APPENDIX B: SAMPLE SCENARIO #2 CRITICAL EVENT TEAM TRAINING

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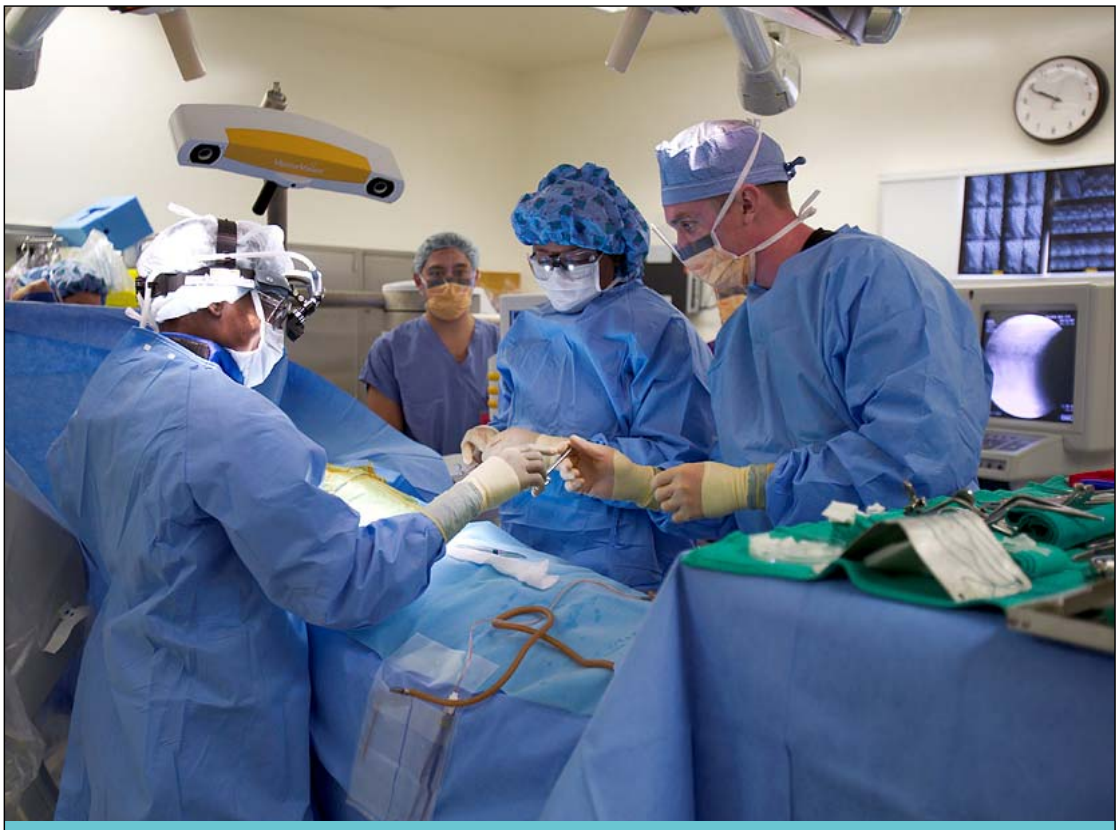

Hemorrhage & PEA in the OR

CETT L&D, San Diego

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Post-Partum Hemorrhage in the OR and PEA
Part 1 – General Information

