resources
    - Training
    - Hiring/coaching/termination
    - Onboarding
    - Mentoring or training new educators/facilitators/operational staff
    - Ordering of supplies and capital equipment
    - Managing warranties, preventative maintenance, and other contractual arrangements
    - Analyzing programmatic outcomes data
    - Budget planning and oversight
    - Strategic planning
  - Simulationist role responsibilities may include:
    - Scenario design and development
    - Presimulation preparation
    - Prebriefing
    - Implementation and facilitation
    - Debriefing[2]
    - Evaluation
- Incorporate an ongoing professional development plan designed specifically for simulation personnel with associated competency validation that meets:[1,4,10,20,27,30,40,41]
  - The professional development plan should be program and personnel specific to meet identified needs and may include such things as:
    - Membership and engagement with professional societies and organizations.
    - Attendance at local, regional, national, or international simulation conferences.
    - Completion of online or in-person SBE-focused courses, continuing education programs, or certifications.[41,42]
    - Participation in regional networks to share resources and skills.
- Ensure personnel receive necessary and ongoing training to be competent to set up, operate, and maintain simulation equipment, as appropriate for the job description,[8,10] including:
  - Computer networking and connection of simulation IT infrastructure.
  - Audiovisual systems.
  - Media file usage, manipulation, access, storage, security, retention and destruction.
  - Operation and troubleshooting of simulation modalities.
  - Costuming and moulage.
  - Staging, scripting, and use of props.
  - Simulation and teaching methods.
  - Applicable health care equipment and terminology.
  - Implementation and training of standardized/simulated patients.

Criterion 3: Develop plans to manage space, equipment, and personnel resources.

Required Elements:

- Identify roles, tasks, and expectations for the set up and break down of simulation-based experience (Follow the HSSOBP™ Simulation Design Standard).
- Maintain a competency-based training program for personnel to operate applicable equipment,[4,18,29,40,43] which may include:
  - Simulator equipment
  - Medical equipment
  - Audiovisual equipment
  - Electronic health record systems
- Follow a written plan addressing the educational objective(s)/purpose(s) with an accessible list of supplies, equipment, and personnel required to support the ac-

tivity (Follow the HSSOBP™ Simulation Design Standard).
  - Select the most sustainable equipment with the appropriate level of fidelity that meets curricular needs to extend the lifespan of equipment.[44]
  - Pilot all simulation-based experiences before implementation.[45-47]
  - Create written scenario instructions including expected time to set up, run, pre-brief, debrief, and break down for each simulation-based experience.
  - Plan and account for training of standardized/simulated patients for the simulation event.[48]
  - Coordinate and plan transition between sessions to minimize downtime.[49]
- Use a scheduled or periodic review process to ensure all simulation-based experiences are feasible, appropriately designed based on programmatic resources, and in alignment with the strategic plan.
  - Incorporate outcomes data, as well as learner, facilitator, and staff feedback into this review process.[9,35]
- Use a system, process, and/or policy to prioritize requests, reserve rooms, disseminate equipment, and ensure adequately trained personnel are available to operate and support each simulation-based experience.[44]
- Use an inventory control system to manage purchasing, shipping, receiving, tracking, storage, and reordering of equipment and supplies.[45]
- Ensure that all SBE experiences and associated activities are in an environment that complies with institutional, national, international, or other regulatory occupational safety practices including:
  - Ventilation, if working with fumes or gases.
  - Using correct ergonomic technique for lifting heavy equipment to prevent injury.
  - Prevention, identification, and reporting of needle sticks and other injuries.
  - Policies to identify/report/prevent needle sticks or other injuries.
  - Mitigation of risk to patients related to use of simulated medications and equipment in patient care settings.[46,47] Specifically the labelling of all equipment and medications as being for simulation and not for human/animal/medical use.
  - Infection control measures before, during, and after SBE.
  - Guidelines for the safe and effective use of new learning modalities.

Criterion 4: Secure and manage the financial resources to support stability, sustainability, and growth of the SBE program's goals and outcomes.

Required Elements:

- Sustain a defined SBE budget with a quantified, formalized plan to analyze and control costs.[48,49]
- Plan an operating budget for the SBE program's revenues and expenses on a yearly basis.
  - Consider program activities that generate revenues such as:
    - Continuing education programs
    - Providing services to external clients
    - Donors, stakeholders, partnerships, alliances, grants, or loans[50]
- Prepare and execute an operational budget in consideration of the SBE program's environmental review, current and future goals/objectives, and priorities.[37]
- Identify planned expenses such as consulting or accreditation fees.
- Identify fixed costs that do not change regardless of the number of simulation activities conducted such as facility overhead, maintenance and service contracts, personnel salaries, and professional development costs for staff.
- Identify variable costs that change based on the number of SBE events and the number of learners. For example, staffing for SBE activities such as the number of personnel required to facilitate and operate the simulation, reimbursement for standardized patients, and consumable items such as clinical and office supplies.
- Incorporate the costs of identified capital expenditures from the strategic plan as a budgeted line item (see Criterion 1).
- Forecast growth for personnel roles and responsibilities including professional development needs required to meet the SBE program's learner outcomes, program objectives, and/or regulations.[40]
  - Include workload, position and salary equity, job description, role expectations, and scope of practice in the forecast.
- Report correlation of the impact of the SBE program metrics on the organization's costs and/or savings from the following domains:[36,37,51-53]
  - Educational effectiveness
  - Educational efficiency
  - Resource management
  - Patient safety
  - Quality of care
  - New employment efficacy

Criterion 5: Use a formal process for effective systems integration.

