AIM

ALLIANCE FOR INNOVATION
ON MATERNAL HEALTH

Obstetric Simulation Scenarios for the Emergency Department

December 2024

Introduction

Improving access to high-quality health care is critical to addressing the leading causes of preventable severe maternal morbidity (SMM) and mortality in the United States. **The Alliance for Innovation on Maternal Health (AIM)** at the American College of Obstetricians and Gynecologists (ACOG), which is funded through a cooperative agreement with the Health Resources Services Administration (HRSA), developed this Obstetric Simulation Scenarios for the Emergency Department resource to support response to this need.

How should these scenarios be used?

These scenarios are intended to be adapted for a variety of facility and resource levels and to meet the goals established by the teams participating in simulation. Each scenario may be used in any level of fidelity simulation, from tabletop or virtual drill use to high fidelity simulation in formal Simulation Centers or with standardized patients.

Simulation is meant to provide a safe environment for learning and preparing to meet patient needs, particularly for high acuity, low frequency events in clinical settings. The use of these scenarios in conjunction with the AIM Obstetric Emergency Readiness Resource Kit, which contains best practices, resources, and planning materials for teams in healthcare settings where obstetric services are not typically provided, may best support provision of high-quality care for pregnant and postpartum people experiencing obstetric emergencies.

Who should participate in these scenarios?

These scenarios are intended to be run with a full healthcare team that would participate in patient care if the scenarios were to occur. Inclusion should extend, but not be limited to, all Emergency Department personnel, as well as other disciplines, including Anesthesiology, Emergency Medical Services providers, Pharmacy, Social Work/Case Management Services, Radiology, Operating Rooms, Blood Bank/Laboratory Services, and Nursing Administration. This type of facility wide planning for stabilization, transport, and emergency care in obstetrics may allow a facility to test process and procedures well before a patient with these needs presents for care.

How were these simulation scenarios prepared?

These scenarios were developed by a team of clinicians with expertise in Emergency Medicine, Obstetrics, and simulation. Following development, the scenarios were reviewed by a variety of clinician reviewers, including those that practice in both rural and urban settings.

Acknowledgements

The AIM TA Center wishes to thank a variety of authors and reviewers who contributed to this resource, including Dr. Tara Lewis, Jaimee Robinson, Leslie Jones, Dr. Jenna White, Dr. Elizabeth Lynch, Kerrie Redmond, and an Emergency Medicine physician from the Louisiana Perinatal Quality Collaborative. AIM staff members including Christie Allen, Amy Ushry, and Izzy Taylor also contributed to this resource.

OBSTETRIC HEMORRHAGE:
Patient Presenting to the Emergency Department Setting

OBJECTIVES

1. Demonstrate key attributes of team-based communication (Attributes of Simulation)
2. Identify obstetric hemorrhage and initiate appropriate treatment
3. Identify patient risk factors when considering treatment of obstetric hemorrhage
4. Demonstrate components of SBAR with team communication

SIMULATION OVERVIEW

Purpose and Assumption: Everyone here is intelligent, well-trained, wants to be their best, and is here to improve patient care. This is not a test of individuals, it is a test of process, a tool to identify and potentially fix gaps on our unit, in our teamwork, in our communication, and the overall reliability of the care we provide. It is also an opportunity to learn and ask questions in a safe environment.

Safety: This simulation session is confidential and formative in nature. To allow this to be a great learning environment, we want to create a safe space. There is no shame/blame or finger pointing. We are not here to evaluate any individual performances or trick you. It's about learning, being curious, and understanding what happened in the case. The goal is to discuss what was effective or went well, what may be opportunities to do things differently and how to be more effective in practice.

Confidentiality: What happens in simulation, stays in simulation. This is a way to keep our environment a safe learning environment. Please feel free to bring back anything you learn to your practice, but please don't talk about anyone's performance or the case itself. This will give everyone the same opportunity as you when they participate.

Fidelity: We have done our best to create a realistic patient room and scenario which you might encounter in your practice. The ED patient room is equipped with noninvasive cardiopulmonary monitoring, respiratory equipment and O2 delivery.

Expectation: Please participate in the simulation and debriefing. Everyone has unique perspectives, insights, and ideas. The facilitator will help guide the conversation to ensure participation and that the objectives have been met.

Videotaping/Recording: *Let participants know if you are/are not videotaping and, if videotaping, when it will be deleted.

Attributes of Simulation: Communication, Role Clarification, Situational Monitoring, Mutual Support

SBAR: Situation, Background, Assessment, Recommendation (either ordered or demonstrated), Closed-loop Communication

REPORT GIVEN TO LEARNERS AT START OF SCENARIO

T.C. is a 39 y/o gravida 3, para 3 female who presents to the Emergency Department with a precipitous vaginal birth in the car approximately 10 minutes ago, newborn is vigorous and stable. Placenta is spontaneously delivered 5 minutes after the patient is in a room. Upon delivery of the placenta, the patient immediately begins having brisk vaginal bleeding.

ALLERGIES	MEDICATION(S)	PRENATAL/MED/SURG/SOCIAL HISTORY
NKDA	Synthroid, prenatal vitamin	SVD x3, currently breastfeeding Hashimoto's thyroiditis Family History HTN Right knee ACL 2008

INITIAL PATIENT CONDITION

Fundus is boggy, heavy vaginal bleeding noted. The patient starts complaining of feeling like she is going to pass out and has nausea/vomiting. Vital signs are currently normotensive and NSR.

