What is Lurking in the Shadows – A Latent Risk Threat? Using Simulation as a Framework for Quality Improvement

Glenn Paetow, MD, MACM Rochelle Zarzar, MD Hennepin Healthcare

Terminology:

In Situ Simulation: Simulations that are conducted in the actual patient care environment, involving the entire healthcare team and utilizing the current equipment, systems and processes.

Latent Risk Threats (LRTs): System or design failures that contribute to the occurrence of errors or make errors prone to cause harm; also commonly termed latent failures or latent safety threats.

Active Errors: A witnessed error that is often attributed to frontline personnel as it occurs at the interface between an individual and the system.

In Situ Simulation and LRTs:

Conducting in situ simulation allows teams to identify latent patient safety threats, also known as LRTs and develop solutions before patient safety is compromised. See the reference list below for a list of studies involving the use of in situ simulation for LRT detection.

The tool on the following page may be used to categorize and track LRTs (as well as active errors) that are uncovered through an in situ simulation. During the simulation, assign a recorder to use this sheet to document any identified threats. Following the simulation, use this tool to track any solutions you brainstorm for each threat.

Simulation LRT Identification Tool

Date/Time of Sim	Scenario	Facilitator	Unit/Location
Identified Threats	Information Shared	Source of Information	Suggested Solutions
Policy/Procedure (policy/procedure not followed due to lack of role definition, knowledge, skills or training) Ex: No patient ID bands on, Adult code team arriving for Pediatric code, No hard stop before incision)			
Equipment (Technical, equipment or environment failure or not available) Ex: No baby warmer in OR for resuscitation, Noise level too high in code situation, Crash cart stored in wrong place)			
Process Issue (System process failure- inter-department or unit services/support/communication) Ex: Lab did not know where to go when heard code paged, Inadequate blood order protocols during emergencies)			

References:

- 1. Auerbach M, Kessler DO, Patterson M. The use of in situ simulation to detect latent safety threats in paediatrics: a cross-sectional survey. *BMJ Simulation and Technology Enhanced Learning*. 2015;1(3):77-82.
- 2. Fan M, Petrosoniak A, Pinkney S, et al. Study protocol for a framework analysis using video review to identify latent safety threats: trauma resuscitation using in situ simulation team training (TRUST). *BMJ Open*. 2016;6(11):e013683.
- 3. Garden AL, Mills SA, Wilson R, et al. In situ simulation training for paediatric cardiorespiratory arrest: initial observations and identification of latent errors. *Anaesth Intensive Care*. 2010;38(6):1038-1042.
- 4. Hamman WR, Beaudin-Seiler BM, Beaubien JM, et al. Using in situ simulation to identify and resolve latent environmental threats to patient safety: case study involving a labor and delivery ward. *J Patient Saf.* 2009;5(3):184-187.
- 5. Hamman WR, Beaudin-Seiler BM, Beaubien JM, et al. Using in situ simulation to identify and resolve latent environmental threats to patient safety: case study involving operational changes in a labor and delivery ward. *Qual Manag Health Care*. 2010;19(3):226-230.
- 6. Hamman WR, Beaudin-Seiler BM, Beaubien JM, et al. Using simulation to identify and resolve threats to patient safety. *Am J Manag Care*. 2010;16(6):e145-e150.
- 7. Patterson MD, Blike GT, Nadkarni VM. *In Situ Simulation: Challenges and Results*. Agency for Healthcare Research and Quality (US); 2008.
- 8. Patterson MD, Geis GL, Falcone RA, LeMaster T, Wears RL. In situ simulation: detection of safety threats and teamwork training in a high risk emergency department. *BMJ Qual Saf.* 2013;22(6):468-477.
- Patterson MD, Geis GL, LeMaster T, Wears RL. Impact of multidisciplinary simulation-based training on patient safety in a paediatric emergency department. BMJ Qual Saf. 2013;22(5):383-393.
- 10. Petrosoniak A, Auerbach M, Wong AH, Hicks CM. In situ simulation in emergency medicine: Moving beyond the simulation lab. *Emerg Med Australasia*. 2017;29:83-88.
- 11. Reason J. Human error: models and management. *BMJ*. 2000;320(7237):768-770.
- 12. Riley W, Davis S, Miller KM, Hansen H, Sweet RM. Detecting breaches in defensive barriers using in situ simulation for obstetric emergencies. *Qual Saf Health Care*. 2010;19 Suppl 3:i53-i56.
- 13. Steinemann S, Berg B, Skinner A, et al. In situ, multidisciplinary, simulation-based teamwork training improves early trauma care. *J Surg Educ*. 2011;68(6):472-477.
- 14. Wetzel EA, Lang TR, Pendergrass TL, Taylor RG, Geis GL. Identification of latent safety threats using high-fidelity simulation-based training with multidisciplinary neonatology teams. *Jt Comm J Qual Patient Saf.* 2013;39(6):268-273.
- 15. Wheeler DS, Geis G, Mack EH, LeMaster T, Patterson MD. High-reliability emergency response teams in the hospital: improving quality and safety using in situ simulation training. *BMJ Qual Saf.* 2013;22(6):507-514.