

SIMULATION

Out-of-Hospital Delivery of a Live Newborn Requiring Resuscitation

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ABSTRACT:

Audience: This simulation is designed to educate emergency medicine residents and medical students on the initial assessment and resuscitation of a neonate in respiratory distress.

Introduction: The incidence of spontaneously delivered neonates that require resuscitation is low. Despite the fact that only about 10% of neonates require some assistance and less than 1% require extensive resuscitation measures, it is critical that the emergency physician be prepared to perform neonatal resuscitation.¹ A structured pathway focused on airway and respiratory support must be followed if initial supportive measures are inadequate.

Objectives: By the end of this simulation session, the learner will be able to: 1) perform a neonatal assessment, 2) identify which neonates require resuscitation, 3) understand the principles of neonatal resuscitation, 4) describe proper airway management in neonatal resuscitation, 5) discuss underlying etiologies or pathologies that may lead to a neonate to require resuscitation and 6) communicate effectively with team members and nursing staff during the resuscitation of a critically ill neonate.

Method: This session is conducted using high-fidelity simulation, followed by a debriefing session on neonatal assessment and resuscitation. However, it could also be run as an oral boards case.

Topics: Medical simulation, out-of-hospital delivery, neonatal assessment, neonatal resuscitation.



USER GUIDE

List of Resources:

Abstract	41
User Guide	42
Instructor Materials	44
Operator Materials	51
Debriefing and Evaluation Pearls	54
Simulation Assessment	57

Learner Audience:

Medical Students, Interns, Junior Residents, Senior Residents, Paramedics

Time Required for Implementation:

Instructor Preparation: 30 minutes
Time for case: 20 minutes
Time for debriefing: 30 minutes

Recommended Number of Learners per Instructor:

3-4

Topics:

Medical simulation, out-of-hospital delivery, neonatal assessment, neonatal resuscitation.

Objectives:

By the end of this simulation session, the learner will be able to:

1. Perform a neonatal assessment.
2. Identify which neonates require resuscitation.
3. Understand the principles of neonatal resuscitation.
4. Describe proper airway management in neonatal resuscitation.
5. Discuss underlying etiologies or pathologies that may lead to a neonate to require resuscitation.
6. Communicate effectively with team members and nursing staff during the resuscitation of a critically ill neonate.

Linked objectives, methods and results:

The rate of unplanned out-of-hospital deliveries in the United States is approximately 1%. Additionally, hundreds of precipitous deliveries occur in emergency departments (ED) each year. Out-of-hospital and ED deliveries are associated with adverse maternal and neonatal outcomes.² The majority of these deliveries and the transition of baby from intra-uterine to extra-uterine life occurs without complication. However, it is critical for the emergency physician to possess skills in neonatal resuscitation for those rare cases that do require intervention. Emergency Department resources for neonatal care may be limited, especially in free-standing and community EDs. The first

few minutes of life must be managed in a calm, standardized, and well-rehearsed manner in order to prevent increased morbidity and mortality. This simulation scenario allows learners to review safe and effective neonatal resuscitation.

Learners will have the opportunity to assess and identify sick neonates (objectives 1 and 2). They will then perform the resuscitation in a safe environment (objective 3) while addressing the most common life-threatening etiologies that can occur in the first few minutes of life (objective 5). Learners will need to control the neonatal airway, allowing them to describe and practice proper airway management (objective 4). Learners will also have the opportunity to practice their communication skills, with an emphasis on closed loop communication (objective 6). After the simulation, participants will be able to debrief, analyze their performance, and review the principles of neonatal resuscitation.

Recommended pre-reading for instructor:

We recommend that learners become familiar with the recommendations proposed by the Neonatal Resuscitation Program (NRP), which is provided by the American Academy of Pediatrics and based upon the 2015 American Heart Association Guidelines for cardiopulmonary resuscitation (CPR) and Emergency Cardiovascular Care. Suggested reading includes the materials listed below under “References/suggestions for further reading.”