CASE FLOW STATES

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
1. Baseline BP 120/74 HR 94, SPO2 98% RR 16 **Information if/when actions warrant and/or requested by team:** Fundus remains boggy Superficial perineal laceration – not bleeding Moderate/Heavy bleeding continues Pelvic exam: no severe lacerations or hematomas Placenta: Intact Ultrasound: No retained placental fragments or free fluid in abd Quantitative blood loss (QBL)/ Estimated blood loss (EBL) 900mL	**Learner Actions:** ☐ Recognition of obstetric hemorrhage ☐ Monitor/VS - (should be asking what VS are frequently) ☐ Fundal massage ☐ Perineum exam ☐ HOB down ☐ OB consult (per protocol and access) ☐ Call for additional help • SBAR • Physician to bedside ☐ 18G or larger IV (preferably x2) ☐ Administer oxytocin infusion IV, or if no IV access, IM ☐ Obtain stat labs, including blood type and crossmatch ☐ Perform a physical exam, attempting to determine Postpartum hemorrhage etiology ☐ Urinary catheter placed ☐ Pelvic exam ☐ Assess placenta as available ☐ Ultrasound exam as available ☐ Verbalize consideration of uterotonics, uterine balloon placement, or other next steps to control bleeding as resources allow	**Trigger:** • If learner fails to identify Obstetric hemorrhage (OBH) (go to State 2) • If learner fails to correctly identify OBH etiology (go to State 2) **Education Points:** *Lactated Ringers initially – Normal Saline with Blood Administration *T&S/Crossmatch blood *Contraindications for uterotonics *Demonstrates how to obtain QBL in ED setting *Role clarification and delegation – closed loop communication *Family considerations/support

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
2. Information if/when actions warrant: Fundus remains boggy 1st degree laceration – not bleeding Moderate/Heavy bleeding continues Pelvic exam: no severe lacerations or hematomas Placenta: Intact Ultrasound: No retained placental fragments or free fluid in abd **Continued vaginal bleeding with S/S Hypovolemic shock** BP 94/48 HR 120 SpO2 98% RR 18 Nausea/Vomiting Lab results?	**Learner Actions:** ***Perform any of State 1 not achieved*** ☐ Uterotonics administered* ☐ Recognize S&S shock ☐ Blood products ordered ☐ Prepare to activate facility Mass Transfusion Protocol ☐ Cumulative QBL (should be asking what QBL is, ongoing) ☐ Blood product administration ☐ Additional Uterotonics ☐ OR / IR Team Notification (per protocol and access) ☐ Assess need for transfer or stabilization acquired ☐ Assess perineum and apply pressure for any bleeding while awaiting more definitive treatment ☐ Begin appropriate response to uterine atony, retained placenta, laceration, hematoma	**Trigger:** • If learner fails to provide fluid resuscitation and blood product administration, patient loses consciousness (Go to State 3) • If learner fails to consult OB (if applicable)- patient loses consciousness (Go to State 3) • If learner fails to notify OR/IR (if applicable), patient loses consciousness (Go to State 3) **Education Points:** *When to consider Massive Transfusion Protocol *SBAR

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
3. Continued vaginal bleeding, Worsening hemodynamic status BP 72/42 HR 136 SpO2 98% RR 24 QBL/EBL additional 100mL	**Learner Actions:** ***Continue with above Learner Actions*** ☐ Administer additional uterotonics ☐ Continue blood product administration ☐ Cumulative QBL ☐ Assess disposition (stabilize to transfer, Operating room) ☐ Consider tools on hand (uterine balloon (Bakri), suction system (Jada), etc.	**Trigger:** • If Learner Actions not performed, provide suggestions to guide critical thinking if all learner actions completed (Go to State 4) **Education Points:** *SBAR
4. Bleeding stabilized, hemodynamically improving BP 88/52 HR 124 SpO2 98% RR 20 QBL/EBL no additional	**Learner Actions:** ***Continue with above Learner Actions*** ☐ Fundus firm, midline U -1 ☐ Assess perineum for any repair	**Scenario complete when patient stabilized and/or interventions do not lead to identified cause – Move to Debrief**

KEY DEBRIEFING POINTS

1. What went well?

2. What were some opportunities?

3. Any new processes tested during this simulation?

4. New learnings or education gaps identified?

5. Any quality improvement ideas?

RESOURCES:

- **Obstetric Hemorrhage AIM Patient Safety Bundle**
- **ACOG Practice Bulletin: Postpartum Hemorrhage**
- **ACOG Committee Opinion: Quantitative Blood Loss in Obstetric Hemorrhage**

OBSTETRIC HEMORRHAGE EXAMPLE MEDICATIONS

Medication	Dose	Contraindications and Considerations
Oxytocin (Pitocin)	10u IM or IV infusion	
Methylergonovine (Methergine)	0.2 mg IM	Avoid in setting of HTN or HTN hx
Misoprostol (Cytotec)	800 mcg SL, buccal, or rectal	(for use if diagnosed with HTN and asthma)
Carboprost (Hemabate)	250 mcg IM	Avoid in setting of asthma hx
Tranexamic Acid (TXA)	1 gram IV	May repeat in 30 minutes

Source: California Maternal Quality Care Collaborative. Improving Health Care Response to Obstetric Hemorrhage Toolkit, Version 3.0. **https://www.cmqcc.org/sites/default/files/Appendix%20C%20Obstetric%20Hemorrhage%20Care%20Guidelines%20Table%20Format%20Errata%207.2022.pdf**

CARDIAC CONDITIONS IN OBSTETRICS: Patient Presenting to the Emergency Department

OBJECTIVES

1. Demonstrate key attributes of team-based communication (Attributes of Simulation)
2. Demonstrate components of SBAR with team communication
3. Identify pre-existing risk factors that may contribute to cardiac conditions in pregnancy
4. Identify S&S of potential cardiac conditions in pregnancy

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Time Out: Any participant may call a "time out" during a scenario, to request real time feedback and guidance while asking questions. While there is merit to allowing a scenario to run uninterrupted, if participants feel learning will be ineffective without a pause, this option is available.

Attributes of Simulation: Communication, Role Clarification, Situational Monitoring, Mutual Support

SBAR: Situation, Background, Assessment, Recommendation (either ordered or demonstrated), Closed-loop Communication

REPORT GIVEN TO LEARNERS AT START OF SCENARIO

O.F. is a 38 y/o woman, gravida 2, para 1 at 35 weeks gestation who presents to the Emergency Dept with a dry cough and reports shortness of breath. She was diagnosed with pneumonia last week and just finished her course of antibiotics. She reports no improvement and thinks her symptoms are getting worse. The patient denies any fevers. The patient reports swelling in both her ankles.

