

NeolmPACTS Scenario Title:

Placental Abruption

General Information	
Clinical Diagnosis Patient Details & Setting	Placental Abruption, Blood Loss
Target Learners	Providers attending deliveries
Location	Delivery Room
Anticipated Duration	
Scenario Time:	15-20 minutes
Debriefing Time:	30 minutes

Learning Objectives:
1. Follow Neonatal Resuscitation Program (NRP) guidelines including airway management-CPR-UVC placement-volume and medications
2. Apply principles of CRM: Identify and mobilize all available resources-communicate effectively and establish role clarity
3. Use STABLE and demonstrate ongoing assessment
4. Identify encephalopathy and discuss process to or initiate passive cooling

Educational Rationale
Learner will recognize and resuscitate depressed newborn from hypotensive shock due to placental abruption
Scenario Synopsis
<p>Precipitous delivery in L&D. Learners are called to the room of a patient who presents to L&D reportedly at term with no prenatal care. She reports polysubstance abuse and recent cocaine use. She complains of severe abdominal pain with profuse vaginal bleeding. She quickly progresses to a precipitous spontaneous vaginal delivery. Baby taken to warmer stand on delivery suite. Infant is covered in blood, apneic and flaccid. Estimated weight 3 kg.</p> <p>Learner will recognize neonatal depression at delivery, initiate resuscitation based on NRP guidelines. Learner will administer epinephrine via ET tube, place UVC, and administer epinephrine and NS bolus and blood. Team members will have assigned roles; team leader will be designated.</p> <p>If physicians not in house, consider holding back a physician for 5 minutes from start of scenario.</p>

Scenario Setup

Scenario Description		
Location & Setting	Hospital	
	Unit/Room	L and D
	Debriefing Rm	
Mannequin Set up	Mannequin	Newborn (preferred high fidelity, but either low or high fidelity acceptable)
	Wardrobe	Naked
	Monitor	Delivery room monitor should be available, not on or attached
	Moulage	Bloody
	Access	None
	Other Details	Apneic, flaccid
Embedded Person Roles		
Room Staging		Warmer in L&D room
Medications		Epinephrine Normal Saline Bolus Blood
Equipment for scenario (to be brought by Sim Team)		Hospital delivery cart – warmer and supplies Code Cart (including epinephrine) UVC kit IV Fluids Neopuff (or other bag mask device)
Medical Chart Information	EHR	
	Lab Results	Arterial Cord Blood Gas: 6.98/64/9/-16, unable to obtain venous
	Imaging	N/A

Learner information to be given prior to start of scenario

You are working in L&D when a patient presents reportedly at term with no prenatal care. The patient reports polysubstance abuse and recent cocaine use. The patient complains of severe abdominal pain and profuse vaginal bleeding and quickly progresses to a precipitous spontaneous vaginal delivery.

Pre-Sim Checklist	
<input type="checkbox"/>	Video recording enabled (if applicable)
<input type="checkbox"/>	Debriefing location identified

<input type="checkbox"/>	COVID precautions for institution
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Expected Participants
Name & Role: <ol style="list-style-type: none"> 1. Nurse 2. Physician 3. Respiratory Therapist

Scenario Logistics

Vital Signs & Events:			
Event/Trigger: Room Set Up by Nursing to Prepare for Delivery			
Vital Signs	Patient & Actor Actions	Expected Learner Actions	Triggers to Move to Next State
PREPARATION	Patient: Not in room yet Actors: Plan for them to answer any sim questions. Have RN/RT set up their delivery room	Set up in preparation (equipment, warmer, medications) for baby	Baby Born
No VS, No infant yet			
Time to stay at vitals: 2 minutes			

Vital Signs & Events:			
Event/Trigger: Baby Born, presents limp, bloody and apneic			
Vital Signs	Patient & Actor Actions	Expected Learner Actions	Triggers to Move to Next State
Transition time: 30 Sec HR: 40 BP: 0 Sat: 0% RR: 0	Mannequin State: when brought in: pale-bloody-apneic Actors: State baby is pale once they are dried and cleaned.	<ul style="list-style-type: none"> - Mobilize all available resources - Perform initial steps in NRP - Place pulse ox and ECG leads - Perform PPV and MRSOPA 	No response
Time to stay at vitals: 3 minutes			

Vital Signs & Events:			
Event/Trigger: Physician Arrival (at ~5 minutes of life if physician held back initially)			
Vital Signs	Patient & Actor Actions	Expected Learner Actions	Triggers to Move to Next State
Transition time: HR: 40 BP: Sat: RR:	Mannequin State: remains pale with no respiratory effort and low HR Actors:	<ul style="list-style-type: none"> - Hand off team lead to physician - Communicate actions to now - Physician prepares to Intubate 	- Patient intubated
Time to stay at vitals: Until infant intubated			