Results and tips for successful implementation:

This simulation scenario was conducted approximately four times for 16-20 emergency medicine residents broken into groups of four or five. The original scenario was written as a dual-patient case with mom requiring a perimortem C-section. We found that learners often would place the neonate into the neonatal warmer, then direct their attention back to mom’s resuscitation. It was discovered that without faculty unambiguously telling the team that the neonate was cyanotic, floppy, or apneic, the learners disregarded the second patient, not realizing that the goal was to utilize crisis resource management to manage two patients simultaneously. Hence, this was rewritten for those who wish to focus on neonatal resuscitation as a primary teaching point. The scenario was not assessed with pre- or post-testing.

This simulation was written to be performed as a high-fidelity simulation scenario but may also be used as a mock oral board case. Furthermore, the case was written for emergency medicine residents in a low resource setting without obstetric or pediatric services. However, the simulation could be conducted in conjunction with obstetrics/gynecology or pediatric residents in an emergency department, as well as in



USER GUIDE

other settings such as a labor and delivery ward or prehospital location.

References/suggestions for further reading:

1. Wyckoff MH, Aziz K, Escobedo MB, et al. Part 13: neonatal resuscitation: 2015 American Heart Association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. 2015;132: S543-S560. doi: 10.1542/peds.2015-3373G
2. Vasquez V, Desai S. Labor and Delivery and Their Complications. In: Walls RM, Hockberger RS, Gausche-Hill M, et al. eds. *Rosen's Emergency Medicine: Concepts and Clinical Practice*. 9th ed. Philadelphia, PA: Elsevier; 2018:2296-2312.
3. Fernandes C. Neonatal resuscitation in the delivery room. In: Kim, MS, ed. UpToDate. Waltham, MA: UpToDate Inc. <https://www.uptodate.com/contents/neonatal-resuscitation-in-the-delivery-room>. Published May 15, 2018, Accessed September 6th, 2018.
4. Sawyer T, Umoren R, Gray MM. Neonatal resuscitation: advances in training and practice. *Advances in Medical Education and Practice*. 2016;8:11-19. doi: 10.2147/amep.s109099



INSTRUCTOR MATERIALS

Case Title: Out-of-Hospital Delivery of a Live Newborn Requiring Resuscitation

Case Description & Diagnosis (short synopsis): A term infant presents to a freestanding emergency department (ED) via emergency medical services (EMS) after a precipitous delivery in the back of the ambulance two minutes prior to arrival. The infant appears cyanotic, limp, and has agonal respirations. Goals include early recognition of neonatal distress and subsequent resuscitation. The patient should be dried, warmed, and stimulated. The patient should then be resuscitated following NRP guidelines and then transferred to a hospital with NICU capabilities.

Equipment or Props Needed:

- High-fidelity infant simulation mannequin
- Moulage material for central cyanosis
- Positive-pressure mask for neonates
- Neonatal pulse-oximetry
- Umbilical vein catheter kit
- Intra-osseous kit and drill with neonatal-sized needles
- Neonatal warmer
- Broselow tape
- Intravenous (IV) epinephrine
- Size 3.0 endotracheal tube
- Size 0 Miller laryngoscope blade and handle

Confederates needed:

- Primary nurse, paramedic

Stimulus Inventory:

- #1 Blood glucose
- #2 Image of cyanotic newborn

Background and brief information:

The newborn is brought into a freestanding emergency department's resuscitation bay by EMS.



INSTRUCTOR MATERIALS

Initial presentation: The emergency medical technician (EMT) brings in a cyanotic and limp newborn. The EMT states that mom just delivered in the back of the ambulance and is being taken to another room (participants will not be responsible for her care as part of this case).

- If asked: The EMT says that mom thinks she was “due” but hasn’t received recent obstetrics care.
- If asked: Mom has a history of homelessness and is a known intravenous drug user.
- If asked: Mom had an ultrasound at beginning of pregnancy, but did not receive any further prenatal testing.