Alternative: Patient may be 3 weeks postpartum, and learner must ask about recent pregnancy to determine that the patient has new onset heart failure from peripartum cardiomyopathy.

ALLERGIES	MEDICATION(S)	PRENATAL/MED/SURG/SOCIAL HISTORY
NKDA	Nifedipine, PNV	Currently breastfeeding Hashimoto's thyroiditis HTN Prior c-section

INITIAL PATIENT CONDITION

On the physical exam, the patient is noticed to have jugular vein distention and 2+ pitting edema to the lower extremities. Lung sounds demonstrate fine crackles at the bases, with good air movement. The patient is tachypneic to 28 with mildly increased work of breathing. She answers in short sentences, but must stop to focus on breathing, in between questions. The patient's abdomen is soft and nontender, with no palpable contractions. A pelvic exam demonstrates a closed cervix with no bleeding or discharge.

CASE FLOW STATES

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
1. Baseline HR 122 BP 102/54 SPO2 89% RA RR 28 LOC AAOx4 Eyes open Speech: short sentences, takes breaths in between	**Learner Actions:** ☐ Vital Signs/Pulse Ox • Lung sounds • Heart rhythm (murmur evaluation) ☐ IV fluid assessment needs • 250mL fluid bolus*^ ☐ O2 via nasal canula/mask ☐ Obtain fetal heart tones (FHT's) ☐ Avoid supine position ☐ Chest x-ray ☐ EKG ☐ BNP and other labs (CBC, CMP, ABG, urine toxicology with consent, TSH) ☐ Consider Maternal Sepsis Screening to rule out as cause of condition	**Trigger:** • If learner fails to identify oxygen administration, (go to State 2) **Education Points:** *^**KEY LEARNING POINT:** Care scenario requires judicious use of fluids with careful monitoring or intake and output. Discussion warranted. *Correlation with hypertension and cardiovascular risks *Consider discussions of standardized pregnancy risk assessment tool

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
2. Worsening Respiratory Distress BP 100/58 HR 136 EKG Sinus Tachycardia*^ -SpO2 82% (if oxygen not yet applied) -SpO2 90% (when oxygen applied) RR 33 SOB continues, patient attempting to reposition herself to breath more effectively	**Learner Actions:** ***Perform any of State 1 not achieved*** ☐ Lasix administration ☐ Bedside point of care US exam of heart ☐ Insert indwelling urinary catheter ☐ Call for additional multidisciplinary help • SBAR ☐ OB and Cardiac Consult (per protocol and access)	**Trigger:** • If learner fails to identify S&S of suspected pregnancy-related cardiac condition, provide suggestions to guide critical thinking (go to State 3) **Education Points:** *Family consideration/support *Rapid identification of potential pregnancy-related cardiac conditions *B-type Natriuretic Peptide (BNP) and role in establishing etiology of cardiac vs pulmonary dyspnea – difference in levels for pregnant vs non-pregnant patients *Multidisciplinary care team approach *^**KEY LEARNING POINT:** EKG changes that may indicate postpartum cardiac disease or conditions. *Role clarification and delegation- closed loop communication

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
3. Worsening Hemodynamic Status BP 72/42 HR 122 SpO2 90% RR 26 ABG pH 7.32. PaO2 65, PaCO2 42, HCO3 20 WBC 10.2, Hgb 11, Hct 37, Plts 349	**Learner Actions:** ***Continue with the above Learner Actions*** ☐ Educate patient ☐ Continuous fetal monitoring ☐ BiPAP ☐ Initiate Vasopressors	**Trigger:** • If learner fails to identify cardiac condition and/or delays interventions, provide suggestions to guide critical thinking (go to State 4) • If all learner actions are completed (go to State 4) **Education Points:** *Identification and timely transfer
4.Post Resuscitation BP 104/78 HR 110 SpO2 95% RR 22	**Learner Actions:** ***Continue with above Learner Actions*** ☐ Develop transfer plan/disposition ☐ Continue to monitor VS	**Scenario complete- debrief** **Education Points:** *Carry out transfer process and continued stabilization

KEY DEBRIEFING POINTS

1. What went well?

2. What were some opportunities?

3. Any new processes tested during this simulation?

4. New learnings or education gaps identified?

5. Any quality improvement ideas?

RESOURCES:

- Cardiac Conditions in Obstetric Care AIM Patient Safety Bundle
- ACOG Practice Bulletin: Pregnancy and Heart Disease
- Honigberg MC, Elkayam U, Rajagopalan N, Modi K, Briller JE, Drazner MH, Wells GL, McNamara DM, Givertz MM, IPAC Investigators. Electrocardiographic findings in peripartum cardiomyopathy. Clinical cardiology. 2019 May;42(5):524-9.
- *Iannaccone G, Graziani F, Kacar P, Tamborrino PP, Lillo R, Montanaro C, Burzotta F, Gatzoulis MA. Diagnosis and management of peripartum cardiomyopathy and recurrence risk. International Journal of Cardiology Congenital Heart Disease. 2024 Sep 1;17:100530.

*While this article discussed race as a risk factor, because race is a social construct without a biological basis, the AIM TA Center acknowledges that racism and bias rather than race are likely a contributor to patient risk.

