

1. Introduction

This unit focuses on the competencies a Clinician Educator (CE) needs in order to develop and integrate simulation-based education into a curriculum. The CE will become a locally available resource for faculty development in simulation, helping to build capacity and to increase the delivery of simulation-based education.

2. Prerequisite units

- Foundations 1 (mandatory)
- Teaching and Learning (mandatory)
- Curriculum (mandatory)
- Assessment (recommended)

3. CE competencies addressed in this unit

The CE must be able to:

- Design simulation-based learning activities for incorporation into a larger curriculum

4. Learning objectives

By the end of this unit, the CE will be able to:

- develop a simulation-based learning activity
- demonstrate the appropriate integration of simulation into a curriculum
- design simulation scenarios
- lead a simulation-based learning activity
- integrate CanMEDS competencies and interprofessional activities within simulation scenarios where appropriate
- provide effective debriefing
- evaluate simulation-based activities

5. Suggested resources

Articles

Andreatta P, Saxton E, Thompson M, Annich G. Simulation-based mockcodes significantly correlate with improved pediatric patient cardiopulmonary arrest survival rates. *Pediatr Crit Care*

*Med.*2011;12(1):33–8.

Barsuk JH, McGaghie WC, Cohen ER, O'Leary KJ, Wayne DB. Simulation-based mastery learning reduces complications during central venous catheter insertion in a medical intensive care unit. *Crit Care Med.*2009;37(10):2697–701.

Boulet JR, Murray DJ. Simulation-based assessment in anesthesiology: requirements for practical implementation. *Anesthesiology.*2010;112(4):1041–52.

Cleland JA, Abe K, Rethans JJ. The use of simulated patients in medical education: AMEE Guide No 42. *Med Teach.* 2009;31(6):477–86.

Cook DA, Brydges R, Zendejas B, Hamstra SJ, Hatala R. Mastery learning for health professionals using technology-enhanced simulation: a systematic review and meta-analysis. *Acad Med.* 2013 Aug;88(8):1178-86.

Cook DA, Brydges R, Zendejas B, Hamstra SJ, Hatala R. Technology-enhanced simulation to assess health professionals: a systematic review of validity evidence, research methods, and reporting quality. *Acad Med.* 2013 Jun;88(6):872-83.

Cook DA, Hatala R, Brydges R, Zendejas B, Szostek JH, Wang AT, et al. Technology-enhanced simulation for health professions education: a systematic review and meta-analysis. *JAMA.* 2011;306(9):978–88.

Cook DA, Triola MM. Virtual patients: a critical literature review and proposed next steps. *Med Educ.* 2009;43(4):303–11.

Cooper JB, Taqueti VR. A brief history of the development of mannequin simulators for clinical education and training. *Postgrad Med J.*2008;84(997):563–70.

Draycott T, Sibanda T, Owen L, Akande V, Winter C, Reading S, et al. Does training in obstetric emergencies improve neonatal outcome? *BJOG*2006;113(2):177–82.

Ericsson KA. Deliberate practice and the acquisition and maintenance of expert performance in medicine and related domains. *Acad Med.* 2004;79(1):S70–81.

Fanning RM, Gaba DM. The role of debriefing in simulation-based learning. *Simul Healthc.* 2007;2(2):115–25.

Issenberg SB, McGaghie WC, Petrusa ER, Gordon LD, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. *Med Teach.*2005;27(1):10–28.

Leblanc VR. Review article: simulation in anesthesia: state of the science and looking forward. *Can J Anaesth.*2012;59(2):193–202.

McGaghie WC. Medical education research as translational science. *Sci Transl Med.*2010;2(19):19cm8.

McGaghie WC, Issenberg SB, Cohen ER, Barsuk JH, Wayne DB. Medical education featuring mastery learning with deliberate practice can lead to better health for individuals and populations. *Acad Med.* 2011;86(11):e8–9

Salas E, DiazGranados D, Weaver SJ, King H. Does team training work? Principles for health care. *Acad Emerg Med.*2008;15(11):1002–9.

Savoldelli GL, Naik VN, Park J, Joo HS, Chow R, Hamstra SJ. Value of debriefing during simulated crisis management: oral versus video-assisted oral feedback. *Anesthesiology.*2006;105(2):279–85.

Wayne DB, Didwania A, Feinglass J, Fudala MJ, Barsuk JH, McGaghie WC. Simulation-based education improves quality of care during cardiac arrest team responses at an academic teaching hospital: a case-control study. *Chest.* 2008;133(1):56–61.

Wright MC, Phillips-Bute BG, Petrusa ER, Griffin KL, Hobbs GW, Taekman JM. Assessing teamwork in medical education and practice: relating behavioural teamwork ratings and clinical performance. *Med Teach*. 2009;31(1):30–8.

Online resources

Healthy Simulation (resource and review website): www.healthysimulation.com/

Society for Simulation in Healthcare: www.ssih.org

6. Learning activities

Formal

- The candidate must engage in a structure, formalized activity or a series of activities related to the learning objectives above. This activity or activities should include interactions with other learners and teachers. The activity or activities will facilitate a deeper engagement of the material. The learning activity or activities can include, for example, workshops, courses, e-learning programs, or other activities associated with a faculty development program, a national specialty society or education conference (e.g. Royal College Simulation Summit, International Meeting on Simulation in Healthcare, Royal College Simulation Educator Training (SET) course). The learning activity or activities must be pre-approved by the CE AFC program. To assist in standardizing the scope of the required learning activity or activities among CE AFC programs the typical time requirement for the formal learning activity or activities is 6 hours.
- A portion of the learning activity or activities must include an immersive component as a participant in a simulation.

Applied

To complete this unit, the candidate must:

1. Develop and evaluate a learning activity that incorporates simulation
2. Design simulation scenarios
3. Provide debriefing to learners following simulation scenarios

7. Assessment

Formative

During this unit candidates should regularly meet with their unit advisor (a minimum of four 30 minute meetings) to:

- discuss and receive feedback on their understanding of key ideas in simulation-based education
- check their progress in achieving the learning objectives of this unit
- monitor their progress in the applied learning activities

Documentation of these interactions and their outcomes is required (through the Final Unit Report).

Summative

Candidates must submit e-documentation of the following via their electronic portfolio:

1. Proof of successful completion of the formal learning activities (via the Final Unit Report and not as a separate entry.)
2. A self-designed simulation-based learning activity, including a needs assessment, learning objectives, simulation scenarios, and a plan for assessment.
3. A video portfolio of a minimum of three conducted debriefings that include a candidate's self assessment and feedback from the unit advisor.
4. An essay or multimedia report reflecting on the candidate's approach to debriefing
5. An essay or multimedia report that evaluates the simulation-based learning activity.
6. Final Unit Report: a narrative report from the unit advisor using the prescribed template indicating that the candidate has successfully completed the unit

8. Criteria for unit advisor

Education qualifications or experience:

- a minimum of > 3 years of simulation-based education experience; or
- formal fellowship in simulation education; or
- a Master's degree in medical/health professions education with a focus in simulation

The CE AFC Program must assess the appropriateness of the proposed unit advisor and submit the relevant certificate.

9. Unit Designation

Selective

10. Special resources

The unit advisor must have access to an accredited Royal College Simulation Centre and its resources.

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