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Scenario	Post Partum Hemorrhage in the OR and PEA
Scenario Time	15-20 minutes
Debriefing Time	40 minutes
Target Group	OB physicians, nurses, and techs For teaching ACLS, anesthesia and pediatric teams not required
Case Summary	This is a case of severe hemorrhage during an elective cesarean section. Despite standard treatment for **post-partum hemorrhage**, the patient's blood loss is so severe that she suffers cardiac arrest and **p**ulseless **e**lectrical **a**ctivity (**PEA**). The team must manage hemorrhage per **CMQCC guidelines** and **PEA per AHA ACLS protocols**. Some of the OB participants will expect anesthesia to run the code in this scenario. However, the **OB team should work WITH anesthesia to run the code** when it occurs. Whoever plays the role of anesthesia in the room e.g. (confederate with ACLS expertise, CRNA, or Anesthesiologist), must not take control of the room entirely. They should be working with the OB surgeons and nursing staff, making suggestions re: management and communicating with the OB surgeons to get updates on what is happening away from the head of the bed. OB staff should be providing CPR and updates re: patient information. In this case, the massive hemorrhage is the cause of the PEA and must be communicated to anesthesia. The patient will respond with a stable cardiac rhythm and improved hemodynamic status when the team treats per ACLS protocols and begins transfusion of blood products.
Teaching Personnel **(Total # required will depend on expertise of training staff)**	1. 1 OB MD For clinical expertise during debriefing 2. Instructor staff must be able to complete the following tasks during the case (Note that one person may take on more than one task e.g. GUI operator and voice of patient) a. Give the participant team information re: whether the fundus is firm, boggy, etc. DURING the case. b. Give the participant team information re: status of bleeding e.g. has it stopped after treatment, etc. In the OR, EBL will be estimated based upon "blood" in suction container, in drape, and from number of soaked laps. c. GUI operator – Qualified simulation instructor to operate scenario in L&D. d. Note teamwork and communication skills and medical management for debriefing purposes. e. Voice of patient – use SimMan microphone system. 3. ACLS clinical expert who can act as anesthesia confederate if no anesthesia staff available.
Participants	**2** OB MD's **3** L&D nurses **1** scrub tech **1** Certified Nurse Midwife (optional) **1** Anesthesiologist or CRNA (optional)
Learning Objectives	1. Demonstrate Crisis Resource Management (CRM) skills and recognize their effect on team performance. 2. Identify maternal hemorrhage and estimate blood loss (EBL) based upon clinical condition. 3. Demonstrate knowledge of CMQCC maternal hemorrhage classification (based upon EBL and VS). 4. Treat maternal hemorrhage per CMQCC guidelines. 5. Assess ABC's and respond according to ACLS guidelines. 6. Improve the response/resuscitation of the critical patient by improving coordination of anesthesia, surgeons, nursing, and OR staff during critical events.

Post-Partum Hemorrhage in the OR and PEA
Part 2 – Objectives

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Cognitive Skills/Medical Management	1. Assess **ABC's** and respond accordingly. 2. Demonstrate familiarity with code cart equipment/medications. 3. Identify maternal hemorrhage and estimate blood loss (EBL) based upon clinical condition (careful inspection and vital signs). 4. Identify progression of CMQCC Class 0 to Class 3 hemorrhage and treat per guidelines: a. Increased pitocin b. Fundal massage c. Methergine d. Type and Cross e. Establish 2nd IV f. Aggressive volume resuscitation g. Hemabate h. Misoprostol i. Call *Code Purple* and transfuse ASAP 5. Identify Pulseless Electrical Activity (PEA) and consider causes of PEA per AHA ACLS guidelines- in this case, hypovolemia secondary to hemorrhage. 6. Treat PEA with epinephrine, atropine (HR <60) as indicated and transfuse ASAP. 7. Provide high quality CPR with assisted ventilations and chest compressions while treating PEA. 8. Manage the patient per ACLS protocols as a coordinated effort between anesthesia, surgeons, nursing, and OR staff. 9. Demonstrate successful strategies to deal with concerned family members who may become an obstruction to patient care.
Psychomotor Skills	1. Complete C-section delivery. 2. Calculate, prepare, and administer accurate medication doses. 3. Demonstrate competency with defibrillator/ monitor. 4. Provide high quality chest compressions/CPR. 5. Assist ventilations with mask ventilation and/or intubation-ventilation.
Critical Actions	1. 100% O2, IV, monitor. 2. Identify PEA and unresponsive patient. 3. Anesthesia needs to call a code. 4. Treat PEA per AHA ACLS protocols. 5. High quality CPR while treating PEA. 6. Appropriate management of maternal hemorrhage per CMQCC guidelines.