Vital Signs & Events:			
Event/Trigger: Patient Intubated			
Vital Signs	Patient & Actor Actions	Expected Learner Actions	Triggers to Move to Next State
Transition time: HR: 50 BP: Sat: not detectable RR: intubate Time to stay at vitals: Once volume is given	Mannequin State: Actors: - NICU nurse states "equal breath sounds, ET CO2 color change" -tell learners: Simulate epinephrine via ET tube - If needed might suggest: "Does this baby need blood?" Must simulate bolus of blood	- Chest compressions for HR <60 once adequately ventilated - Epi via ETT - UVC placement or consider IO if emergency room physician - EPI through UVC - Volume-crystalloid and blood	Volume/Blood given

Vital Signs & Events:			
Event/Trigger: Recovery after Blood			
Vital Signs	Patient & Actor Actions	Expected Learner Actions	Triggers to Move to Next State
Transition time: 30 sec HR: 100 Sat: 94% RR: bagging infant	Mannequin State: Actors:	- STABLE: Post resuscitation care - Passive Cooling - Notify Transport team	

Scenario Endpoints
NS bolus given, blood ordered or given, Call to NICU attending-Transport to receiving hospital –turn off warmer/cooling measures

Debriefing Points

Debriefing Points Following Learning Objectives	
Technical	Assembling equipment Initial airway steps (PPV, MRSOPA) Performing intubation UV line placement Identifying correct epinephrine dose Epinephrine 1.0 mg (10 mL of a 1:10 000 solution) IV 0.01–0.03 mg/kg IV or IO (0.1 - 0.3 ml/kg) ETT 0.05–0.1 mg/kg (0.5 - 1ml/kg) Identifying need for volume/blood Post-resuscitation care
Cognitive	Roles clearly defined Good communication with team Following NRP guidelines for suctioning meconium
Behavioral/Interpersonal	Delegation of roles, clear communication with respect Closed loop communication Back up intubation plan Mental modeling
Other	

Scenario Support Materials, Pre and Post Tests, Evaluations

- Reference List:
 - NRP 8th Edition Update (December 2020)
[https://downloads.aap.org/AAP/PDF/NRP%208th%20Edition%20Busy%20People%20Update%20\(1\).pdf](https://downloads.aap.org/AAP/PDF/NRP%208th%20Edition%20Busy%20People%20Update%20(1).pdf)
- Pre-test or Pre-sim work:
- Post-test:
- Session Evaluations:

References

Table 1: Overview of NRP 8th Edition Practice Changes

Change	NRP 7th Edition	NRP 8th Edition
Umbilical cord management plan added to 4 pre-birth questions, replacing "How many babies?"	The 4 pre-birth questions: (1) Gestational age? (2) Amniotic fluid clear? (3) How many babies? (4) Additional risk factors?	The 4 pre-birth questions: (1) Gestational age? (2) Amniotic fluid clear? (3) Additional risk factors? (4) Umbilical cord management plan?
Initial steps reordered to better reflect common practice.	Initial steps: Warm and maintain normal temperature, position airway, clear secretions if needed, dry, stimulate.	Initial steps: Warm, dry, stimulate, position airway, suction if needed.
An electronic cardiac monitor is recommended earlier in the algorithm	An electronic cardiac monitor is the preferred method for assessing heart rate during cardiac compressions.	When an alternative airway becomes necessary, a cardiac monitor is recommended for the most accurate assessment of the baby's heart rate.
Epinephrine intravenous/intraosseous (IV/IO) flush volume increased.	Flush IV/IO epinephrine with 0.5 to 1 mL normal saline	Flush IV/IO epinephrine with 3 mL normal saline (applies to all weights and gestational ages)
Epinephrine IV/IO and endotracheal doses have been simplified for educational efficiency. The dosage range is unchanged. The simplified doses (IV/IO and ET) do not represent an endorsement of any particular dose within the recommended dosing range. Additional research is needed.	Range for IV or IO dose = 0.01 - 0.03 mg/kg (equal to 0.1 - 0.3 mL/kg) Range for endotracheal dose = 0.05 - 0.1 mg/kg (equal to 0.5 - 1 mL/kg)	The suggested initial IV or IO dose = 0.02 mg/kg (equal to 0.2 mL/kg) The suggested endotracheal dose (while establishing vascular access) = 0.1 mg/kg (equal to 1 mL/kg)
Expanded timeframe for cessation of resuscitative efforts	If there is a confirmed absence of heart rate after 10 minutes of resuscitation, it is reasonable to stop resuscitative efforts; however, the decision to continue or discontinue should be individualized.	If confirmed absence of HR after all appropriate steps performed, consider cessation of resuscitation efforts around 20 minutes after birth (decision individualized on patient and contextual factors).

IV = intravenous IO = intraosseous ET = endotracheal HR = heart rate