

## YOU SHOULD TRY THIS!

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# A patient safety escape room simulation for internal medicine learners, based on hazards identified in local incident reports

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## Implication Statement

Physicians at our centre have enthusiastically supported a Quality Improvement initiative aimed at achieving a high proportion of physician-submitted incident reports. We uncovered some serious safety incidents and recurring safety themes based on review of these physician-submitted reports and decided to embed these local data in a realistic simulation scenario. Our innovative escape room format for the simulation was an engaging and effective way to teach medical learners about patient safety concepts and how to recognize and respond to safety incidents. We encourage colleagues at other centres to try this strategy for delivering patient safety education!

## Une simulation d'échappatoire pour la sécurité des patients destinée aux étudiants en médecine interne, basée sur les dangers identifiés dans les rapports d'incidents locaux Énoncé des implications de la recherche

Les médecins de notre centre ont soutenu avec enthousiasme une initiative d'amélioration de la qualité visant à obtenir un taux élevé de rapports d'incidents soumis par les médecins. L'examen de ces rapports nous a permis d'identifier certains incidents graves et des thèmes récurrents en matière de sécurité, et nous avons décidé d'intégrer ces données locales dans un scénario réaliste de simulation. Notre format innovant de simulation sous forme de jeu d'évasion s'est avéré être un moyen attrayant et efficace d'enseigner aux étudiants en médecine les concepts liés à la sécurité des patients, ainsi que la manière de reconnaître et de réagir aux incidents liés à la sécurité. Nous encourageons nos collègues d'autres centres à essayer cette stratégie pour dispenser une formation sur la sécurité des patients !

# Introduction

Health care delivery is not without risk. The Canadian Institute of Health Information data showed that in 2024-25, one in 17 hospitalizations involved at least one preventable adverse event.<sup>1</sup> Yet, medical learners at our centre receive limited formal education on safety concepts, adverse event recognition, and risk mitigation.

Simulation is superior to problem-based learning for skill assessment and development,<sup>2</sup> with simulation-based escape rooms more recently being described as an innovative strategy for delivering education.<sup>3</sup> An escape room is an activity where a team of participants work together to discover clues, solve puzzles, and complete tasks to progress through a challenge and achieve an end goal.<sup>3</sup> There are descriptions of using escape room simulations to teach patient safety concepts, however, simulations based on actual incident report data have not yet been described.<sup>4</sup>

## Description of the innovation

The Patient Safety team at South Health Campus (SHC), a hospital in the Alberta Health Services system, led a Quality Improvement initiative to increase physician use of the Reporting and Learning System, a tool for reporting of adverse events, close calls, and safety hazards.<sup>5</sup> SHC achieved a high proportion of physician-submitted incident reports, which provided value in highlighting the various hazards not captured from non-physician reports. Additionally, physician-reported incidents were of greater severity with more serious consequences, compared to non-physician submissions.

Our team compiled SHC physician-submitted incident reports between 2017-2022,<sup>5</sup> and grouped them into major safety themes, which we incorporated into a simulation scenario. The scenario is based upon an actual reported case of a patient diagnosed with a pulmonary embolism who becomes hypotensive and tachycardic due to a medication error (the administered vial contained intravenous nitroglycerin as opposed to heparin). Within this scenario, we integrated additional safety themes identified from the incident reports, including hospital-acquired infections; in-hospital

patient falls; and challenges with handover amongst healthcare providers. We selected an escape room simulation strategy to allow for a more engaging and interactive approach to delivering medical education, compared to formats such as lecturing or non-interactive problem-based learning.<sup>3</sup> We utilized recommendations from educators in Texas, USA, to organize and develop our escape room.<sup>6</sup> We delivered our simulation to medical learners completing their Internal Medicine rotation at SHC. A detailed description of our scenario is in Appendix A.

