

## **SIMULATIONS & DRILLS**

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### **EXECUTIVE SUMMARY**

- Interdisciplinary drills are useful for improving communication and coordination among team members in emergency situations.
- Drills can also be used to assess system weaknesses, identify opportunities for improvement, and test new or modified policies and procedures.
- Human factor training is essential for maximizing learning and team building. It should be incorporated into simulation/drills programs for effective debriefing of drills and critical incidents.
- Both low and high fidelity simulation can be of benefit. Access to a simulation center is not required for the development of an effective simulation program.

### **BACKGROUND AND LITERATURE REVIEW**

Medical simulation drills of obstetrical hemorrhage cases can assess system weaknesses and strengths, test policies and procedures for coping with hemorrhage and improve teamwork and communication skills of staff members. Drills that include all disciplines (obstetrics, anesthesia, pediatrics and nursing) can be especially effective in improving communication and coordination among team members.

Drills are practice sessions of relatively uncommon but critical events, such as antenatal or postpartum hemorrhage and amniotic fluid embolism. Critical Event Training simulations for all physicians, midwives, anesthesiologists and nurses may improve neonatal outcomes.<sup>1</sup> Implementing a rapid response team and addressing systems' issues for management of obstetrical hemorrhage has been shown to decrease maternal mortality and improve outcomes.<sup>2</sup> The Joint Commission recommends team training in their 2005 Executive Summary of Strategies to Improve the Medical Liability System and Prevent Patient Injury.<sup>3</sup>

Human factors training can improve communications and teamwork. Such training includes briefings, handoffs, time-outs and situational awareness for the team, which is a shared understanding of what is happening now and what happens next. Explicit communication skills to be taught include: addressing team members by name, making eye contact, repeating back orders and confirming that you are responding to an order, and not speaking to the room and assuming that you were heard. In addition, the concept of "Just Culture" or a similar environment should be implemented in all health care settings so that all team members feel respected and comfortable with asserting

observations, suggestions and opinions. Team training may include practicing worst case scenarios, back up behavior (assisting a teammate in completion of a task), and performance monitoring (monitoring a teammate and providing constructive feedback).<sup>4</sup> Improving communications skills among caregivers is one of the Joint Commission 2012 National Patient Safety Goals.

Scenarios for simulation should be designed for the needs of the learners (nurses, physicians, residents, respiratory therapy, etc.) and tailored to available resources. Interdisciplinary training should include all disciplines involved in the care of obstetric patients. Simulation can be low tech—using live models—or high tech, using complex computerized simulators or a combination of both. The objective of simulation is to create situations that are as similar to “real life” as possible. Simulation in situ may improve ability to address systems issues and provides practice in one’s own hospital setting with familiar resources. A study of neonatology in situ and lab simulation training over a 19-month period found that in situ simulation identified safety threats more readily, leading to documented improvements in neonatal care.<sup>5</sup> Simulation in a computerized simulation center offers high technology in an environment similar to real life, but without the distractions of the hospital. The choice of high or low fidelity simulation is institution dependent; both can work well for hemorrhage scenarios. For practicing complex events requiring a maternal cardiorespiratory arrest, high fidelity may be a better choice since chest compressions cannot be performed on a live model, for example. Some institutions use a combination of both types. Simulation of obstetric hemorrhage has been used to teach quantification of blood loss, bimanual compression technique, inspection for lacerations, and medical treatment of atony.<sup>6</sup>

Debriefing is appropriate both for simulation drills and for live events. Video taken during simulation serves as a realistic debriefing tool to explore what went well and what needs improvement after a scenario is performed. One method of debriefing developed by simulation experts in Cambridge, Massachusetts divides debriefing into three stages: Reactions (clear the air, review facts), Understanding (explore what happened, apply judgment and teach skills, generalize lessons to real life situations), and Summarize (review lessons learned which can be applied to future events).<sup>7</sup> To facilitate debriefing, provide a safe private area for discussion, acknowledge value of all input and importance of reflection, and clarify that debriefing is confidential.<sup>8</sup>

Evaluation tools such as checklists for expectations of each participant in their role and for team and individual performances can provide an objective approach to debriefing. Similarly, follow-up evaluation ensures that specific goals and objectives for each level of participant are met. The Ottawa Crisis Resource Management Global Rating Scale and Mayo High Performance Teamwork Scale are examples.<sup>9,10</sup>

## RECOMMENDATIONS

All hospitals adopt regularly scheduled simulation drills for practicing response to obstetric hemorrhage. The choice of high or low fidelity drills is institution dependent; both can work well for hemorrhage scenarios.

## EDUCATIONAL TOOLS

1. Guidelines for Simulation Scenario Development
2. Obstetric Hemorrhage Sample Scenario 1: Drill for Uterine Atony
3. Obstetric Hemorrhage Sample Scenario 2: Drill for Hemorrhage and Pulseless Electrical Activity in the OR (see Appendix B)
4. Kaiser Evaluation Form for Drills; Debriefing Tool: "Labor and Delivery/Family Centered Care, Mock Obstetrical Hemorrhage, Roles and Responsibilities of Staff Skills Validation"

## EVIDENCE GRADING

**Level of Evidence: II-3 B.** Evidence obtained from multiple time series with or without intervention. Well-done QI studies with statistical process control analyses (or the like) fall into this category. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence. Recommendations based on limited or inconsistent evidence.

## REFERENCES

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