HOW TO DIFFERENTIATE COMMON SIGNS AND SYMPTOMS OF NORMAL PREGNANCY VERSUS THOSE THAT ARE ABNORMAL AND INDICATIVE OF UNDERLYING CARDIAC DISEASE

Source: Pregnancy and Heart Disease. ACOG Practice Bulletin 212. American College of Obstetricians and Gynecologists. Obstet Gynecol 2019;133:e320-e356. 10.1097/AOG.0000000000003243

	ROUTINE CARE Reassurance	CAUTION[*†] Nonemergent Evaluation	STOP[†‡] Prompt Evaluation Pregancy Heart Team
HISTORY OF CVD	None	None	Yes
SELF REPORTED SYMPTOMS	None or Mild	Yes	Yes
Shortness of breath	No interferance with activities of daily living; with heavy exertion only	With moderate exertion, new onset athsma, persistent cough, or moderate or severe OSA[§]	At rest; paroxysmal nocturnal dyspnea or orthopnea; bilateral chest infiltrates on CXR or refractory pneumonia
Chest pain	Reflux related that resolves with treatment	Atypical	At rest or with minimal exertion
Palpitations	Few seconds, self-limited	Brief, self-limited episodes; no lightheadedness or syncope	Associated with near syncope
Fatigue	Mild	Mild or moderate	Extreme

	ROUTINE CARE Reassurance	CAUTION*† Nonemergent Evaluation	STOP†‡ Prompt Evaluation Pregancy Heart Team
VITAL SIGNS	Normal		
HR (beats per minute)	<90	90–119	≥120
Systolic BP (mm Hg)	120–139	140–159	≥160 (or symptomatic low BP)
RR (per minute)	12–15	16–25	≥25
Oxygen saturation	>97%	95–97%	<95% (unless chronic)
PHYSICAL EXAMINATION	Normal		
JVP	Not visible	Not visible	Visible >2cm above clavical
Heart	S3, barely audible soft systolic murmur	S3, systolic murmur	Loud systolic murmur, diastolic murmur, S4
Lungs	Clear	Clear	Wheezing, crakles, effusion
Edema	Mild	Moderate	Marked

Abbreviations: BP, blood pressure; CVD, cardiovascular disease; CXR, chest x-ray; HR, heart rate; JVP, jugular venous pressure; OSA, obstructive sleep apnea; RR, respiratory rate.

* If unclear, any combination of factors in the yellow column that add up to 4 or more should prompt further evaluation.

† Data in this column from Afshan B. Hameed, Christine H. Morton, and Allana Moore. Improving Health Care Response to Cardiovascular Disease in Pregnancy and Postpartum. Developed under contract #11-10006 with the California Department of Public Health, Maternal, Child and Adolescent Health Division. Published by the California Department of Public Health, 2017. Available at **https://www.cmqcc.org/resources-toolkits/toolkits/improving-health-care-response-cardiovascular-disease-pregnancy-and**

‡ History of CVD or signs and symptoms in the red column should lead to urgent evaluation by the Pregnancy Heart Team.

§ Should raise concern about heart failure and should promptly be evaluated.

Reused with permission from Pregnancy and Heart Disease. ACOG Practice Bulletin 212. American College of Obstetricians and Gynecologists. Obstet Gynecol 2019;133:320-356. Table 5 in the source is noted as modified from Thorne S. Pregnancy and native heart valve disease. Heart 2016;102-1410-7.

SEPSIS IN OBSTETRIC CARE:
Patient Presenting to the Emergency Department

OBJECTIVES

1. Demonstrates key attributes of team-based communication (Attributes of Simulation)
2. Identify Sepsis and initiate appropriate timely treatment based on 'time zero'
3. Identify patient risk factors for infection, leading to Sepsis
4. Demonstrates components of SBAR with team communication

SIMULATION OVERVIEW

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Attributes of Simulation: Communication, Role Clarification, Situational Monitoring, Mutual Support

SBAR: Situation, Background, Assessment, Recommendation (either ordered or demonstrated), Closed-loop Communication

REPORT GIVEN TO LEARNERS AT START OF SCENARIO

S.R. 32 y/o pregnant female, gravida 3, para 2 woman at 34.2 weeks gestation who presents to the Emergency Department late in the evening, with complaints of feeling "exhausted and aching all over." She was recently treated by her obgyn for a UTI and finished her abx as prescribed. Unsure of abx type and describes it as "a yellow pill." Denies loss of fluid, endorses fetal movement, denies complications with her last two pregnancies, which were uncomplicated vaginal births after induction of labor at term. Patient states she has been feeling increasingly fatigued the past two days, and today she generally feels worn down and thinks she may have had fever this morning. She took two doses of Tylenol throughout the day, which helped some, but when she laid down to go to bed tonight, she began feeling much worse. Her obgyn office is 2 hours away. Denies pain other than "achiness all over."

ALLERGIES	MEDICATION(S)	PRENATAL/MED/SURG/SOCIAL HISTORY
NKDA	PNV	Appendectomy as a child

INITIAL PATIENT CONDITION

On the physical exam, the patient is not in any distress but appears to feel unwell and is pale. Abdomen is gravid, soft, and non-tender. Lungs CTA.

CASE FLOW STATES

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
1. Baseline BP 108/68 HR 125 RR 24 Temp 99.9F FHR 175 Pulse Ox 93% Patient not in labor CXR: normal EKG: sinus tachycardia (is requested)	**Learner Actions:** ☐ Obtain vital signs, including continuous pulse oximetry ☐ IV bolus ☐ Continuous Fetal Monitoring ☐ Consider pre-term premature rupture of membranes (PPROM) ☐ Sterile speculum exam (SSE)*^ ☐ Consider Maternal Sepsis Screening ☐ Consider potential infection sources ☐ Arrange OB consultation per facility process and resources ☐ Initiate appropriate labs related to infection/sepsis: cultures x 2, CBC, CMP, UA, coagulation profile, lactate	**Trigger:** • If learner fails to identify significance of S/Sx and potential infection (go to State 2) **Education Points:** *Maternal Early Warning Criteria (positive screen) *^**KEY LEARNING POINT:** Need to observe, as minimum, for pooling of fluid in vaginal vault, with note of fluid appearance and/or odor.

