

A Complication of Pregnancy: Are You Prepared?

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It is 3:00 AM on a Saturday night, and you just completed an uncomplicated vaginal delivery. Since you are covering the obstetric service at your small community hospital, the emergency department calls and says they are sending a new admission, who is in very active labor, to the labor and delivery unit. You rapidly determine that she has no ongoing medical problems and is at term with her fifth baby. You also note that she is unregistered at your hospital.

The patient delivers spontaneously about 3 minutes after arrival at the labor and delivery unit. The placenta delivers within a minute or two. Almost immediately she begins to hemorrhage.

You diagnose the cause as most likely atony, discover she does not have an IV, and call for methergine or oxytocin to be given intramuscularly. The nurse leaves the room to get the drugs from the medicine room behind the nursing station. The patient continues to hemorrhage despite bimanual massage with a total estimated blood loss (EBL) of about 1,000 cc.

The nurse returns, methergine is given, but she is unable to get an IV started. You call for additional help. The patient continues to bleed, with a total EBL now of 1,500 to 2,000 cc, and becomes diaphoretic, with a pulse rate of 140. A second nurse is able to get an IV started, and an oxytocin solution is infused.

Realizing the patient is in shock, you call for unmatched blood to be given. You also call for misoprostol, which also has to be obtained from the medicine room. While you are placing the misoprostol per rectum, the blood bank balks at sending blood since there is no registration

information on the patient. After quickly communicating the requisite information to patient registration and telling them to provide a medical record number to the blood bank immediately, they indicate they have 2 units of blood available. You ask the nurse to call for someone to get the blood and bring it back stat.

You make the decision to transfer the patient to an operating room (OR) for further management, since she continues to bleed. You call for the OR team, and it takes about 30 minutes for them to arrive. The hemorrhage is ultimately controlled with uterine vessel ligation, but the patient requires many units of blood and blood products and has an ICU stay of several days before stabilizing. Your patient safety committee decides to review this case and determine what process improvement needs to occur.

This hypothetical case of a known and common complication of pregnancy illustrates a number of problems that need to be addressed by the patient safety committee. Although the recognition and successful management of the complication would mitigate the chances of legal action in this particular case, the committee should recognize that luck probably played a significant role in the successful outcome. So what steps should be taken to improve the process?

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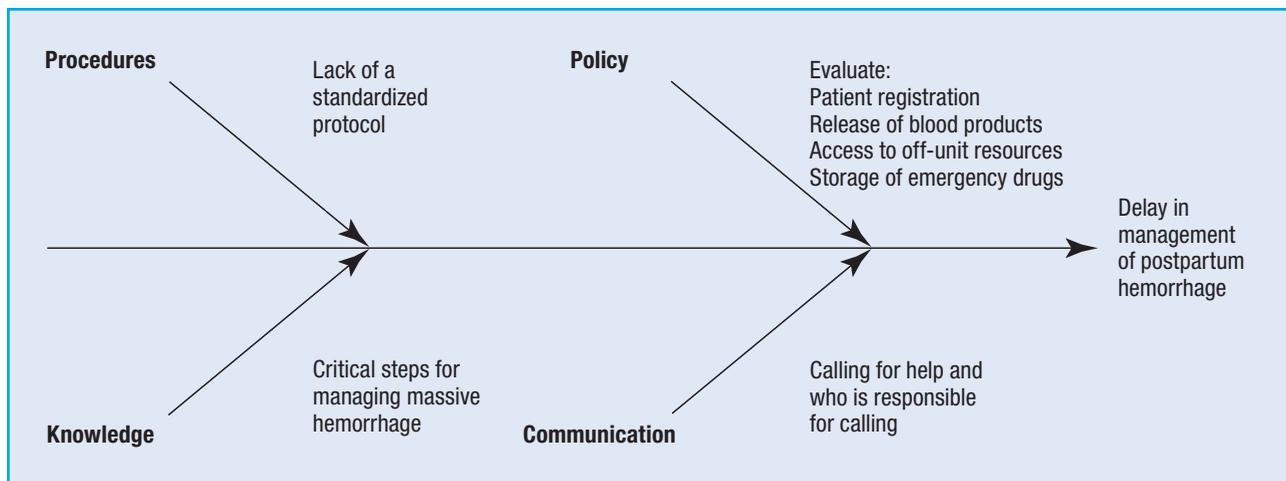


FIGURE. Identifying possible areas of improvement in the management of postpartum hemorrhage.

