

### Scenario Overview

#### Summary

A 30-year-old woman who gave birth vaginally 30 minutes ago is experiencing postpartum hemorrhage. The surgeon has already been notified. The perioperative team responds by:

- Calling an emergency procedure for OR # \_\_\_\_.
- Notifying the anesthesia coordinator.
- Pulling instruments and supplies for the procedure.
- Setting up the operating room (OR).
- Receiving a hand off report from the Obstetrics (OB) department RN and interviewing the patient.

#### Setting

- Starts at patient transfer of care from the OB nurse before the patient enters the restricted OR area
- OR

#### Time

Pre-brief: 5 minutes  
Simulation: 15 minutes  
Debrief: 20 minutes

#### Participants

Multidisciplinary team:

- OB personnel
- Embedded simulation personnel
- Surgeon
- Anesthesia professional
- Certified registered nurse anesthetist (CRNA)
- Nursing professional development specialist/Clinical educator
- RN circulator
- Scrub person

The nurse and scrub person should have OB/GYN or at least general surgery experience. Experience with cesarean delivery would be best.

#### Potential Systems Explored

- Roles of the perioperative team members during an emergent transfer to the OR from the OB department for a postpartum hemorrhage event
- Interprofessional training in communication and professionalism

## Learning Objectives

1. Recognize the initial signs and symptoms of postpartum hemorrhage in an obstetric patient.
2. Identify the appropriate treatment for a patient experiencing a postpartum hemorrhage in the OR.
3. Demonstrate interprofessional communication and professionalism with respectful interactions.

### Participant Preparation

#### Pre-Simulation

- Review the Crisis Checklist on Postpartum Hemorrhage.
- Review the facility policy on Care of a Patient During a Postpartum Hemorrhage.
- Review the facility policy on Emergency Transfer of an OB Patient.
- Review the contents of the emergency cart.
- Read:
  - American Congress of Obstetricians and Gynecologist. Obstetric Hemorrhage Checklist. Retrieved from <https://www.acog.org/-/media/Districts/District-II/Public/SMI/v2/SMIHemorrhageChecklistREVISEDJUNE2019.pdf>. Revised June 2019. Accessed February 24, 2020.
  - Muirhead B, Weiss ADH. Massive hemorrhage and transfusion in the operating room. *Can J Anaesth*. 2017;64(9):962-978. doi: 10.1007/s12630-017-0925-x
  - Ring L, Landau R. Postpartum hemorrhage: anesthesia management. *Semin Perinatol*. 43(1):35-43. doi: 10.1053/j.semperi.2018.11.007
  - Stokes TL, Koslan G. Preparing perinatal nurses for obstetric OR emergencies by using simulations. *AORN J*. 2019;110(2):162-168. doi: 10.1002/aorn.12754

### Standard Introduction

1. Sign in and obtain participant consents for video or research, if necessary.
2. Have participants introduce themselves:
  - a. Specialty
  - b. Experience and role
  - c. Something personal
3. Orient participants to the simulation process:
  - a. Briefing
  - b. Case (simulation)
  - c. Debriefing—Discuss and review what went well and where there are opportunities for improvement
  - d. Feedback and closing
4. Discuss course objectives.
5. Describe the learning environment:
  - a. Simulation is a safe and confidential learning environment.
  - b. Acknowledge participants' anxiety.
  - c. Assure participants of confidentiality of participants' performance during the simulation.
  - d. Obtain buy-in for simulation activities. Treat the simulation as a real-life situation, given the limitations of working with a mannequin, simulated medications, etc.
    - o Treat the scenario as a real patient care situation
    - o Inject medications as usual.
  - e. Participants will be video recorded for purposes of debriefing. The video will be destroyed/deleted per the simulation laboratory guidelines.
6. Discuss expectations of the participants:
  - a. Clinical role (be yourself).
  - b. Assure participants that the embedded simulation people are there to help them and there are no tricks.
  - c. Agree on a code word for a real event (the simulation will end immediately).
7. Identify equipment that is live or partially functional and explain any related safety issues:
  - a. Mannequin
  - b. Defibrillators/emergency equipment
  - c. Cameras
  - d. Monitoring devices displaying vital signs
  - e. Phone list
  - f. Documentation
8. Orient participants to the patient's situation and participants' assumed roles; provide role cards if applicable:
  - a. "It is 10:00 AM on a Thursday and you are taking care of a patient with...."
  - b. "Your table is set up and all items have been counted...."
  - c. "You will start by conducting a time out...."
9. Ask the "float/supporting" personnel to leave the simulation environment and await communication they would receive during an actual crisis.
10. Ask participants if they have any questions before beginning.
  - a. Answer any additional questions/clarify the shared mental model.
  - b. Announce that the simulation is starting.

