

Simulation Scenario

Simulation Case Title: 29/30 week neonate

Patient Name: John Doe

Patient Age: Newborn

Chief Complaint: newborn/premie/15 y/o mom

Brief narrative description of case <i>Include the presenting patient chief complaint and overall learner goals for this case</i>	John Doe is a newborn, delivered at home to a G1P1 15 year old by double footling breech. Fluid ruptured at time of delivery and was clear and normal in volume. Location: Rural area - 40 minutes from nearest hospital with inclement weather
Primary Learning Objectives <i>What should the learner gain in terms of knowledge and skill from this case?</i>	1. Basic NRP skills refresher 2. Targeted temperature management of a hypothermic baby 3. rewarming guidelines for hypothermic infants 4. possible outcomes of rewarming too fast 5. Understanding of the role of temperature in primary metabolic acidosis
Critical Actions <i>List which steps the participants should take to successfully manage the simulated patient. These should be listed as concrete actions that are distinct from the overall learning objectives of the case</i>	1. Early stabilization, and transport (recognition of the golden hour) 2. Early temperature management is key in this scenario, if not identified the baby will deteriorate despite best efforts and management 3. NRP skills and Glucose management. 4. Identify and treat evolving issues 5. Identify high risk factors in the beginning of scenario 6. Identify and recruit outlying alternative sources of help 7. Transfer care to next caregiver with an appropriate handoff/report
Learner Preparation <i>What information should the learners be given prior to initiation of the case</i>	NO information will be given unless asked

Initial Presentation					
Initial vital signs	HR	B/P	RR	O2sat	Temp
Initial	120	UNK		86	(98.7 – must ask for temp)
Inappropriate Tx	48	UNK		72	(89.6 – must ask for temp)
Appropriate Tx	108	UNK	48- PPV/vent	90-98	(94.5) must ask for temp (97 if wrapped in plastic)
Overall appearance <i>What do learners see when they first enter the room?</i>	On arrival you see a 15 year old female with double footling presentation, NB delivers as soon as EMS personnel arrive, there are no obvious deformities to the infant. Male appears to be ~30 weeks gestation, 29 weeks by mothers report.				
Past Medical/Surgical History	Medications None				
No medical hx.	No medications		No allergies		No hx.
Mother denies ETOH or drug use although the babys father was recently jailed for selling cocaine. Denies illness during her pregnancy.					
General	1. Premie neonate approx. 29-30 weeks gestation, weighing 1200grams				

HEENT	1) No abnormalities, palate is intact 2) Post/Ant fontanel open
Neck	1 Airway intact
Lungs	1) Crackles auscultated
Cardiovascular	1 Normal, soft murmur
Abdomen	1) Soft, rounded 2) Umbilical cord present
Neurological	1) Grossly intact
Skin	1) Abundant Lanugo 2) Thin intact skin with visible veins (neonates less than 32 weeks should not be warmed and dried but rather wrapped in plastic for heat loss)
GU	1) Grossly normal 2) Anus is patent

Instructor Notes – Changes and Case Branch Points

Intervention / Time point	Change in Case	Additional Information
00:00 – establish scene awareness	Scene arrival	Crew should identify that the patient is about to deliver and identify that additional help is needed. Identify there are two patients Begin neonatal resuscitation efforts and consider time recording and apgars
00:10 – Baseline vitals obtained	Warm, dry, and stimulate are the basic steps, then initiate PPV for a HR 60 or less for 30 seconds with effective ventilations.	**Discuss MRSOPA **Neonates less than 32 weeks should be wrapped in plastic to prevent heat loss
00:30 – steps to continue resuscitation based on HR	HR increased to 120 with PPV BP still not registering Temp- axillary (if asked) 89 RR - 40	HR recheck after 30-60 seconds of effective PPV, may use umbilical cord for HR check. -crew should use a preductal pulse ox site.
1:00 – consider advanced airway	HR 136 RR-40 BP - UNK	** Uncuffed ET tubes for neonates -should place a 3.0 ET tube ** tip to lip rule (kg+6)
3:00 – establish IV/IO access		
5:00 – continue resuscitation efforts - decision to transport should have been determined by now.	-still no blood pressure registering -dextrose 40-60 range (normal)	Oxygen continues to range 90-98% as long as PPV continues, if PPV is withdrawn it goes down to 82%
~Hospital Arrival -	Report given to hospital team	Focus on BP and temperature in the report should be communicated
-ET tube positioning confirmed		Axillary temp of 88.7

-Labs, ABG, D10W started	ABG 7.38, PCO2 19.7, PO2 151, HCO3 11.4	(decrease PIP, rate, and %O2)
Vent setting:	PIP 22, PEEP5, rate 60, Itime 0.4,100%	
-Give surfactant		
sudden HR drop to 60 Breath sounds are now decreased on the left side	Resuscitation starts -epi x3 (0.3cc of 1:10,000) -needle chest aspiration- no air obtained -Chest compressions for 2 minutes until HR is over 100	If repeat ABG is asked for Ph: 7.06, PCO2 42, PO2 99, HCO3 11.8

Cause of death in this scenario is primary metabolic acidosis.

Considerations for safe rewarming of hypothermia is topic of discussion for this scenario.

*Closely monitor during rewarming

- Heart rate and rhythm
- Blood pressure, pulses, and perfusion
- Respiratory rate
- Oxygen saturation
- Acid/base status
- Blood glucose

*Signs of deterioration during rewarming include:

- tachycardia
 - hypotension
 - development of cardiac arrhythmias
- Onset of hypoxemia or increased oxygen requirement
- worsening respiratory distress (apnea, tachypnea, retractions)
 - worsening acidosis (metabolic or mixed)

*The skin vessels are very sensitive to heat, so external heat sources may cause these vessels to dilate suddenly and will cause a rapid drop in blood pressure