The ARECCI (Alberta Research Ethics Community Consensus Initiative) screening tool was applied to this quality improvement (QI) protocol, to determine the category of risk for project participants, and therefore, the appropriate ethical review requirements. Because the ARECCI score for this non-research QI project was within the “minimal” risk category, we forewent formal scrutiny by a Research Ethics Board.

## Outcomes

Data were collected from pre- and post-simulation surveys of six sessions conducted in 2024 with a total of 18 participants. The pre-survey consisted of 10 multiple-choice and short-answer questions, assessing knowledge of the safety themes. The post-survey consisted of the same pre-survey questions, in addition to Likert scale and short-answer questions, that assessed learners’ perceived confidence in responding to adverse events (Appendix B). Participants’ knowledge regarding PPE, risks associated with in-hospital falls, and medication errors was similar before and after the simulation. However, only 16% (3/18) could define SBAR prior to the simulation, compared to 100% (18/18) of participants afterwards. When asked if they felt confident identifying safety incidents before the simulation, 59% (10/17) said they somewhat or strongly agree, compared with 88% (15/17) saying somewhat or strongly agree following the simulation. 65% (11/17) of learners felt confident addressing safety incidents prior to the scenario, compared to 88% (15/17) afterwards. Lastly, 59% (10/17) of participants felt confident in their ability to report safety events before the simulation, compared to 88% (15/17) afterwards.

## Next Steps

We will conduct additional sessions of this patient safety escape room scenario to collect data from a greater number of participants which would allow us to better determine the impact of our intervention on our measured outcomes of knowledge acquisition and learner confidence. From our incident report data, we have also identified additional cases upon which to base new escape room scenarios, so that we can continue to provide medical learners with realistic simulated opportunities to recognize and respond to patient safety events.

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There are no conflicts of interest.

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## Appendix A. Scenario description

A facilitator conducts a pre-brief outside of the escape room, as an introduction to the format of simulation. The prebrief includes information about the Harvey mannequin; introduces the confederate nurse; and highlights that simulation is a safe space for learning. Participants, in groups of 3, start the escape room by receiving handover about an elderly patient with dyspnea by the nurse. Outside of the room, there is an isolation sign, indicating that personal protective equipment (PPE) is required to safely enter the room. There is a block puzzle placed beside the protective equipment that participants must complete, after which they are provided with the appropriate PPE, and an information card on hospital-acquired infections. They enter the room, where a confederate nurse is present for the duration of the scenario. Participants discover that the patient has the bed rails down and a significantly elevated bed height. Once this hazard is identified, and learners engage the bed rails and lower the bed height; a QR code becomes visible on the wall behind the patient's bed. The QR-linked website provides safety data on in-hospital falls, and their impact on patient morbidity and mortality. Next, the confederate nurse informs participants that the patient was diagnosed with a high-risk pulmonary embolism and is being treated with intravenous heparin. Participants must recognize that the patient is becoming hypotensive and tachycardic, prompting them to check the medication vial. If they do not identify this independently, the nurse will provide prompting by reading out the patient's most recent vital signs and indicating she just started the patient on IV heparin. They discover that nitroglycerin was mistakenly started instead of heparin. They then receive an information card from the confederate nurse regarding medication errors. When the participants examine the glass nitroglycerin bottle, there is an adhered label with the acronym SBAR (situation, background, assessment, and recommendations). Participants are prompted by the nurse to consult Critical Care Medicine, due to the patient's hemodynamic instability from the medication error. Participants must use the SBAR handover technique to structure their consultation request when speaking with the critical care doctor over the phone located in the simulation room (the critical care doctor is voiced by a facilitator outside of the room). Finally, the confederate nurse presents the participants with a key, to unlock a hidden box located on the crash cart, which contains a riddle. Once the box is located and the riddle is solved, learners are instructed to submit an electronic RLS report. After this final task is complete, the participants exit the escape room, and a debrief is led by the simulation facilitator.

