

Successfully Providing Simulation Experience for Large Groups: Crisis Management (CM) and Crisis Resource Management (CRM) Sessions

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Introduction

Teaching with simulation has become an established norm. However, even though some proof of outcomes has been demonstrated in randomized studies (Ost 2001), the use of simulation is based mainly on face validity. The advantages of learning via simulation are thought to include hands-on sessions, participatory sessions, and small groups. The small group sessions can be expensive, especially the Faculty time to host, instruct and facilitate the small groups. We have provided several types of sessions to large groups of trainees (n=6-27). We present evaluations of these sessions by the trainees.

Methods

- A. Problem based learning (PBL) medical students (n=121-128) in groups of 6-8 annually attend since 2001, full human simulator sessions which
 - a. “bring alive” cardiology patients they have studied during prior PBL sessions – specifically demonstrating the Frank-Starling mechanism in a dynamic fashion.
 - b. demonstrating diagnostic uses of a ventilator by using changes in compliance and resistance to indicate parenchymal and airway pathology respectively.
- B. Anesthesia residents (n=23) in groups of 2-3, rotated through 11 Objective Structured Clinical Examination (OSCE) stations (6 min each), demonstrating a variety of principles of lung-ventilator interactions including changes in compliance and resistance. (90 minute stations, 30 min debriefing)
- C. Anesthesia residents (n=20-27), used a live video link to assist two of their peers during a crisis management session. At specific pre-determined points the crisis was interrupted and the remote residents had 3 minutes to:
 - a. in a **group discussion** of the obstetric crisis, led by a facilitator, make a diagnosis and suggest therapy for implementation by their peers in the Simulation Lab
 - b. **as individuals**, note (write down) during a pediatric crisis, the predicted direction of changes in arterial blood gases
- D. To learn CRM principles, observers assisted two peers managing a crisis using a full human simulator:
 - a. attendees at an Anesthesia Congress (n=15 - 25 in the same room, 3 sessions)
 - b. anesthesia residents (n=27) viewing the crisis over a live video link.
- E. Experienced endoscopy clinic staff (n=12: nurses administering conscious sedation, and respiratory technicians) managed a known crisis in the Simulation Lab to practice personnel interactions needed during a crisis in an endoscopy suite.

Results

The participants rated the sessions at a high level. (See Table 1 - next page.)

Conclusion

Our results show that, when the only possible option, large group simulation sessions can be used successfully as an interactive educational model for simulation training.

Table 1
Perceived Value of Sessions (Scale of 1 - 10)

| | Total number | Average ± Standard deviation | minimum - maximum |
|-----------------------|---------------------|-------------------------------------|--------------------------|
| A.a. PBL cardiology | 372 | 9.10 ± 1.14 | 4 - 10 |
| b. PBL respiratory | 372 | 8.72 ± 1.14 | 6 - 10 |
| B. OSCE | 23 | 6.30 ± 3.01 | 4 - 10 |
| C.a. Obstetric crises | 20 | 9.88 ± 0.48 | 8 - 10 |
| b. Pediatric ABG | 27 | 8.44 ± 1.34 | 5 - 10 |
| D.a. CRM at Congress | 56 | 7.61 ± 1.60 | 3 - 10 |
| b. CRM residents | 27 | 6.88 ± 1.28 | 4 - 10 |
| E. Endoscopy staff | 13 | 9.60 ± 0.72 | 8 - 10 |

References:

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