Hemorrhage and PEA in the OR
Part 3 – Patient Background Information

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Patient Information and Background OPTION #1	
Age	27 y/o
Weight	80 kg
HPI	27 y/o G2P1 at 37 wks GA with complete placenta previa. She had a small bleeding episode at 33 weeks but has done well at bedrest since then. Previous pregnancy term SVD.
PMHx/PSHx	PMHx: None PSHx: T&A
Medications	PNV, iron bid
Allergies	Sulfa causes rash
Social Hx	Married housewife Tobacco – None EtOH – None
Presentation	In OR for elective CS, spinal in place, prepped and draped when team arrives
Vital Signs	**T** 97.2 **P** 84 **BP** 120/70 **R** 14

Patient Information and Background OPTION #2	
Age	38 y/o
Weight	110 kg
HPI	38 y/o G5P4 for elective repeat C-section and BTL at 39 weeks GA.
PMHx	Gestational diabetes A2 on glyburide, previous C-section x 2
Medications	PNV, glyburide, iron once daily
Allergies	None
Social Hx	Married, housewife Smokes 1-2 cigs per day, tried to quit. No EtOH or drugs.
Presentation	In OR for elective C-section , spinal in, prepped and draped when team arrives
Vital Signs	**T** 98.2 **P** 92 **BP** 130/80 **R** 12

Patient Information and Background OPTION #3	
Age	16 y/o
Weight	70 kg
HPI	17 y/o G1P0 at 39 weeks GA presents for elective C-section for breech.
PMHx/PSHx	PMHx: Mild childhood asthma, no recent inhaler use PSHx: None
Medications	PNV, iron twice a day (when she remembers)
Allergies	PCN causes hives
Social Hx	Single, boyfriend supportive Independent study program for pregnant teens Tobacco: None EtOH: None
Presentation	Presents in OR with spinal in, prepped and draped when team arrives
Vital Signs	**T** 98.4 **P** 96 **BP** 96/64 **R** 16

Post Partum Hemorrhage & PEA in OR
Part 4 – Equipment/Materials List

Simulation Equipment:

	SimMan standard configuration		
	Monitor, link box & laptop		
	Philips defibrillator cable adapter *(Laerda cat. Number: 945004. If not available, attach metal discs supplied with mannequin to defibrillation outputs on sternum and apex of SimMan)*		
	VGA extension cable *(6ft or longer)* depending on location of patient monitor/touch screen		
	Microphone for GUI operator to simulate patient's voice *(if using SimMan)*		
	Resuscitation Infant wrapped for C-Section delivery *(carpet lining)*		
	For video debriefing:		Webcam
			6-12 ft of USB extensions depending on distance between laptop and webcam location
			Additional laptop with Laerdal's Debrief Viewer software installed
			Digital Projector
			Flash drive to transfer Debrief Viewer files between laptops
	Power strip		
	Foam tape		

Patient Care Equipment:

	ID Band on SimMan
	BP, SPO2 monitor, ECG monitor (Anesthesia set up)
	IV lock in place, attached IV tubing, running LR on Baxter IV pump
	C-Section Set up w/blade
	Adult crash cart with advance airway equipment, defibrillator, medications
	Adult size bag-valve mask
	Adult size oxygen mask w/tubing
	Suction module, canister, tubing and yankauer tip
	Blood tubing
	Normal Saline
	10-25 laps soaked with blood (should be handed to the surgeons during the case to help simulate ongoing hemorrhage)
	Medical record/documentation tools

Medications:

	Crash cart pharmacy tray: *(Epinephrine (1:10,000), Atropine included)*
	Pitocine
	Methergine
	Hemabate
	Misprostol

Moulage

	Consider misting down SimMan's, Noelle's face with a SMALL amount of water. Careful not to get electronics wet!!!
	Blood clots (1800 ml)
	6-10 laps soaked with blood consistent with approximately 500-1000 ml

Optional Equipment/Materials:

	CO_2 tank – required in order to get color change on capnometer. Requires valve/regulator from Laerdal mobility kit.
	Mock Blood Bank O- uncrossed match blood

Post-Partum Hemorrhage in the OR and PEA Part 5 – Program algorithm and operator notes

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1. This is a case of severe hemorrhage during an elective cesarean section which leads to Pulseless Electrical Activity i.e. PEA. The team must manage hemorrhage per CMQCC guidelines and PEA per ACLS protocols.
2. The patient is initially awake and draped for C-section with a spinal in place in the OR.
3. Either a CRNA or anesthesiologist or confederate acting as anesthesia must be present
4. The team will deliver the infant via C-section which should take approx 5 min. When this is complete, one of the instructors will inform the team that the patient has a uterine atony and quickly hemorrhages approx 1000 ml (Start with 5-10 soaked laps, 500 mL in suction canister)
5. Click on "Cesarean delivery" below which will advance the case to the next frame where the hemorrhage continues and the patient's VS quickly deteriorate. The patient moves from Stage 0 to Stage 3 classification over approximately 4-5 minutes.