## Appendix B. PRE and POST-survey questions 1-10

*The correct answers are bolded.*

Q1 What kind of Personal Protective Equipment (PPE) is needed for contact and droplet precautions?

- a) Gloves
- b) Gloves, gown
- c) Gloves, gown, mask, eye protection**
- d) Gloves, gown, N95 mask, eye protection

Q2 Which of the below infections require contact and droplet PPE?

- a) Influenza A positive**
- b) C difficile infection
- c) Streptococcus pneumonia
- d) Active pulmonary tuberculosis

Q3 Incorrect use of PPE leads to which of the following?

- a) Increase in antibiotic resistant organisms
- b) Increase in nosocomial infections
- c) Increase in the number of carriers of hospital acquired organisms
- d) All of the above**

Q4 Which of the following increase a patient's fall risk during their hospital admission? Choose all that apply.

- a) Bed rails down**
- b) High bed height**
- c) Urinary urgency or incontinence**
- d) IV poles and cords**
- e) Patient condition: mobility limitations, joint problems, or sensory deficits**
- f) Early involvement of physiotherapy
- g) Placing call bell in reach of patient
- h) Polypharmacy**

Q5 True or False, approximately 50% of patients sustaining an in-hospital hip fracture die within one year of the fracture?

- a) True**
- b) False

Q6 What does the acronym "SBAR" stand for?

**Situation – Background – Assessment – Recommendation**

Q7 Using the SBAR model to effectively communicate critical information leads to improved patient safety outcomes.

- a) True**
- b) False

Q8 What should you do if an error in patient care has occurred that lead to unintended harm or consequences? Choose all that apply.

- a) Inform your staff physician and charge nurse**
- b) Report the safety incident through Reporting & Learning System (RLS) on the AHS insite website**
- c) Document the incident in the patient chart**
- d) Inform the patient of the error**

Q9 Which of the following scenarios would need to be reported through the Reporting & Learning System (RLS) on AHS Insite? Choose all that apply.

- a) Patient falls in hospital
- b) Wrong medication administered to the patient
- c) Patient develops a lower extremity DVT who was not placed on prophylactic blood thinners while admitted to hospital
- d) Patient develops a pressure sore on their buttocks secondary to being bedridden while in hospital
- e) A patient did not receive their anti-epileptic medication as it was missed being ordered on admission, and they have a seizure

Q10 Which of the following types of events can be submitted as an RLS? Choose all that apply.

- a) Clinical Adverse Event: Event that could or does result in unintended injury or complications arising from healthcare management
- b) Close call: Event that has potential for harm and is intercepted or corrected prior to reaching the patient
- c) Hazards: Hazards in the patient or working environment that do or may lead to patient harm
- d) All of the above

**ADDITIONAL POST-SURVEY QUESTIONS 11-15**

Q11 With respect to patient safety incidents, please rate your confidence in the following BEFORE the simulation session.

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I can identify scenarios such as falls, medication errors, PPE, and communication gaps that impact patient safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to address the identified problem to improve patient safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can recognize the risk that these incidents carry to patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can report patient safety incidents if appropriate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q12 With respect to patient safety incidents, please rate your confidence in the following AFTER the simulation session.

	Strongly Disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I can identify scenarios such as falls, medication errors, PPE, and communication gaps that impact patient safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to address the identified problem to improve patient safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can recognize the risk that these incidents carry to patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can report patient safety incidents if appropriate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q13 True or False: BEFORE the simulation session, I was aware of the Reporting & Learning System (RLS) and could confidently find and submit a patient safety report.

- True
- False

Q14 True or False: AFTER the simulation session, I am aware of the RLS system and can confidently find and submit a patient safety report.

- True
- False

Q15 Did you find this session helpful in gaining experience recognizing and working through patient safety incidents? Why or why not?

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Q16 Are there other patient safety scenarios that were not included in this simulation session that you have experienced or think are important to recognize?

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