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
2. Continued worsening patient condition BP 88/54 HR 130 RR 28 Temp 102.1F Pulse Ox 90% FHT 180 Patient starting to get agitated	**Learner Actions:** ***Perform any of State 1 not achieved*** ☐ Recognize S&S sepsis • Call out 'time zero' ☐ Insert indwelling urinary catheter for accurate urine output • Urometer ☐ Call for additional help • SBAR • Any facility sepsis protocols ☐ Call for additional consults (per availability), either in house or via telehealth • Critical Care Provider*^ • OB for delivery of infant/transfer/ NICU support ☐ Obtain appropriate labs: cultures x 2, CBC, CMP, coagulation profile, lactate	**Trigger:** • If learner fails to identify S&S of Sepsis, provide suggestions to guide critical thinking (go to State 3) **Education Points:** *Time Zero *Lactate parameters non-labor vs laboring patient *^**KEY LEARNING POINT:** Consider discussion about MFM vs. Critical Care per facility protocol and patient need for systems learning *Role clarification and delegation – closed loop communication in real time or in debrief *Family considerations/support

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
3. Continued worsening patient condition; patient confused, decreased urine output BP 81/46 HR 130 RR 32 Temp 102.4F Pulse Ox 90% FHT 185 **Initial Diagnostic Findings Available Lab Data:** WBC 18, Hgb/Hct 9/36, Plts 672 Na 134, K 4.3, Cl 10, HCO3 18, BUN 6, Cr 0.7, Gluc 78 Lactate 4.8 UA pos nitrite, pos bacteria, WBC >5000, RBC present, moderate leuks	**Learner Actions:** ***Continue with above Learner Actions*** ☐ Initiate facility sepsis protocol ☐ Expedite broad spectrum antibiotics*^ ☐ Fluid management*^ • Re-evaluate patient's status after bolus	**Trigger:** • If learner fails to identify Sepsis management and urgency of delayed interventions, provide suggestions to guide critical thinking (go to State 4) • If all learner actions are completed (go to State 4) **Education Points:** *^**KEY LEARNING POINT:** Significance of antibiotic initiation within 1 hour of sepsis suspicion *^**KEY LEARNING POINT:** Fluid management algorithm (30mL/kg initially, watch for responsiveness, reassess fluid status) *Type of antibiotics *Frequency of repeat labs (lactate)

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
4. Continued worsening patient condition; remains confused; BP 80/52 HR 130 RR 28 Temp 101.0F Pulse Ox 90% FHT 180	**Learner Actions:** ☐ Continue ongoing consultation with OB, Critical Care ☐ Develop transfer plan ☐ Continue to continuously monitor fetal status ☐ Prepare for imminent cesarean birth if fetal distress*^ ☐ Continue to monitor VS, urine output, patient mental status, labs, fluid and antibiotic management ☐ Continue fluid resuscitation ☐ Begin vasopressor infusion	**Scenario complete - debrief** **Education Points:** *^**KEY LEARNING POINT:** Sepsis rarely requires delivery in obstetric care in absence of intrauterine infection and presence of maternal oxygenation and hemodynamic stabilization. *Carry out transfer process and continued stabilization *Frequency of repeat labs (lactate) *Fluid management algorithm

KEY DEBRIEFING POINTS

1. What went well?

2. What were some opportunities?

3. Any new processes tested during this simulation?

4. New learnings or education gaps identified?

5. Any quality improvement ideas?

RESOURCES:

- Sepsis in Obstetric Care AIM Patient Safety Bundle
- ACOG Practice Bulletin: Critical Care in Pregnancy Practice
- AIM Maternal Early Warning System Implementation Resource Kit
- Urgent Maternal Warning Signs
- Bauer ME, Fuller M, Kovacheva V, Elkhateb R, Azar K, Caldwell M, Chiem V, Foster M, Gibbs R, Hughes BL, Johnson R. Performance characteristics of sepsis screening tools during antepartum and postpartum admissions. Obstetrics & Gynecology. 2022 May 5:10-97.
- Main EK, Fuller M, Kovacheva VP, Elkhateb R, Azar K, Caldwell M, Chiem V, Foster M, Gibbs R, Hughes BL, Johnson R. Performance characteristics of sepsis screening tools during delivery admissions. Obstetrics & Gynecology. 2022 May 5:10-97.

PERINATAL MENTAL HEALTH CONDITIONS: Patient Presenting to the Emergency Department

OBJECTIVES

1. Demonstrates key attributes of team-based communication (Attributes of Simulation)
2. Demonstrates components of SBAR with team communication
3. Identify strategies for respectful care
4. Identify the validated screening tools for perinatal mental health conditions
5. Demonstrates attributes of inclusion

SIMULATION OVERVIEW

Purpose and Assumption: Everyone here is intelligent, well-trained, wants to be their best, and is here to improve patient care. This is not a test of individuals, it is a test of process, a tool to identify and potentially fix gaps on our unit, in our teamwork, in our communication, and the overall reliability of the care we provide. It is also an opportunity to ask questions in a safe environment.

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Fidelity: We have done our best to create a realistic patient room and scenario which you might encounter in your practice. The ED patient room is equipped with noninvasive cardiopulmonary monitoring, respiratory equipment and O2 delivery.

Expectation: Please participate in the simulation and debriefing. Everyone has unique perspectives, insights, and ideas. The facilitator will help guide the conversation to ensure participation and that the objectives have been met.

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Attributes of Simulation: Communication, Role Clarification, Situational Monitoring, Mutual Support

SBAR: Situation, Background, Assessment, Recommendation (either ordered or demonstrated), Closed-loop Communication

REPORT GIVEN TO LEARNERS AT START OF SCENARIO

S.C. is a 19 y/o, gravida 1, para 0 at 14 weeks gestation who presents to the ED after referral from a home visiting nurse, stating she is feeling hopeless and having thoughts of killing herself and she states she has a plan. The patient has a strained relationship with her family and reports feeling "overwhelmed" and "too tired to do this anymore", she also states "this all is just never going to get any better". She has mentioned her feelings to her family and friends, but she is feeling unheard. She has a history of a suicide attempt, by overdose, at age 15.

