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Standards of Best Practice: Simulation

INACSL Standards of Best Practice: SimulationSM Participant Evaluation

INACSL Standards Committee

KEYWORDS

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As the science of simulation continues to evolve, so does the need for additions and revisions to the INACSL Standards of Best Practice: SimulationSM. Therefore, the INACSL Standards of Best Practice: Simulation are [living documents](#).

Standard

All simulation-based experiences require participant evaluation.

Background

Simulation-based experiences support evaluation of knowledge, skills, attitudes, and behaviors demonstrated in the cognitive (knowledge), affective (attitude), and psychomotor (skills)¹ domains of learning. Formative evaluation of the participants fosters personal and professional development, to assist the participant in progression toward achieving objectives or outcomes. Summative evaluation focuses on the measurement of outcomes or achievement of the objectives at a discrete moment in time, often at the end of a program of study.² High-stakes evaluation refers to an assessment that has major implications or consequences based on the result or the outcome (such as on merit pay, progression or grades).

Authentic evaluation of the participants using simulation-based experiences includes the following elements: (a) determine the intent of the simulation-based experience, (b) design the simulation-based experience to include timing of the evaluation, the use of a valid and reliable assessment tool, and evaluator training required, and (c) complete the evaluation and interpret the results.³

Potential consequences of not following this standard may lead to inaccurate assessment, poor participant experiences, poor learning outcomes, failure to progress, inappropriate selection of tools, or assessment bias.

Criteria Necessary to Meet This Standard

1. Determine the method of participant evaluation before the simulation-based experience.
2. Simulation-based experiences may be selected for formative evaluation.
3. Simulation-based experiences may be selected for summative evaluation.

4. Simulation-based experiences may be selected for high-stakes evaluation.

Criterion 1: Determine the method of participant evaluation prior to the simulation-based experience.

Required Elements

- Participant evaluation is:
 - Directed by the objectives/outcomes and/or the intent of the simulation.
 - Guided by the type: formative, summative, or high-stakes evaluation.

Criterion 2: Simulation-based experiences may be selected for formative evaluation.

Required Elements

- Formative evaluation is conducted to:
 - Monitor progress toward achieving outcomes.
 - Provide ongoing formative feedback.^{4,5}
 - Support participant's clinical competencies.
 - Identify and close gaps in knowledge and skills.
 - Assess readiness for real-world experiences.
 - Facilitate teaching and learning.
- Requires formally trained facilitators (see INACSL Standard: Facilitation).
- Use small group ratio, ideally a minimum ratio of one facilitator per three to five students.^{6,7}

Criterion 3: Simulation-based experiences may be selected for summative evaluation.

Required Elements

- Summative evaluation is conducted:
 - At a discrete point in time (i.e., at the end of a course or certain time period).
 - In a safe learning environment.
 - After orientation to the environment and equipment.
 - Appropriate level of fidelity necessary to achieve the participant outcomes.
 - Utilizing a standardized format and scoring methods (i.e., utilizing a standardized scenario that includes information on when to cue, scenario length of time, and other scenario details).
 - With a video recording of the evaluation to allow review by multiple trained evaluators.^{6,8}
- Use a theoretically based method to determine passing or cut scores⁹ where appropriate.
- Select a valid and reliable instrument.
- Provide rater training for observation-based evaluation.^{4,5}

- Establish interrater reliability when more than one rater required.
- Inform participants in advance of the evaluation process.
- Provide summative feedback to participant about achievement of outcomes.

Criteria 4: Simulation-based experiences may be selected for high-stakes evaluation.

Required Elements

- High-stakes evaluation is conducted:
 - At the end of the learning process, but may occur at other times to assess gaps in knowledge or to identify significant safety issues.
 - Based on specific participant objectives.
 - After the consequences and outcomes have been explained to the participants.
 - With predetermined parameters for terminating the scenario for its completion.
 - After the simulated-based experience has been piloted tested.
 - By trained, nonbiased objective raters or evaluators.
 - By an objective rater or evaluator using a comprehensive tool (i.e., checklist or rubric that clearly outlines desirable and undesirable behaviors).
 - After the participant has had the opportunity for multiple exposures to simulation-based experiences including evaluations.^{7,10}
- Use an evaluation tool previously tested with similar populations.
- Use more than one evaluator for each participant, either directly observed or a video recording.⁸