### Set-up

#### Room

- Simulation OR or OR not in use

#### Equipment

- OR table with safety strap and stirrups
- Mannequin
- Identification band for the mannequin
- IV tubing
- Back table basic set up including hysterectomy instruments and supplies
- Mayo stand basic set up
- Electrosurgical unit
- Emergency cart (will be requested by the team)
- Anesthesia machine and airway equipment (endotracheal tube [ETT] and bag valve mask)

#### Medications (if simulated, labeled with “simulation use only”)

- IV saline
- Pitocin
- Methergine
- Hemabate
- Cytotec
- Tranexamic acid
- Blood for transfusion

#### Simulator Preparation

Mannequin:

- Intubated with an ETT after the patient enters the OR
- IV in the right arm
- Simulator program (eg, vital signs, responses)
- Positioning: lithotomy

### Sequence of Events

- The OR team is called and notified that a patient will be transferred to the OR because of a postpartum hemorrhage.
- The charge nurse notifies the anesthesia coordinator.
- The OR team gathers all instruments and supplies needed. The team should prepare for multiple interventions, including:
  - Intrauterine balloon tamponade
  - Uterine compression suture / B-Lynch suture
  - Uterine artery ligation
  - Hysterectomy
- The OR is opened and set up.
- The team initiates the Massive Transfusion Protocol/Hemorrhage Protocol – blood is delivered to the room.
- The RN circulator and the rest of the team receive the patient report from the OB RN.
- The patient is brought into the OR, safely moved to the bed, and secured with the safety strap.
- Monitors are applied. Initial vital signs: HR 150, BP 90/60, Respirations 24.
- The patient is intubated. Vital signs change to HR 160, BP 85/55, Respirations 14 controlled by a ventilator.
- The team positions the patient.
- The abdomen is prepped and draped; all cords are handed off.
- All personnel participate in and complete the time out.
- Blood products are administered if needed.
- Medications are administered.
- If an intrauterine balloon was used, it is removed from the vaginal cavity by:
  - Releasing tension on the shaft and removing any packing
  - Removing fluid content from the balloon; it can be cut if needed
  - Removing the balloon and checking to ensure it is intact and no pieces are retained
- The surgeon opens the abdomen and explores.
- If using a uterine compression suture, the surgeon may:
  - Loop suture around the fundus
  - Pull the ends tight while uterus is compressed
  - Tie knots
  - Evaluate for bleeding
- If performing a hysterectomy, the surgeon may:
  - Place a retractor
  - Ligate and cut the round ligament and peritoneum
  - Clamp, cut, and ligate the infundibulopelvic ligament and adnexa
  - Mobilize the bladder
  - Clamp, cut, and ligate the cardinal ligament
  - Remove uterus and close the vaginal cuff
- Before the abdomen is closed, the surgeon
  - Irrigates with warm saline
  - Checks for bleeding
  - Checks for retained objects
- The RN and scrub person perform appropriate surgical counts per facility policy.

## Sequence of Events

### Skills Assessment - Postpartum Hemorrhage Crisis

Continue with the simulation until the following action/treatments are completed.  
Treatment action time points are referenced from the time of crisis announcement.

Action/Treatment Checklist	Time	Skill met	Skill not met
PPH Crisis announced	00:00		
Equipment/supplies pulled and OR opened			
Patient transferred to OR			
Time out completed			
If necessary, blood product(s) administered			
Abdomen opened and explored			
If necessary, intrauterine balloon removed			
If necessary, uterine compression suture applied			
If necessary, hysterectomy performed			
Count completed			
Abdomen closed			

### Debrief

Begin the debriefing by soliciting the participants' reactions to the simulation experience.

Clarify confidentiality and expectations.

Review the learning objectives.

Discuss what happened in the simulation.

Review what went well.

Consider opportunities for improvement.

Encourage expression of reactions.

Ask participants:

- "How did participating in this simulation make you feel?"
- "Describe your thinking when the patient entered the OR."
- "Were there performance gaps?"
- "What could be changed in the OR?"

Review the participant's roles and team expectations.

Review principles of effective interprofessional teamwork.

Review expectations for effective communication.

Review specific content of this simulation:

- Massive transfusion protocol for postpartum hemorrhage
- Intrauterine balloon tamponade equipment
- Uterine compression suture
- Hysterectomy instruments
- Emergency considerations:
  - Patient care priorities
  - Time out
  - Surgical skin antisepsis
  - Counts
  - Wound classification

Discuss appropriate post-event actions:

- Consider keeping the patient intubated and sedated.
- Consider transferring the patient to a critical care unit.

Identify learner issues.



## Resources

### Postpartum Hemorrhage Pre/Post Test

1. Possible interventions for the patient experiencing postpartum hemorrhage include:
  - a. Intrauterine balloon tamponade
  - b. Compression suture
  - c. Hysterectomy
  - d. All of the above
2. Blood products should be available in the OR before the procedure.
  - a. True
  - b. False
3. The possible position for the patient could be:
  - a. Supine
  - b. Prone
  - c. Lithotomy
  - d. a & b
  - e. a & c
  - f. Any of the above
4. An intrauterine balloon can be placed before the patient arrives in the OR.
  - a. True
  - b. False
5. During a postpartum hemorrhage, an estimated blood loss of up to 1500 mL is considered stage \_\_\_\_\_.
  - a. One
  - b. Two
  - c. Three
  - d. Four

Resources

**Postpartum Hemorrhage Test Answers**

1. d
2. True
3. e
4. True
5. b

### Resources

#### Considerations for Simulation Variation

Cesarean delivery with PPH

#### References

- American Congress of Obstetricians and Gynecologist. Obstetric Hemorrhage Checklist. <https://www.acog.org/-/media/Districts/District-II/Public/SMI/v2/SMIHemorrhageChecklistREVISEDJUNE2019.pdf>. Revised June 2019. Accessed February 24, 2020.
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- Hiramatsu Y. Basic standard procedure of abdominal hysterectomy: part 1. *Surg J (N Y)*. 2019;5(Suppl 1):S2-S10. doi: 10.1055/s-0039-1678575
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- Konishi I. Basic principle and step-by-step procedure of abdominal hysterectomy: part 2. *Surg J (N Y)*. 2018;5(Suppl 1):S11–S21. doi: 10.1055/s-0038-1676467

## Resources

### **Acknowledgments**

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