How the scenario unfolds: The EMT will hand the infant to the team leader. He should be taken over to the neonatal warmer, and the warmer should be turned on. The patient should be dried, warmed, and stimulated. A heart rate should be obtained and a preductal pulse-oximeter should be placed on the right wrist.

When the patient does not respond to being warmed, dried, and stimulated, positive-pressure ventilation should be initiated. The heart rate will decrease below 60 despite positive-pressure application and despite checking to ensure adequate delivery of positive-pressure. The infant should then be intubated with chest compressions initiated at a ratio of 3 compressions to 1 ventilation in a pattern of “1-and 2- and 3- and breathe.” Chest compressions should be performed at a rate of approximately 120 compressions per minute and to a depth of approximately 1/3 the anterior-posterior diameter of the chest. Vascular access should be obtained through umbilical vein catheterization or intraosseous needle placement.

Heart rate should be re-evaluated after 1 minute of chest compressions. Heart rate will remain low and IV epinephrine at a dose of 0.01-0.03 mg/kg (0.1-0.3 mL/kg) of 1:10,000 epinephrine should be given. Epinephrine may be repeated every 3-5 min. If all this is performed correctly, the heart rate will increase above 100bpm, and chest compressions may be stopped.

Critical actions:

1. Warm, dry, and physically stimulate the neonate
2. Obtain a heart rate reading
3. Obtain a pre-ductal oxygen saturation level on the right hand
4. Initiate positive-pressure ventilation
5. Perform intubation
6. Recognize low heart rate and appropriately perform chest compressions
7. Obtain vascular access through umbilical vein catheterization



INSTRUCTOR MATERIALS

8. Administer epinephrine via appropriate dose and route
9. Call for critical-care transfer with a facility with NICU capabilities



INSTRUCTOR MATERIALS

Case title: Out-of-Hospital Delivery of a Live Newborn Requiring Resuscitation

Chief Complaint: A term infant brought in by EMS born by precipitous spontaneous vaginal delivery.

Vitals: Not obtained by EMS (ED vitals will be available later on in the case if learner appropriately obtains them)

General Appearance: Infant appears appropriate size for term gestation, has some extremity flexion and is grimacing, but not coughing or crying. Respirations appear irregular and slow. Central cyanosis present.

Primary Survey:

- **Airway:** Patent
- **Breathing:** Slow, irregular agonal breaths
- **Circulation:** Central cyanosis, heart rate of 86, delayed capillary refill >5 seconds

History:

History of present illness: Spontaneous vaginal delivery in the ambulance bay approximately 2-5 minutes ago. Mom thinks baby is term but has received minimal prenatal care as she relapsed on heroin and is now homeless. She has not had serologies or GBS testing and does not know her blood type. This is her fourth child, and her other deliveries had been uncomplicated other than neonatal abstinence syndrome with her son. Mom does not take any medications. Mom last used IV heroin approximately 1 day prior.

- **Family history:** unknown other than her son's neonatal abstinence syndrome

Secondary Survey/Physical Examination:

- **General appearance:** Appears term, grimacing, in distress
- **HEENT:**
 - **Head:** within normal limits
 - **Eyes:** within normal limits
 - **Ears:** within normal limits
 - **Nose:** within normal limits
 - **Throat:** within normal limits
- **Neck:** within normal limits



INSTRUCTOR MATERIALS

- **Heart:** no murmurs, gallops or rubs, regular bradycardic rhythm. Central cyanosis
- **Lungs:** agonal breathing pattern, bradypnea, clear to auscultation bilaterally
- **Abdominal/GI:** Umbilical cord cut and clamped, otherwise within normal limits
- **Genitourinary:** normal external genitalia
- **Rectal:** within normal limits
- **Extremities:** within normal limits
- **Back:** within normal limits
- **Neuro:** Decreased muscle tone globally, some extremity flexion
- **Skin:** Central cyanosis



INSTRUCTOR MATERIALS

Results:

Blood Glucose

Blood Glucose

82 mg/dL



INSTRUCTOR MATERIALS

Image of cyanotic newborn



Atkins, J. Two-hour-old cyanotic d-TGA + VSD, en:neonate; unpalliated, pre-operative. EKG leads on chest. In: Wikimedia Commons. https://commons.wikimedia.org/wiki/File:Cyanotic_neonate.jpg. Published August 4, 2004. CC BY.



