Simulation Scenario

Simulation Case Title: Neonatal simulation

Patient Name: John Doe

Patient Age: newborn

Chief Complaint: Premature delivery

Brief narrative

description of case

Include the presenting patient chief complaint and overall learner goals for this case

Primary Learning Objectives

Pre-scenario didactics Review the neonatal resuscitation algorithm (Appendix 3) and the top 10 take-home messages from the 2020 NRP update

1. Newborn resuscitation requires anticipation and preparation by providers who train individually and as teams

2. Most newly born infants do not require immediate cord clamping or resuscitation and can be evaluated and monitored during skin-to-skin contact with their mothers after birth

3. Inflation and ventilation of the lungs are the priority in newly born infants who need support after birth

4. A rise in heart rate is the most important indicator of effective ventilation and response to resuscitative interventions

5. Pulse oximetry is used to guide oxygen therapy and meet oxygen saturation goals

6. Chest compressions are provided if there is a poor heart rate response to ventilation after appropriate ventilation corrective steps, which preferably includes endotracheal intubation

7. The heart rate response to chest compressions and medications should be monitored by ECG

8. If the response to chest compressions is poor, it may be reasonable to provide epinephrine, preferably via the intravenous route

9. Failure to respond to epinephrine in a newborn with history or examination consistent with blood loss may require volume expansion (consider normal saline or call ahead for blood at facility/NICU)

Critical Actions

List which steps the participants should take to successfully manage the simulated patient. Theses should be listed as concrete actions that are distinct from the overall learning objectives of the case

NRP algorithm and knowledge, along with signs of/risk for blood loss in utero

Learner Preparation

What information should the learners be given prior to initiation of the case

Simulation Pre-brief

- Read the scenario and instruct team members on their role during the simulation

- Orient the learners to the supplies and equipment, and how to call for help

 - Orient the learners to the NRP algorithm, set up expectations

- Encourage to think out loud, work as a team, and suspend disbelief

Ms. Smith is a 38 year-old, G2P1 at 35 weeks and 5 days gestation with a history of velamentous cord insertion and low-lying placenta. Her obstetrician had planned for an elective repeat cesarean delivery (CD) at 36 weeks gestation, however, she has called EMS for spontaneous labor 2 days prior. Her first CD was for breech presentation. During the patients transition to the gurney, a gush of fluid and a small amount of vaginal bleeding was noted and the patient has sudden abd pain and urge to push.

Initial Presentation

Initial vital signs

	HR	60	B/P	UNK - won't register	RR	O2sat	Temp	88.7. glucose

Overall appearance

What do learners see when they first enter the room?

Scenario Details Trigger Patient Condition Action Done Time Comments Team brief + equipment check

1. Form team mental model + anticipate status of the neonate (confirm gestational age)

2. Turn on warmer, obtain sterile warm blankets

3. Set up the flow inflating bag (10 L O2 at FiO2 0.21 (room air), set APL (PIP 20-25 cmH2O + PEEP 5)

4. Check suction + intubation equipment (e.g. ETT 3.0 at 36 wks)

5. Bring resuscitation equipment

6. If team suspects vasa previa and fetal hemorrhage, ask nurse to request emergency release blood

>>>>>Delivery Neonate white, pale, limp, with no respiratory effort

1. Assess tone + resps

2. Defer delayed cord clamping

 3. Dry and stimulate, assess HR

4. Move through initial steps within 30 sec Assess resps + HR

>>>>>No palpable HR No resp effort No signal on pulse oximeter

1. Start positive pressure ventilation within 1 min of delivery (positive pressure ventilation 30-60/min, bag should look full but not hyperinflated, I:E ratio 1:2)

2. Place pulse oximeter on right wrist

3. Consider EKG

4. Evaluate ventilation, consider MR SOPA ventilation correction steps (e.g. mask adjustment, reposition airway, suction mouth and nose, open mouth, pressure increase, alternate airway)

>>>>>Reassess resps + HR (after 30 sec) HR 0 bpm

1. Start chest compressions, coordinate with respirations (3:1 ratio, 120 events/min)

2. Increase FiO2 to 100% . Place alternate airway (ETT or LMA)

4. Confirm tube position/LMA placement by breath sounds and CO2 exchange

 5. Place EKG 6. Obtain umbilical vein access (advanced providers)

7. Ask for NICU back-up/transfer

 8. Call for blood (if available, or call ahead to report/dispatch)

>>>>Reassess HR in 45-60 sec HR 50 bpm

 1. Continue chest compressions

2. Place IV line O2 Sat 70%

3. Administer epinephrine (e.g. 10-30 mcg/kg = 0.01-0.03 mg/kg = 0.1-0.3 ml/kg, of the 100 mcg/ml epinephrine solution)

4. Administer volume (e.g. 10 ml/kg normal saline or emergency release blood)

>>>>> Reassess HR HR 120 bpm Resp 40/min Sats 90%

 1. Stop chest compressions

2. Continue PPV

 3. Asses for spontaneous breathing

4. Prepare for NICU transfer, discuss postresuscitation care including cooling NICU team arrives HR 130 bpm Resp 40/min Sats 95%

>>>1. Give sign out to NICU

Debriefing:

Questions to Ask After the Scenario:

• Did the team have a shared mental model? Were recaps used to keep the team on track?

• Were the latest guidelines followed during the resuscitation?

 • Did the team follow the NRP algorithm? If not, what were the deviations?

• Were the tasks clear? Were they delegated or randomly chosen by team members? Was there a leader? Was the leader involved with tasks or supervisory? Was there closed-loop communication?

• How could the team have improved communication during critical portions of the resuscitation?

• What is the overall impression of the team regarding their performance? Did they have the necessary knowledge, skills, equipment, back-up help as needed? What were gaps and what were opportunities for improvement?