References

1. Alexander, M., Durham, C., Hooper, J., Jeffries, P., Goldman, N., Kardong-Edgren, S., ..., & Tillman, C. (2015). NCSBN simulation guidelines for prelicensure nursing programs. *Journal of Nursing Regulation, 6*, 39-42.
2. Billings, D., & Halstead, J. (2016). *Teaching in nursing: A guide for faculty* (5th ed.). St. Louis, MO: Elsevier.
3. Huang, Y., Rice, J., Spain, A., & Palaganas, J. (2015). Terms of reference. In Palaganas, J., Maxworthy, J., Epps, C., & Mancini, M. (Eds.), *Defining excellence in simulation programs*. Philadelphia, PA: Wolters Kluwer. (pp. xxi-xxxiii).
4. Adamson, K. (2014). Evaluating simulation effectiveness. In Ulrich, B., & Mancini, B. (Eds.), *Mastering simulation: A handbook for success*. Indianapolis, IN: Sigma Theta Tau. (pp. 145-163).
5. Adamson, K. (2014). Evaluation tools and metrics for simulations. In Jeffries, P. (Ed.), *Clinical simulations in nursing education: Advanced concepts, trends, and opportunities*. Philadelphia: National League for Nursing, Wolters Kluwer Health. (pp. 145-163).
6. Arizona State Board of Nursing. (2015). *Advisory opinion; education use of simulation in approved RN/LPN programs*. Retrieved from