OPERATOR MATERIALS

SIMULATION EVENTS TABLE:

Minute (state)	Participant action/ trigger	Patient status (simulator response) & operator prompts	Monitor display (vital signs)
0:00 (Baseline)	Patient handed to team leader, participants obtain history	EMT gives brief history.	No vitals should be displayed
0:30	Participant should warm, dry, and stimulate the neonate.	The neonate will not improve with initial conservative measures. If the neonate isn't warmed dried and stimulated, then nursing will prompt learners to "do something!"	No vital signs should be displayed
1:00	Participants should measure the heart rate and pulse oximeter should be placed on R wrist	Primary nurse and EMT express concern about lack of clinical improvement. If vitals are not obtained, then nurse will ask if they should be obtained.	HR 86 RR 28 O ₂ sat 62% RA
2:00	Participants should initiate positive pressure ventilation.	If the patient is bagged correctly, the SpO ₂ will improve; however, the patient will remain bradycardic. If the patient is not bagged or not bagged correctly, the patient will decompensate into PEA and participants will need to start CPR (details regarding CPR requirements can be found under 3:30 below).	HR 58 RR 40-60 PPV O ₂ sat 59% on FiO ₂ 30% HR 0 RR 0 O ₂ sat undetectable
3:00	Participants should recognize continued hypoxia and bradycardia and intubate the patient.	If intubation correctly performed, SpO ₂ improve; however, heart rate will remain below 60. If intubation is not performed, the patient will decompensate into PEA and participants will need	HR 56 RR 40-60 O ₂ sat 70% FiO ₂ 100% HR 0 RR 0



OPERATOR MATERIALS

Minute (state)	Participant action/ trigger	Patient status (simulator response) & operator prompts	Monitor display (vital signs)
		to start CPR (details regarding CPR requirements can be found under 3:30 below).	O ₂ sat undetectable
3:30	Participants should recognize continued HR<60 and initiate chest compressions.	<p>If CPR is initiated properly (1 breath per 3 compressions at a rate of 90-100 compressions/min and 30 breaths/min), the heart rate will continue to be bradycardic upon pulse check.</p> <p>If CPR is not initiated or is performed improperly, the patient will decompensate into PEA.</p> <p>PEA: If participants have failed an action above and the patient is in PEA, they can get return of spontaneous circulation through proper CPR (1 breath per 3 compressions at a rate of 90-100 compressions/min and 30 breaths/min), and return to vital signs on pulse check here on line 3:30.</p> <p>If after PEA, CPR is still not initiated or performed properly patient will decompensate into asystole and participants will be unable to resuscitate the infant. As this is a difficult outcome, instructors may want to prompt learners regarding proper CPR to avoid this outcome.</p>	<p>CPR O₂sat 72% on FiO₂ 100%</p> <p>On pulse check: HR 56 RR 40-60 O₂sat 72% on FiO₂ 100%</p> <p>HR 0 RR 0 O₂sat undetectable</p>
4:00	Participants should obtain vascular access through umbilical line.	<p>Nurse states umbilical line is working appropriately.</p> <p>If an umbilical line is not obtained, nursing will state they are unable to get an IV and ask if learners can obtain more central access.</p>	<p>Continued CPR O₂ 72% FiO₂ 100%</p> <p>On pulse check: HR 56 RR 40-60 O₂sat 72% on FiO₂ 100%</p>