ALLERGIES	MEDICATION(S)	PRENATAL/MED/SURG/SOCIAL HISTORY
PCN	PNV	History of anxiety and depression ½ pack/day smoker Drinks alcohol occasionally Occasional use of THC Lives with mother and siblings

INITIAL PATIENT CONDITION

The patient presents to ED, tearful with noticeably poor hygiene and is very guarded with interactions. Her speech and physical exam are normal. She reports decreased sleep, appetite, and ability to focus. She reports having a "messy" home environment with a mother who has poorly controlled bipolar disorder. She feels that no one would care if she died, and she found herself in her bathroom collecting her pill bottles this morning with a plan to overdose on Tylenol PM and iron tablets. She came to the Emergency Department instead after speaking to a home visiting nurse, and "just knows I need help".

CASE FLOW STATES

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
1. Baseline BP 110/64 HR 72 SPO2 98% RR 18 **Diagnostic Findings:** (routine ED screens) EKG: Sinus rhythm (is asked) **Lab Data:** All normal with negative Urine Toxicology Screen Ethanol negative Acetaminophen negative – no physical S&S of toxicity	**Learner Actions:** ☐ Room patient in a safe environment • Someone at bedside always ☐ Monitor/VS ☐ Provide oral fluids, food as needed ☐ Assess correlation of presenting symptoms to S&S of acetaminophen toxicity ☐ Obtain FHT 's (may be patient's first time hearing them) • Assess feelings about pregnancy ☐ Educate patient • Use reassuring language validating patient's feelings • Validating safety is priority ☐ Engage in open, transparent, empathetic, and trauma-informed communication • Shared decision-making approach ☐ Use of validated screening tools for suicidality	**Trigger:** • If learner fails to secure safe environment (go to State 2) **Education Points:** *Respectful, Equitable, and Supportive Care *Elements of Inclusion • Establishment of trust • Informed, bidirectional shared decision-making • Recognizing patient values and goals as the primary driver • Aligning health literacy, culture, language, and accessibility needs *Screening tools/actions for acute crisis vs. ongoing screening

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
2. Continued worsening anxiety and feelings of hopelessness Vital signs stable Patient states she has no one to call, no support	**Learner Actions:** ***Perform any of State 1 not achieved*** ☐ Assess evidence of self-harm ☐ Assess desire to harm fetus (and/or others) ☐ Do not leave patient alone • Initiate sitter and/or staff to always remain at bedside • Establish trust with limited people at bedside ☐ Implement suicide precautions • Assure the environment is free from objects that could harm the patient (strings/cords, sharp objects etc.) ☐ Assess support person(s) • Who may be called? • What support system may be created? ☐ Consult crisis counselors, obtain psychiatric evaluation, and/or social services, as available per protocol • Risk stratification of 'plan' to be fatal or not, if executed, based on validated screen • SBAR ☐ Non-pharmacological and/or referral for pharmacologic interventions for stabilizing current crisis	**Trigger:** • If learner fails to identify strategies for respectful care, provide suggestions to guide critical thinking (go to State 3) **Education Points:** *Family consideration/support, identification of other support if family is not able *Role clarification and delegation—closed loop communication *Consent process and permissions to disclose patient information for coordination and collaboration of care *Identify local and national support for perinatal psychiatric emergencies, such as crisis lines, state-based perinatal psychiatry access programs, Maternal Mental Health Hotline

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
3. Patient appears stable and clear in thoughts, reporting she feels hopeless and wants to continue with her plan Vital signs stable	**Learner Actions:** ***Continue with above Learner Actions*** ☐ Document current supports and resources • Is the patient established with obstetric care and/or counselor? ☐ Provide patient materials for crisis intervention and additional resources ☐ Allow time for patient to process feelings, under continued surveillance • Patient desire to seek help is validated • Shared decision-making for next steps and care coordination	**Trigger:** • If all learner actions are completed (go to State 4) **Education Points:** *Consider the opportunity to develop criteria pathway for imminent follow up, for all pregnant patients and postpartum *Population focused navigation among multiple providers

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
4. Patient safe disposition plan reached Patient states she is tired and just wants to go to bed	**Learner Actions:** ☐ Determine disposition and plan for further follow up • Other care providers, such as OB, PCP, current behavioral health providers notified of patient information and admission within 24 hours ☐ Coordinate transfer to ongoing care/ admission with available resources and known psychiatric supports per facility/unit.	**Scenario complete when patient has a coordinated disposition plan, including admission for observation to crisis or inpatient psychiatric care, consider highlighting obstetric care follow-up.**

KEY DEBRIEFING POINTS

1. What went well?

2. What were some opportunities?

3. Any new processes tested during this simulation?

4. New learnings or education gaps identified?

5. Any quality improvement ideas?

RESOURCES:

- Perinatal Mental Health Conditions AIM Patient Safety Bundle
- State Perinatal Psychiatry Access Programs
- ACOG Clinical Practice Guideline #5: Treatment and Management of Mental Health Conditions During Pregnancy and Postpartum
- Postpartum Support International's Perinatal Psychiatric Consult Line (877)499-4773

24 HOUR ACCESS PATIENT HOTLINES

National Maternal Mental Health Hotline: 1(833)TLC-MAMA
Postpartum Support International Helpline: 1-800-944-4773
National Suicide Prevention Hotline: 988

SEVERE HYPERTENSION IN PREGNANCY AND PREECLAMPSIA: Patient Presenting to the Emergency Department

OBJECTIVES

1. Demonstrate key attributes of team-based communication (Attributes of Simulation)
2. Identify an acute hypertensive crisis
3. Identify patient risk factors when considering timely treatment of hypertension.
4. Demonstrate components of SBAR with team communication.

SIMULATION OVERVIEW

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Attributes of Simulation: Communication, Role Clarification, Situational Monitoring, Mutual Support

SBAR: Situation, Background, Assessment, Recommendation (either ordered or demonstrated), Closed-loop Communication

REPORT GIVEN TO LEARNERS AT START OF SCENARIO

E.G. is a 37 y/o female who presents to the Emergency Department 8 days following cesarean birth of her second child with complaints of a persistent headache and flu-like symptoms that have been worsening over the past 24 hours. Denies fever, chills, SOB, or other complaints.