Initial Analysis

Whenever an emergency of this severity occurs, the use of a debriefing session as soon as possible after the event is important. The purpose of debriefing is to objectively review the critical event, decide how processes and/or outcomes could be improved, and develop a plan for improvement. It is essential that all parties involved participate in debriefing, since every member of the team has a unique perspective to contribute. Holding the session soon after the event helps ensure that all concerns are documented and initially discussed while participant memories are still fresh.

The session requires an objective and frank discussion of the facts surrounding the case and the involved care. It is not a session for finger pointing, since if that occurs, some participants may become defensive or reluctant to share their perspective. It is also important that debriefing be a confidential, peer review process. In this particular case, on the positive side, the team was able to ultimately control the hemorrhage, and the patient survived. However, a hemorrhage of this magnitude constitutes a true medical emergency, since failure to aggressively manage it results in risk of significant morbidity and mortality.

Areas of concern that would likely come out at a debriefing would include when to

call for help, who is responsible for getting help, what additional resources can be called upon if needed, in an emergency how to facilitate registering a patient, and where emergency drugs should be kept. In the real world, the list would be longer and more involved, but this case is designed to demonstrate the concepts and not provide a complete example.

Flow Chart

A useful step after gathering the initial information on this particular case is to make a flow chart outlining the processes and steps in the patient’s care. At each step, the team should indicate if there was a flaw in the process. For example, an initial step in the flow chart would be registration of a patient in active labor or who presents with an emergency situation. The flaw would be lack of clarity on how this should be undertaken, what information is critical and what is not, and who is responsible for obtaining it in a timely fashion when an emergency exists. Another step would be administration of uterotonic drugs, with a flaw being lack of immediate availability in the labor room.

Root Cause Analysis

Along with completion of a flow chart outlining the process of care, it is useful to identify the major areas where improve-

ment can be made, the so-called root causes. The Figure is a simplified diagram plotting some possible root causes with examples existent in this case. As shown, there were major issues with policy, procedures, knowledge, and communication.

This type of diagram allows the patient safety team to focus on the problems and devise a corrective strategy. This strategy might include a streamlined process for registering emergency patients; having frequently used obstetric drugs kept in a cabinet in the labor rooms; developing a protocol for postpartum hemorrhage; including the management steps along with drugs and dosages that could be posted in the labor rooms or available as a readily accessed chart in an electronic medical record; and having a protocol and call tree for obtaining key staff in an emergency.

PDCA

PDCA stands for **plan**, **do**, **check**, and **act**. This is a continuous cycle developed initially by W. Edwards Deming, one of the pioneers in the area of process improvement. In this example, *planning*, which includes gathering and analyzing data and coming up with an improved process, has already occurred. *Do* requires one to actually implement the recommended changes. One then studies or *checks* the improved process to see if the desired goals and objectives have been met. Finally, *act* requires making the process improvement a standard approach if successful or going back to the planning stage if it does not appear to be successful. Thus, in our example, once the team recommends process changes, the requisite policies and protocols are written, staff members are educated on the changes, and then they are put in place.

One concern relates to the check part of the process. Given this is a small community hospital, it might be months or years before another postpartum hemorrhage of this magnitude occurs. How can the team determine if the planned changes are likely to work?

This would be an ideal situation for using in situ simulation, where a severe

postpartum hemorrhage is simulated on the actual labor and delivery floor. Such a simulation does not require extensive equipment or a mannequin. For example, a staff member can play the role of a patient, the person conducting the simulation can call out vital signs and the EBL at appropriate intervals, and the team in the simulation can still do the needed tasks such as registering the patient, obtaining needed drugs, and setting up an OR. Further, documentation can also be done as part of the simulation.

Afterward, the simulation can be critiqued by both the team doing the simulation and the observers to determine what went well, what needs further work or clarification, and whether the documentation was appropriate. The advantages are at least twofold: It checks whether the proposed changes work, and it also provides training to staff in the management of this emergency. If there is need to tweak the changes to make things run more smoothly, these can be carried out before a real emergency occurs. Also, the simulation can be repeated at regular intervals to ensure that participants maintain their skills.

Conclusion

This article has focused on some of the key concepts in the field of process improvement. Relative to the ongoing problem of obstetric litigation, improved processes reduce the chance of error, which in turn reduces exposure to possible malpractice lawsuits. However, even more importantly, such approaches improve the quality of care and patient outcomes, goals that both we and the patient have the utmost desire to achieve.

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Useful Procedures for Posting in Labor Room and/or Emergency Department

- Protocol for postpartum hemorrhage and other complications
- Management procedures
- Drugs and dosages
- Call tree for key staff