OPERATOR MATERIALS

Minute (state)	Participant action/ trigger	Patient status (simulator response) & operator prompts	Monitor display (vital signs)
4:30	Participants should recheck heart rate during pulse check.	<p>If CPR is being performed properly, the clinical condition of newborn remains unchanged.</p> <p>If CPR is not initiated or is performed improperly, the patient will decompensate into PEA (see PEA on line 3:30)</p>	<p>HR 54 RR 40-60 PPV O₂sat 71% FiO₂ 100%</p> <p>HR 0 RR 0 O₂sat undetectable</p>
5:00	Participants should give IV Epinephrine 1:10,000 at 0.01 mg/kg (weight estimated at 3kg).	<p>Continue proper CPR (1 breath per 3 compressions at a rate of 90-100 compressions/min and 30 breaths/min) until pulse check.</p> <p>If epinephrine is not given, the patient will decompensate into PEA (see PEA on line 3:30)</p>	<p>HR 54 RR 40-60 PPV O₂sat 71% FiO₂ 100%</p> <p>HR 0 RR 0 O₂sat undetectable O₂ 80% FiO₂ 100%</p>
6:00	Participants should perform pulse check, cease compressions, and call for transfer.	<p>If epinephrine was given, the patient's HR will improve.</p> <p>Participants should initiate transfer process and end case.</p>	<p>HR 118 RR 40-60 PPV O₂sat 90% FiO₂ 100%</p>

Diagnosis:

Neonatal distress

Disposition:

Transfer to neonatal intensive care unit.



DEBRIEFING AND EVALUATION PEARLS

Out-of-Hospital Delivery of a Live Newborn Requiring Resuscitation

Pearls:

In a real-life situation, the staff should be split into maternal and neonatal teams prior to patient arrival when possible.

Assign clearly delineated roles and responsibilities.

If the infant is term, breathing well or crying and has good tone, routine care such as providing warmth, drying, and suctioning may occur while the infant stays with the mother.

If the baby does not meet the above, the baby should be taken to a neonatal warmer for warming, drying and stimulating.

Assess the infant using the Apgar Score which awards points based on neonatal color, tone, heart rate, respiratory effort, and reflexes (grimace and cry) at 1- and 5-minutes post-partum.

If the baby continues to have gasping respirations, is apneic, or if the heart rate is below 100bpm, positive pressure ventilation should be promptly initiated.

The baby should have preductal SpO₂ monitoring placed and, if available, cardiac monitoring.

Positive pressure ventilation should be performed at a rate of 40-60 breaths per minute with a PEEP of 5cm H₂O.

FiO₂ should begin at 21% for term infants and may be titrated up as necessary. Starting with a low FiO₂ helps to prevent oxygen free radical-induced damage to the retina and lungs.³

If the neonate continues to be bradycardic or becomes bradycardic with a heart rate below 60bpm, the baby should be intubated prior to the initiation of chest compressions.

Breaths should be coordinated with compressions at a ratio of 1 breath for every 3 compressions.

Epinephrine may be given if the heart rate does not increase to above 60bpm after one minute of compressions.⁴



DEBRIEFING AND EVALUATION PEARLS

Epinephrine dose is weight-based, an appropriate neonatal dose of epinephrine is 0.01mg/kg of 1:10,000 epinephrine, typically 0.03mg for a neonate.

Vascular access in neonates is usually obtained via an umbilical vein catheterization.

Intraosseous (IO) access is a safe and rapid alternative, placed into the proximal tibia or distal femur with care to avoid the underlying epiphyseal plates.

Other debriefing points:

Closed-loop communication among team: was it used? Why or why not? Were there any implications of this during case execution?

Closed-loop communication is vital for optimal resuscitation performance, particularly in conditions with high emotional stress, high-acuity, and low-frequency. The majority of medical errors have an underlying component of communication errors. Not only does clear communication allow for team members to all be on the “same page” by sharing a mental model, but it also allows for an additional safety check for pediatric weight-based dosing of medications. Team members can then ensure that orders are heard and executed in a timely fashion to prevent inaction or duplication of an order.

Utilizing a shared mental model by voicing where you are in the resuscitation process and next potential steps allows for summary of findings, next-step planning, and may answer unasked questions from other team members. The authors suggest that if possible, a team member is designated to obtain the NRP guideline, either through a prepared kit in the ED, computer, or smartphone, and review steps with the team leader.

