

## Simulations and Drills: Educational Tools

### Sample Scenario #4: Atonic Uterus and Postpartum Hemorrhage

#### Simulations and Drills

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**Participants:** OB residents, FM residents.

### Learning Objectives

At the end of the session the participants will be able to:

- 1) recognize the signs of uterine atony
- 2) appropriately treat uterine atony and hemorrhage
  - a. use correct medications
  - b. order appropriate labs
  - c. ensure resuscitation measures are instituted
  - d. make decision to treat surgically

### Simulation Overview

This case involves the condition of uterine atony. It is the most common cause of significant obstetric bleeding. It may be associated with placenta previa, placental abruption, retained placenta, or occur alone. Factors associated with uterine atony include multiple gestation, macrosomia, polyhydramnios, high parity, prolonged labor, excessive use of oxytocin, and chorioamnionitis. An atonic uterus may contain up to 1L of blood. Although rarely life threatening, uterine atony can cause severe postpartum hemorrhage and hypotension. The problem should be recognized and treated quickly. Treatment should include administration of appropriate medication to stimulate uterine contractions (oxytocin, Hemabate---prostaglandin F2 alpha, ergonivine) and management of hypovolemic shock. Post partum hemorrhage should be treated as follows:

1. Initiate appropriate general resuscitation principals (ABC's)
2. Ask for assistance
3. Place large bore intravenous lines
4. Order blood tests and blood products
5. Begin volume replacement with crystalloid and/or colloid solutions
6. Consider invasive monitoring
7. Treat bleeding disorders if present
8. Monitor urine output
9. Consider use of vasopressors

### Patient History

Patient is a 32 year old G4P3 female with no prenatal care who presents in labor. She is crowning and ready for delivery. She is a stat transfer from the ED.

## **Patient History, continued**

PMH: Asthma

PSH: None

Meds: albuterol 2 puffs BID prn

All: bee stings

SHx: married; husband is rushing from work. Smokes ½ pack per day; no ETOH; she wants more children

FHx: none

ROS: labor started about 2 hours ago. Water broke 45 minutes ago; clear

## **Physical examination (provided only if asked)**

Cardiac: tachycardic otherwise normal

Lungs: clear bilaterally

Neck: supple

## **Labs:**

None initially available

If ordered: CBC Hct 35% Platelets 235; WBC 8.2

Chem 7 WNL

PT/PTT 9.5/26 seconds

## ***Simulation Parameters***

### **Initial Parameters**

BP: 135/78

Hr: 96

RR: 20

Sat: 98%

Heart Sounds: Normal

Lung sounds: clear

## **Scenario Run**

The patient will present with the fetal head crowning; she will be wanted to push. The baby will be delivered OA without complications. Immediately after the placenta is removed, blood will come from the vaginal opening. If palpated the uterus will soft. It will remain so despite medications. The blood pressure will drop from the initial readings over the next 10 minutes to 70/40. Oxytocics will not cause uterine contraction. If Hemabate is given, the patient will complain of shortness of breath and her sats will drop to 80%. If the lungs are auscultated, wheezing will be evident. Rise in blood pressure will depend on replacement of volume. If large bore IVs are placed rapidly and

put on pressure bags, the pressure will initially improve to 80/45 but will slowly (over five minutes) decrease back to the 70's. Decision to take patient to OR for operative intervention will end case. If not, patient will expire.

### **Materials needed**

**Platform:** Laerdal® or METI® monitor; Noelle birthing simulator modified with external tubing attached to “blood” bag for bleeding

**Diagnostic studies:** CBC, coagulation studies

**Props:** L and D delivery drapes  
Fetal monitor  
IV equipment  
Drugs

**Personnel:** one “L and D nurse”  
Patient Voice

### **Expected actions by participants (checklist)**

- \_\_\_\_\_ Take appropriate history from patient
- \_\_\_\_\_ Order IV access
- \_\_\_\_\_ Order placement of fetal monitors
- \_\_\_\_\_ Order placement of maternal monitor (BP, sat)
- \_\_\_\_\_ Successfully deliver baby
- \_\_\_\_\_ Recognize post-partum hemorrhage
- \_\_\_\_\_ Assess uterine tone
- \_\_\_\_\_ Order fundal massage
- \_\_\_\_\_ Order labs to include CBC, type and screen, clotting studies
- \_\_\_\_\_ Order placement of secondary IV access (large bore) with rapid fluid replacement
- \_\_\_\_\_ Call for help
- \_\_\_\_\_ Order vasopressors (correct drug in correct amount)
- \_\_\_\_\_ Order blood to be administered
- \_\_\_\_\_ Order oxytocin in appropriate dose
- \_\_\_\_\_ Consider Hemabate® but hold its administration
- \_\_\_\_\_ Order ergonovine in appropriate dose and route
- \_\_\_\_\_ Makes decision to go to OR for surgical intervention
- \_\_\_\_\_ Order surgical team to be called in
- \_\_\_\_\_ Discusses the need for potential hysterectomy with patient and gets consent