Required Elements:

- Direct the program's simulation activities by the strategic needs of the larger organization.[33]
- Assess the organization's readiness for simulation integration or growth.[4,54]
- Develop the program's mission and/or vision along with written policies and procedures to articulate the role of the SBE program in relation to other stakeholders and the larger organization or region.

- Communicate with stakeholders and/or advisory board about how the SBE program's mission, vision, and goals align with the overall improvement of health care education and eventually health care delivery.[14,33,55]
  - Address identified key performance indicators from clinical partners in order to improve simulation-based experiences to impact patient outcomes.[14]
- Actively participate and collaborate in bidirectional initiatives across organizations, contributing to the improvement of learner, health care, and/or program outcomes.[33]
  - Address quality, patient safety, interprofessional education, human factors, research, and risk management for the improvement of system activities by and for various groups.
- Ensure ongoing systematic and programmatic improvement processes are in place for the SBE program including:
  - Quality/performance improvement, dissemination, and sustainability plan(s).
  - Clearly defined metrics using consistent data collection methods.
  - Appropriate resources such as human factors, systems engineering, psychometric, and informatics to meet expected program goals.[14,33,35,56]

Criterion 6: Create policies and procedures to support and sustain the SBE program.

Required Elements:

- Consider human resource factors regardless of employment status (full-time, adjunct, volunteer, or student) such as:
  - Workload and compensation equity, accounting for planned and unplanned personnel leaves
  - Orientation and onboarding plans to support all new employees.
  - Ongoing education and competency or proficiency validation plans for all personnel.[1]
  - Expectations that applicable standards of best practice for simulation will be followed.[1]
- Identify how prior experience and informal training are recognized, appraised, and viewed while making employment and advancement decisions.
- Define data collection, storage, access, destruction, and reporting processes such that it is performed and aligns with institutional and accrediting bodies' expectations.
- Provide safety information for handling, securing, storing, and maintaining any chemical, medication, or other hazardous supplies and how they can be accessed by personnel. These policies should be supported by institutional, national, international, or other regulatory protocols as appropriate.[33] Moreover, these policies and procedures need to be examined and expanded as virtual and distributed environments begin to become more commonplace. Examples include:
  - Chemicals
  - Solvents
  - Moulage supplies
  - Expired and simulated medications
  - Defibrillators
  - Sharps containers
- Create clear guidelines that:
  - Address duplicated, conflicting, and/or confusing requests.
  - Prioritize the use of space, equipment, and personnel.
  - Address prioritization of scheduling.
  - Identify reordering processes for consumable resources.
- Specify guidelines for equipment storage, location, security, safety, and access including:
  - Use and maintenance of equipment.
  - Planned downtime for periodic maintenance.
  - Organization and maintenance of user and system manuals.
  - Fire and safety procedures.
  - Storage and use of combustible gasses.
- Establish guidelines and procedures for:
  - Sharing confidentiality expectations for learners, faculty, facilitators, embedded participants, and personnel.
  - Audiovisual capture, storage, retention, and use policies.
  - Articulating psychological safety and learner expectations for learning activities.
  - Contingency plans for unanticipated events, learner accommodations, or simulator downtime.

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The INACSL Standards Committee (2017, December). INACSL standards of best practice: Simulation[SM]: Operations. *Clinical Simulation in Nursing*, 13(12), 681-687. https://doi.org/ 10.1016/j.ecns.2017.10.005

Subsequent Standards

The INACSL Standards Committee (2017, December). INACSL standards of best practice: Simulation[SM]: Operations. *Clinical Simulation in Nursing*, 13(12), 681-687. https://doi.org/ 10.1016/j.ecns.2017.10.005.

About the International Nursing Association for Clinical Simulation and Learning (INACSL)

The International Nursing Association for Clinical Simulation and Learning (INACSL) is the global leader in transforming practice to improve patient safety through excellence in health care simulation. INACSL is a community of practice for simulation where members can network with simulation leaders, educators, researchers, and industry partners. INACSL also provided the original living documents INACSL Standards of Best Practice: Simulation[SM], an evidence-based framework to guide simulation design, implementation, debriefing, evaluation, and research. The Healthcare Simulation Standards of Best Practice™ are provided with the support and input of the international community and sponsored by INACSL.