An example of this model is as follows: “Okay, team, we have a 38w gestation male who still has agonal breaths and a heart rate of 80 despite positive-pressure ventilation. The oxygen saturation of 70% is to be expected so soon after birth. We will check the positive-pressure mask seal. If he continues to be apneic thirty seconds from now, we will intubate. If heart rate goes below 60bpm at any time, we will perform CPR. Questions?”

Important History or Information to Obtain/Consider

- Birth history – previous children, miscarriages, abortions, previous pregnancy/birth complications
- How many weeks gestation, how many fetuses, if there was any prenatal care
- Any complications during pregnancy



DEBRIEFING AND EVALUATION PEARLS

- Eg) Gestational hypertension, pre-eclampsia, eclampsia, gestational diabetes
- Medications taken during pregnancy
- Maternal past medical history
- Group B strep and ABO Rh status

Important Disposition Information to know about your Hospital

- Does your hospital have obstetric and pediatric services?
- If you have one, is your NICU/newborn nursery capable of caring for intubated infants?



SIMULATION ASSESSMENT

Out-of-Hospital Delivery of a Live Newborn Requiring Resuscitation

Learner: _____

Assessment Timeline

This timeline is to help observers assess their learners. It allows observer to make notes on when learners performed various tasks, which can help guide debriefing discussion.

Critical Actions

1. Warm, dry, and physically stimulate the neonate
2. Obtain a heart rate reading
3. Obtain a pre-ductal oxygen saturation level
4. Initiate positive-pressure ventilation
5. Perform intubation
6. Recognize low heart rate and appropriately perform chest compressions
7. Obtain vascular access through umbilical vein catheterization
8. Administer epinephrine via appropriate dose and route
9. Call for critical-care transfer with a facility with NICU capabilities

0:00



SIMULATION ASSESSMENT

Out-of-Hospital Delivery of a Live Newborn Requiring Resuscitation

Learner: _____

Critical Actions:

- Warm, dry, and physically stimulate the neonate
- Obtain a heart rate reading
- Obtain a pre-ductal oxygen saturation level
- Initiate positive-pressure ventilation
- Perform intubation
- Recognize low heart rate and appropriately perform chest compressions
- Obtain vascular access through umbilical vein catheterization
- Administer epinephrine via appropriate dose and route
- Call for critical-care transfer with a facility with NICU capabilities

Summative and formative comments:



SIMULATION ASSESSMENT

Out-of-Hospital Delivery of a Live Newborn Requiring Resuscitation

Learner: _____

Milestones assessment:

	Milestone	Did not achieve level 1	Level 1	Level 2	Level 3
1	Emergency Stabilization (PC1)	<input type="checkbox"/> Did not achieve Level 1	<input type="checkbox"/> Recognizes abnormal vital signs	<input type="checkbox"/> Recognizes an unstable patient, requiring intervention Performs primary assessment Discerns data to formulate a diagnostic impression/plan	<input type="checkbox"/> Manages and prioritizes critical actions in a critically ill patient Reassesses after implementing a stabilizing intervention
2	Performance of focused history and physical (PC2)	<input type="checkbox"/> Did not achieve Level 1	<input type="checkbox"/> Performs a reliable, comprehensive history and physical exam	<input type="checkbox"/> Performs and communicates a focused history and physical exam based on chief complaint and urgent issues	<input type="checkbox"/> Prioritizes essential components of history and physical exam given dynamic circumstances
3	Diagnostic studies (PC3)	<input type="checkbox"/> Did not achieve Level 1	<input type="checkbox"/> Determines the necessity of diagnostic studies	<input type="checkbox"/> Orders appropriate diagnostic studies. Performs appropriate bedside diagnostic studies/procedures	<input type="checkbox"/> Prioritizes essential testing Interprets results of diagnostic studies Reviews risks, benefits, contraindications, and alternatives to a diagnostic study or procedure
4	Diagnosis (PC4)	<input type="checkbox"/> Did not achieve Level 1	<input type="checkbox"/> Considers a list of potential diagnoses	<input type="checkbox"/> Considers an appropriate list of potential diagnosis May or may not make correct diagnosis	<input type="checkbox"/> Makes the appropriate diagnosis Considers other potential diagnoses, avoiding premature closure