ALLERGIES	MEDICATION(S)	PRENATAL/MED/SURG/SOCIAL HISTORY
PCN	PNV	Gravida 2, para 2 Cesarean delivery x's 2 History of preeclampsia in pregnancy

INITIAL PATIENT CONDITION

On the physical exam, the patient is AAOx4. The patient describes her headache as throbbing and located in the front of her head. She denies any visual disturbances but mentions feeling unusually fatigued since delivery and reports feeling "puffy." Abd incision well approximated, without redness. Denies vaginal bleeding, discharge, or odor. Denies abd or pelvic pain "outside normal for me after delivery." Noted to have +2 edema to BLE.

CASE FLOW STATES

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
1. Baseline BP 170/98 HR 84 SPO2 98% RA RR 18 LOC AAOx4 Pain 8/10	**Learner Actions:** ☐ Monitor/Cycle BP's (validate BP) ☐ Recognize hypertension in postpartum patient, possible preeclampsia*^ ☐ Assess neurologic status ☐ Assess additional S&S preeclampsia and/or HELLP (epigastric pain, proteinuria) ☐ Initiate IV access ☐ Draw labs (to include CMP)	**Trigger:** • If learner fails to identify significance of validating BP for early recognition and treatment and hypertensive emergency (go to State 2) **Education Points:** *^**KEY LEARNING POINT:** Recognition and timely treatment of severe hypertension within 30-60 min of validating initial BP *Preeclampsia pathway *HELLP pathway *Role clarification and delegation – closed loop communication *Family considerations/support

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
2. Continued Hypertension BP 165/108 HR 90 SpO2 98% RR 18 Nausea/Vomiting	**Learner Actions:** ***Perform any of State 1 not achieved*** ☐ Call for additional help • Unit huddle or additional resources • Multidisciplinary support • SBAR ☐ Reassess BP within 15 minutes while preparing to treat ☐ Assess Deep tendon reflexes ☐ Recognize hypertensive emergency, monitor for persistent elevation ☐ Initiate seizure precautions (side rails up) and prepare Magnesium Sulfate infusion ☐ OB consult (per protocol and access)	**Trigger:** • If learner fails to identify preeclampsia and/or hypertensive emergency, provide suggestions to guide critical thinking (go to State 3) **Education Points:** *Access to antihypertensive medications, treatment algorithm *Seizure prevention protocol *SBAR

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
3. Continued Hypertension; Worsening Patient Condition BP 174/108 HR 94 SpO2 97% RR 20 Headache and nausea, some blurry vision	**Learner Actions:** ***Continue with above Learner Actions*** ☐ Confirms persistent severe hypertension within 15 minutes of 1st severe range BP ☐ Initiate administration of antihypertensive medications following the appropriate algorithms.*^ ☐ Administer Magnesium Sulfate loading dose and then follow by maintenance dose.*^ ☐ Educate patient ☐ Insert indwelling urinary catheter and maintain strict I&O ☐ Preparation and communication for transfer to obstetric or Maternal-fetal medicine consultation and care	**Trigger:** • If Learner Actions not performed, provide suggestions to guide critical thinking • If all learner actions are completed (Go to State 4) **Education Points:** *^**KEY LEARNING POINT:** Timely treatment of severe hypertension *^**KEY LEARNING POINT(S):** Indication and administration of magnesium sulfate. Calcium gluconate access and availability as an antidote for potential magnesium toxicity *Anti-hypertensive medication administration *Patient Education *Preeclampsia with/without severe features

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
4. Continued Hypertension; Eclamptic Seizure BP 174/101 HR 95 SpO2 95% RR 20	**Learner Actions:** ***Continue with above Learner Actions*** ☐ Continue to administer antihypertensive medications following the appropriate algorithms ***Eclamptic Seizure actions:*** ☐ Call for additional assistance ☐ Ensure side rails up ☐ Protect airway and improve oxygenation: • Pulse oximetry • Supplemental oxygen (100% non-rebreather) ☐ Lateral decubitus position ☐ Bag-valve-mask (BVM) ventilation available*^ ☐ Suction available ☐ Administer additional magnesium sulfate and anticonvulsant medications if needed ☐ Reorient patient	**Trigger:** • If learner fails to identify eclamptic seizure (emergency), provide suggestions to guide critical thinking (go to State 5) **Education Points:** *^**Key Learning Point:** Indications for intubation versus stabilization with BVM *^**Key Learning Point:** Had patient been pregnant, seizure is not an automatic indication for urgent delivery, talking points of considerations based on fetal heart rate tracing with adequate maternal oxygenation and gestational age/fetal status *Maintain oxygenation, safety of patient *Family support *SBAR

CASE FLOW STATES (CON'T)		
State/Vital Signs-Conditions	**Learner(s) Outcomes or Actions Desired**	**Trigger to move to next state**
5. Continued Hypertension; Patient recovers from seizure; Prepare to Transfer or Deliver BP 155/97 HR SpO2 95% RR 20	**Learner Actions:** ☐ Develop transfer plan /disposition ☐ Continue to monitor VS with BP every 5-15 min	**Scenario complete- debrief**

KEY DEBRIEFING POINTS

1. What went well?

2. What were some opportunities?

3. Any new processes tested during this simulation?

4. New learnings or education gaps identified?

5. Any quality improvement ideas?

RESOURCES:

- Severe Hypertension in Pregnancy AIM Patient Safety Bundle
- ACOG Acute Hypertension in Pregnancy and Postpartum Algorithm
- ACOG Eclampsia Algorithm
- Improving Health Care Response to Hypertensive Disorders of Pregnancy: A California Maternal Quality Care Collaborative Quality Improvement Toolkit
- ACOG Practice Bulletin: Gestational Hypertension and Preeclampsia

SUBSTANCE USE DISORDER IN PREGNANCY: Patient Presenting to the Emergency Department

OBJECTIVES

1. Demonstrate key attributes of team-based communication (Attributes of Simulation)
2. Demonstrate components of SBAR with team communication
3. Identify indication for naloxone administration(s)
4. Identify S&S of opioid withdrawal

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REPORT GIVEN TO LEARNERS AT START OF SCENARIO

N.J. is a 26 y/o, gravida 1 para 0 at 20 weeks' gestation who has been brought in by ambulance for altered mental status. EMS received a call from her boyfriend, who reports she was fine this morning but when he got out of the shower, he found her minimally responsive on the couch and was unable to wake her.