- <http://www.azbn.gov/media/2053/ao-use-of-simulation-in-pre-licensure-programs.pdf>.
7. Rizzolo, M. (2014). Developing and using simulation for high-stakes assessment. In Jeffries, P. (Ed.), *Clinical simulations in nursing education: Advanced concepts, trends, and opportunities*. Philadelphia, PA: Wolters Kluwer Health. (pp. 113-121).
 8. Ravert, P. (2012). Curriculum integration of clinical simulation. In Jeffries, P. (Ed.), *Simulation in nursing education: From conceptualization to evaluation* (2nd ed.). New York, NY: National League for Nursing. (pp. 77-90).
 9. Kardong-Edgren, S., & Mulcock, P. (2016). Angoff method of setting cut scores for high-stakes testing: Foley catheter checkoff as an exemplar. *Nurse Educator*, *41*(2), 80-82.
 10. Boulet, J., & Murray, D. (2010). Simulation-based assessment in anesthesiology: Requirements for practical application. *Anesthesiology*, *112*(4), 1041-1052.
- ## Bibliography
- Adamson, K., Kardong-Edgren, S., & Willhaus, J. (2013). An updated review of published simulation evaluation instruments. *Clinical Simulation in Nursing*, *9*(9), e393-e400. <http://dx.doi.org/10.1016/j.ecns.2012.09.004>.
- Aebersold, M., & Tschannen, D. (2013). Simulation in nursing practice: The impact on patient care. *The Online Journal of Issues in Nursing*, *18*(2), 1-13. <http://dx.doi.org/10.3912/OJIN.Vol18No02Man06>.
- Alexander, M., Durham, C. F., Hooper, J. I., Jeffries, P. R., Goldman, N., Kardong-Edgren, S., ..., & Tillman, C. (2015). NCSBN simulation guidelines for prelicensure nursing programs. *Journal of Nursing Regulation*, *6*(3), 39-42.
- Anson, W. (n.d.). Assessment in healthcare simulation. In Palaganas J., Maxworthy C., Epps M., & Mancini M. (Eds.), *Defining excellence in simulation programs* 509-533. Philadelphia: Wolters Kluwer.
- Ashcraft, A., Opton, L., Bridges, R., Caballero, S., Veasart, A., & Weaver, C. (2013). Simulation evaluation using a modified Lasater Clinical Judgment rubric. *Nursing Education Perspectives*, *34*(2), 121-126.
- Beckham, N. (2013). Objective structured clinical evaluation effectiveness in clinical evaluation for family nurse practitioner students. *Clinical Simulation in Nursing*, *9*(10), e453-e459. <http://dx.doi.org/10.1016/j.ecns.2013.04.009>.
- Bensfield, L., Olech, M., & Horsley, T. (2012). Simulation for high-stakes evaluation in nursing. *Nurse Educator*, *37*(2), 71-74. <http://dx.doi.org/10.1097/NNE.0b013e3182461b8c>.
- Bewley, W., & O'Neil, H. (2014). Evaluation of medical simulations. *Military Medicine*, *178*, 64-78. <http://dx.doi.org/10.7205/MILMED-D-13-00255>.
- Billings, D., & Halstead, J. (2016). *Teaching in nursing: A guide for faculty* (5th ed.). St. Louis: Elsevier.
- Cazzell, M., & Howe, C. (2012). Using objective structured clinical evaluation for simulation evaluation: Checklist considerations for interrater reliability. *Clinical Simulation in Nursing*, *8*(6), e219-e225. <http://dx.doi.org/10.1016/j.ecns.2011.10.004>.
- Decker, S., Utterback, V., Thomas, M., & Sportsman, S. (2011). Assessing continued competency through simulation: A call for stringent action. *Nursing Education Perspectives*, *32*(2), 120-125.
- Foronda, C., Alhusen, J., Budhathoki, C., Lamb, M., Tinsley, K., MacWilliams, B., ..., & Bauman, E. (2015). A mixed-methods, international, multisite study to develop and validate a measure of nurse-to-physician communication in simulation. *Nursing Education Perspectives*, *36*(6), 383-388. <http://dx.doi.org/10.5400/15-1644>.
- Furman, G., Smee, S., & Wilson, C. (2010). Quality assurance best practices for simulation. *Society for Simulation in Healthcare*, *5*, 226-231. <http://dx.doi.org/10.1097/SIH.0b013e3181da5c93>.
- Gantt, L. T. (2013). The effect of preparation on anxiety and performance in summative simulations. *Clinical Simulation in Nursing*, *9*(1), e25-e33. <http://dx.doi.org/10.1016/j.ecns.2011.07.004>.
- Gormley, G., Sterling, M., Menary, A., & McKeown, G. (2012). Keeping it real! Enhancing realism in standardized patient OSCE stations. *The Clinical Teacher*, *9*, 382-386. <http://dx.doi.org/10.1111/j.1743-498X.2012.00626.x>.
- Jefferies, A., Simmons, B., & Regehr, G. (2007). The effect of familiarity on examiner OSCE scores. *Medical Education*, *41*, 888-891.
- Jeffries, P. (2012). A critical step in simulation practice and research. In Jeffries, P. (Ed.), *Simulation in nursing education: From conceptualization to evaluation* (2nd ed.). New York: NLN. (pp. 131-161).
- Jeffries, P. R., & Rogers, K. J. (2012). Theoretical framework for simulation design. In Jeffries, P. (Ed.), *Simulation in nursing education: From conceptualization to evaluation* (2nd ed.). New York: NLN. (pp. 25-42).
- Kardong-Edgren, S., Adamson, K., & Fitzgerald, C. (2010). A review of currently published evaluation instruments for human patient simulation. *Clinical Simulation in Nursing*, *6*, e25-e35. <http://dx.doi.org/10.1016/j.ecns.2009.08.004>.
- Kardong-Edgren, S., Hanberg, A., Keenan, C., Ackerman, A., & Chambers, K. (2011). A discussion of high-stakes testing: An extension of a 2009 INACSL conference roundtable. *Clinical Simulation in Nursing*, *7*(1), e19-e24. <http://dx.doi.org/10.1016/j.ecns.2010.02.002>.
- Kelly, M. A., Hager, P., & Gallagher, R. (2014). What matters most? Students' rankings of simulation components which contribute to clinical judgement. *Journal of Nursing Education*, *53*(2), 97-101. <http://dx.doi.org/10.3928/01484834-20140122-08>.
- Lancaster, R., Anderson, P., Jambunathan, J., Elertson, K., & Schmitt, C. (2015). Simulation STEPS ahead: Preparing to engage in systematic evaluations of simulation activities. *Nursing Education Perspectives*, *36*(6), 406-407. <http://dx.doi.org/10.5480/15-1661>.
- Levett-Jones, T., McCoy, M., Lapkin, S., Noble, D., Hoffman, K., Dempsey, J., ..., & Roche, J. (2011). The development and psychometric testing of the Satisfaction with Simulation Experience Scale. *Nurse Education Today*, *31*(7), 705-710. <http://dx.doi.org/10.1016/j.nedt.2011.01.004>.
- Mould, J., White, H., & Gallagher, R. (2011). Evaluation of a critical care simulation series for undergraduate nursing students. *Contemporary Nurse*, *38*, 180-190.
- National Council 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. *Journal of Nursing Regulation*, *5*(2), S1-S64.
- National League for Nursing (NLN) Board of Governors. (2012). *The fair testing imperative in nursing education*. NLN Vision Series. Retrieved from [http://www.nln.org/docs/default-source/about/nln-vision-series-\(position-statements\)/nlnvision_4.pdf](http://www.nln.org/docs/default-source/about/nln-vision-series-(position-statements)/nlnvision_4.pdf).
- Nehring, W. M., & Lashley, F. R. (2010). *High-fidelity patient simulation in nursing education*. Boston: Jones and Bartlett.
- O'Brien, J., Hagler, D., & Thompson, M. (2015). Designing simulation scenarios to support performance assessment validity. *The Journal of Continuing Education in Nursing*, *46*(11), 492-498. <http://dx.doi.org/10.3928/00220124-20151020-01>.
- Orledge, J., Phillips, W., Murray, B., & Lerant, A. (2012). The use of simulation in healthcare: From systems issues, to team building, to task training, to education and high stakes examinations. *Current Opinion in Critical Care*, *18*(4), 326-332. <http://dx.doi.org/10.1097/MC.C.0b013e328353fb49>.
- Reed, S. (2010). Designing a simulation for student evaluation using Scriven's Key Evaluation Checklist. *Clinical Simulation in Nursing*, *6*(2), e41-e44. <http://dx.doi.org/10.1016/j.ecns.2009.03.121>.
- Rutherford-Hemming, T., Kardong-Edgren, S., Gore, T., Ravert, P., & Rizzolo, M. (2014). High-stakes evaluation: Five years later. *Clinical*