SIMULATION ASSESSMENT

Out-of-Hospital Delivery of a Live Newborn Requiring Resuscitation

Learner: _____

	Milestone	Did not achieve level 1	Level 1	Level 2	Level 3
5	Pharmacotherapy (PC5)	<input type="checkbox"/> Did not achieve Level 1	<input type="checkbox"/> Asks patient for drug allergies	<input type="checkbox"/> Selects an medication for therapeutic intervention, consider potential adverse effects	<input type="checkbox"/> Selects the most appropriate medication and understands mechanism of action, effect, and potential side effects Considers and recognizes drug-drug interactions
6	Observation and reassessment (PC6)	<input type="checkbox"/> Did not achieve Level 1	<input type="checkbox"/> Reevaluates patient at least one time during case	<input type="checkbox"/> Reevaluates patient after most therapeutic interventions	<input type="checkbox"/> Consistently evaluates the effectiveness of therapies at appropriate intervals
7	Disposition (PC7)	<input type="checkbox"/> Did not achieve Level 1	<input type="checkbox"/> Appropriately selects whether to admit or discharge the patient	<input type="checkbox"/> Appropriately selects whether to admit or discharge Involves the expertise of some of the appropriate specialists	<input type="checkbox"/> Educates the patient appropriately about their disposition Assigns patient to an appropriate level of care (ICU/Tele/Floor) Involves expertise of all appropriate specialists
9	General Approach to Procedures (PC9)	<input type="checkbox"/> Did not achieve Level 1	<input type="checkbox"/> Identifies pertinent anatomy and physiology for a procedure Uses appropriate Universal Precautions	<input type="checkbox"/> Obtains informed consent Knows indications, contraindications, anatomic landmarks, equipment, anesthetic and procedural technique, and potential complications for common ED procedures	<input type="checkbox"/> Determines a back-up strategy if initial attempts are unsuccessful Correctly interprets results of diagnostic procedure

Standardized assessment form for simulation cases. JETem © Developed by: Megan Osborn, MD, MHPE; Shannon Toohey, MD; Alisa Wray, MD
 Nicholson P, et al. Out-of-Hospital Delivery of a Live Newborn Requiring Resuscitation. JETem 2019. 4(1):S41-61. <https://doi.org/10.21980/J8834M>





SIMULATION ASSESSMENT

Out-of-Hospital Delivery of a Live Newborn Requiring Resuscitation

Learner: _____

	Milestone	Did not achieve level 1	Level 1	Level 2	Level 3
20	Professional Values (PROF1)	<input type="checkbox"/> Did not achieve Level 1	<input type="checkbox"/> Demonstrates caring, honest behavior	<input type="checkbox"/> Exhibits compassion, respect, sensitivity and responsiveness	<input type="checkbox"/> Develops alternative care plans when patients' personal beliefs and decisions preclude standard care
22	Patient centered communication (ICS1)	<input type="checkbox"/> Did not achieve level 1	<input type="checkbox"/> Establishes rapport and demonstrates empathy to patient (and family) Listens effectively	<input type="checkbox"/> Elicits patient's reason for seeking health care	<input type="checkbox"/> Manages patient expectations in a manner that minimizes potential for stress, conflict, and misunderstanding. Effectively communicates with vulnerable populations, (at risk patients and families)
23	Team management (ICS2)	<input type="checkbox"/> Did not achieve level 1	<input type="checkbox"/> Recognizes other members of the patient care team during case (nurse, techs)	<input type="checkbox"/> Communicates pertinent information to other healthcare colleagues	<input type="checkbox"/> Communicates a clear, succinct, and appropriate handoff with specialists and other colleagues Communicates effectively with ancillary staff