1. Note the OBPPH stage 0 to 3 trend running in this frame. In 4-5 minutes the patient's VS deteriorate to HR =143, BP= 68/30. The patient should become less responsive once the SBP reaches approximately 80.

2. The patient's hemorrhage will continue to 1800ml over the next few minutes. (Add additional 15 soaked laps and 500 ml more blood to suction canister making 1000 ml total.)
3. During this frame, the team should be managing PPH per CMQCC guidelines to include medications, fluid resuscitation, code purple, etc. Once the team has completed the appropriate interventions (except transfusion), the patient will go into PEA.
4. Click "Advance Next Frame" and the patient will go into PEA at a rapid rate. The patient will be unresponsive at this time. Anesthesia or the confederate acting as the CRNA must notify the team that the patient now has no pulses. The monitor will show sinus tachycardia, so the team must be told the patient is pulseless for the case to proceed.

The patient is now in PEA and unresponsive. The family member at the head of the bed should note that their loved one is no longer breathing. Dial down the O2 quickly to get anesthesia's attention. Note the trend "HR falling fast" running in this frame. The patient's rate will decrease as well so the team will have to treat unstable bradycardia as well.

Some of the OB participants will expect anesthesia to run the code in this scenario. The OB team should work WITH anesthesia to run the code. Whoever plays the role of anesthesia in the room e.g. (confederate with ACLS expertise, CRNA, or Anesthesiologist), must not take control of the room entirely. They should be working with the OB team, making suggestions re: management and communicating with the OB surgeons re: what is happening away from the head of the bed. OB staff should be providing CPR and updates re: patient information. The OB team must tell anesthesia about the hemorrhage that is the cause of the PEA and must be communicated to anesthesia.
The patient's PEA should be managed initially with epinephrine, but one dose will not be successful. This should prompt the team to give another medication, either a 2nd dose of epi or atropine. A 2nd dose of epi, atropine, or blood being transfused, will advance to the next frame and the patient will go back into sinus tachycardia and will be more responsive.

The patient is becoming more responsive and the HR and BP are recovering quickly. Stop the case once the VS have improved adequately by announcing that the code team has arrived and has taken over the management of the patient.

Debriefing Guide/Evaluation – Make comments below.
Note time of good or bad behavior for use during video debriefing

Teamwork/Leadership	**Situational Awareness**
1. Clearly established Physician & Nurse leadership 2. Clear role designation with role changes as needed 3. Encourages input from team 4. Calm and in control during times of stress	1. Avoids task fixation 2. Reevaluates situation frequently 3. Demonstrates assertion when important information is identified
Effective Communication Skills	**Cognitive Skills**
1. Complete SBAR to entire team 2. Shared Mental Model- "thinking out loud" 3. Uses names when possible, eye contact, non-verbal cues as needed 4. Readback of orders with units 5. Callout of orders as completed 6. Assertion is followed by closed loop communication	1. Quick assessment and management of ABC's 2. Frequently summarizes condition and response to treatment 3. Considers others diagnoses when patient does not respond to treatment or patient's condition changes 4. Utilizes appropriate infection control measures 5. Critical medical management actions completed in timely fashion (Specific for each case) 6. Avoids medication errors For Pediatric Cases, note effective use of Broselow system
Psychomotor Skills (Specific for each case)	**Resource Utilization**
1. Quickly locates critical equipment 2. Demonstrates competency with critical systems/equipment	1. Avoids task saturation 2. Utilizes team resources effectively 3. Prioritizes tasks appropriately 4. Sets clear task priorities