ALLERGIES	MEDICATION(S)	PRENATAL/MED/SURG/SOCIAL HISTORY
NKDA	Zoloft 50 mg PO qD	History of heroin use Inpatient rehab admission 6 months ago

INITIAL PATIENT CONDITION

The patient is not answering questions but moans and withdraws to painful stimuli. Her pupils are pinpoint. Non-rebreather mask in place and her O2 sats are 92%. She has an IV in her left arm, placed in the field, by EMS.

CASE FLOW STATES

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
1. Baseline BP 112/82 HR 78 RR 10 SpO2 84% on100% NRB Minimally responsive to stimuli Abdomen soft and nontender No vaginal bleeding **Diagnostic Findings:** CXR, EKG- if asked for, would be normal	**Learner Actions:** ☐ Access IV access ☐ Obtain labs, including blood glucose ☐ Urine toxicology screen ☐ Assess ability maintain airway independently ☐ Doppler FHR ☐ Assess for contractions/abdominal firmness by palpation ☐ Assess for vaginal bleeding ☐ Call for additional help ☐ Administer naloxone^*	**Trigger:** • If learner gives naloxone, (go to State 2) • If learner fails to give naloxone, provide suggestions to guide critical thinking (go to State 2) **Education Points:** *^**KEY LEARNING POINT:** Naloxone indication/low risk/ administration should not be delayed *Acute placental abruption risks/causes *Multidisciplinary approach to obstetric emergency *Role clarification and delegation – closed loop communication *Family considerations/support

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
2. Awake BP 124/78 HR 90 RR 18 SpO2 99% on O2 GCS 15 **Lab Data:** (WBC, Hgb /Hct, Plts, Na /K /Cl /HCO3 /BUN /Cr /Gluc) WNL TSH WNL UA normal UDS + for opiates, send for confirmation testing Acetaminophen negative Ethanol negative	**Learner Actions:** ***Perform any of State 1 not achieved*** ☐ Gather additional information related to history and physical, including presence/absence of prenatal care ☐ Consult with OB per availability and/or protocol ☐ Assess feelings about pregnancy when patient is responsive ☐ Assess S&S acute withdrawal • Nausea/Vomiting • Aspiration	**Trigger:** • If learner fails to consider imminent risks to pregnancy, provide suggestions to guide critical thinking (go to State 3) **Education Points:** *Acute response to naloxone administration *Acute opioid withdrawal *Fetal oxygenation and well being *Respectful, Equitable, and Supportive Care (open, transparent, and empathetic communication)

CASE FLOW STATES (CON'T)

State/Vital Signs-Conditions	Learner(s) Outcomes or Actions Desired	Trigger to move to next state
3. Mental Status Change BP 120/82 HR 88 RR 10 SpO2 88% on O2 GCS 12	**Learner Actions:** ***Continue with above Learner Actions*** ☐ Repeat naloxone administration ☐ Consider naloxone drip ☐ Repeat doppler FHR	**Trigger:** • If learner fails to repeat naloxone, provide suggestions to guide critical thinking (go to State 4) **Education Points:** *Indications for repeated naloxone administration *Multidisciplinary team approach to obstetric emergency
4. Patient remains alert, good eye contact and answering questions BP 120/80 HR 78 RR 14 SpO2 94% on O2	**Learner Actions:** ***Continue with above Learner Actions*** ☐ Assess for IPV per policy and in absence of partner ☐ Educate patient • Self-harm reduction • Risks to pregnancy • Plan of care • Medication for opioid use disorder (MOUD) referral options ☐ Initiate the use of validated screening tools ☐ Consult crisis counselors, obtain psychiatric evaluation, and/or social services, as available per protocol • Shared decision-making for next steps and care coordination • Readiness for treatment	**Trigger:** • If learner actions are completed (go to State 5) **Education Points:** *Consider opportunity to develop criteria pathway for imminent follow up, for all pregnant patients *Population focused navigation among multiple providers *Consent process and permissions to disclose patient information for coordination and collaboration of care *Patient considerations/support

CASE FLOW STATES (CON'T)		
State/Vital Signs-Conditions	**Learner(s) Outcomes or Actions Desired**	**Trigger to move to next state**
5. Patient alert and oriented	**Learner Actions:** ☐ Determine disposition and plan for further follow up ☐ Coordinate follow up Medication for Opioid Use Disorder (MOUD) referral or programming ☐ Coordinate follow up with OB ☐ Assess patient's barriers to any follow up plan ☐ Rx or dispense naloxone or harm reduction kit	**Scenario complete when patient stable to admit for observation – Debrief** **Education Points:** *Coordinated disposition planning

KEY DEBRIEFING POINTS

1. What went well?

2. What were some opportunities?

3. Any new processes tested during this simulation?

4. New learnings or education gaps identified?

5. Any quality improvement ideas?

RESOURCES:

- Care for Pregnant and Postpartum People with Substance Use Disorder AIM Patient Safety Bundle
- AIM Implementation Webinar: Care for Pregnant and Postpartum People with Substance Use Disorder Patient Safety Bundle
- ACOG Committee Opinion 711: Opioid Use and Opioid Use Disorder in Pregnancy
- Pregnancy and Substance Use: A Harm Reduction Toolkit
- Opioid Overdose & Pregnancy Information Sheet

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