- Simulation in Nursing*, 10(12), 605-610. <http://dx.doi.org/10.1016/j.ecns.2014.09.009>.
- Smith, S., & Roehrs, C. (2009). High-fidelity simulation: Factors correlated with nursing student satisfaction and self-confidence. *Nursing Education Perspectives*, 30, 74-78.
- Stroud, L., Herold, J., Tomlinson, G., & Cavalcanti, R. (2011). Who you know or what you know? Effect of examiner familiarity with residents on OSCE scores. *Academic Medicine*, 86, 8-11.
- Waxman, K. T. (2010). The development of evidence-based clinical simulation scenarios: Guidelines for nurse educators. *Journal of Nursing Education*, 49, 29-35.
- Weinberg, E., Auerback, M., & Shah, N. (2009). The use of simulation for pediatric training and assessment. *Current Opinion in Pediatrics*, 21, 282-287.
- Willhaus, J., Burleson, G., Palaganas, J., & Jeffries, P. (2014). Authoring simulations for high stakes student evaluation. *Clinical Simulation in Nursing*, 10(4), e177-e182. <http://dx.doi.org/10.1016/j.ecns.2013.11.006>.

Original INACSL Standard

- The INACSL Board of Directors. (2011). Standard VII: Evaluation of expected outcomes. *Clinical Simulation in Nursing*, 7, S18-S19.

Subsequent INACSL Standard

- Sando, C., Coggins, R., Meakim, C., Franklin, A., Gloe, D., Boese, T., ..., & Borum, J. (2013). Standards of best practice: Simulation standard VII: Participant assessment and evaluation. *Clinical Simulation in Nursing*, 9(6S), S30-S32. <http://dx.doi.org/10.1016/j.ecns.2013.04.007>.

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 healthcare simulation. INACSL is a community of practice for simulation where members can network with simulation leaders, educators, researchers, and industry partners. INACSL also provides the INACSL Standards of Best Practice: SimulationSM, an evidence-based framework to guide simulation design, implementation, debriefing, evaluation and research.