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**EMS SKILL**

OBSTETRICAL EMERGENCY / EMERGENCY CHILDBIRTH

**NEONATAL ASSESSMENT & RESUSCITATION**

**PERFORMANCE OBJECTIVES**

Demonstrate proficiency in assessing the newborn and performing initial care and interventions as necessary.

**CONDITION**

Assess and perform the initial care of the newborn and intervene as necessary using a simulated patient. Necessary equipment will be adjacent to the manikin or brought to the field setting.

**EQUIPMENT**

Newborn manikin with umbilical cord clamped, bulb syringe, baby blankets, oxygen tank with flow meter, oxygen tubing, neonatal oxygen mask, neonatal bag-valve-mask device, stethoscope, eye protection, masks, gown, gloves.

**PERFORMANCE CRITERIA**

• Items designated by a diamond (⧫) must be performed successfully to demonstrate skill competency.

• Items identified by double asterisks (\*\*) indicate actions that are required if indicated.

• Items identified by (§) should be practiced.

• Ventilations and compressions must be at least at the minimum rate required.

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| **PREPARATION** |
| **Skill Component** | **Key Concepts** |
| ⧫ Establish body substance isolation (BSI) precautions | • Mandatory personal protective equipment – gloves |
| ⧫ Evaluate additional BSI needs | • Situational - eye protection, masks, gown |
| ⧫ Determine:• Additional resources• Specialized equipment |  |
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| **PROCEDURE** |
| **Skill Component** | **Key Concepts** |
| ⧫ Assess and support newborns body temperature:• Dry newborn completely - *if not done previously*• Keep wrapped in dry towel or blanket and keep head and body covered | • Newborns become hypothermic very easy, which can precipitate hypoglycemia, respiratory problems, increased oxygen demand, and bradycardia. • Wrapping the newborn’s head and body so that only the face is exposed assists in maintaining the body temperature of the newborn as they lose most of their heat from their head. |
| ⧫ Assess and support the airway:• Position on back or side with neck in a neutral position• Suction with bulb syringe – ***only*** *if airway is obstructed*  | • The normal respiratory and cardiovascular physiologic responses are expected to begin spontaneously within the first 15-30 seconds after birth* Hyperextension or flexion of neck may cause an airway obstruction.
* Placing a newborn on their side with the neck slightly extended allow secretions to collect in the mouth and not in the posterior pharynx.

• Aspiration of meconium stained amniotic fluid may cause pneumonia or other breathing problems. The American Heart Association (AHA) no longer recommends routine suctioning if meconium is noted unless an airway obstruction is present.• When suctioning with a bulb syringe:- make sure that the bulb syringe is compressed first before placing in the mouth and nose- place the syringe approx. 1"-1 1/2” into the mouth and no more than 1/2” into nostrils, slowly release the bulb drawing fluid into the syringe and discharge contents onto a towel. |

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| **Skill Component** | **Key Concepts** |
| ⧫ Assess breathing and circulation:• **IF PULSE < 120bpm and > 100bpm** **and breathing adequate or slow/shallow:*** Continue to dry, warm and stimulate the newborn until newborn is vigorously crying.

• **IF PULSE < 100bpm OR poor respiratory rate, effort, or persistent central cyanosis:*** Perform Bag Mask Ventilations (BMV) with room air for 90 seconds, squeeze the bag just enough to see chest rise then release; state “squeeze, release, release” to avoid hyperventilation.
* Recheck pulse every 30 seconds.
* For persistent poor respiratory rate, effort or central cyanosis, add high flow Oxygen 15L/min to BMV.

• **IF PULSE < 60bpm after BMV with high-flow Oxygen:*** Begin chest compressions at a rate of 120/min, maintain 3:1 compression to ventilation ratio (90 compressions to 30 ventilations per minute); continue for 2 minutes before pulse check

***\*\* Check pulse after initiating corrective action.*** | • The heart rate is the most reliable indicator of the newborn’s distress level. The normal newborn heart rate is 120-160/beats/minute. * Check pulse by one of the following:

- auscultate apical pulse- palpate pulse at base of umbilical cord (fastest and easiest)- palpate brachial or femoral pulse* Stimulation is accomplished by gently rubbing the back with a towel or flicking the soles of the feet.
* In a neonate that is not responding to treatment, ventilate

 for no longer than 90 seconds with room air before switching to ventilate with O2 at 15L/minute. * All newborns are vulnerable to injuries to their eyes from high concentrations of oxygen, especially preterm infants and those who were resuscitated.
* Respirations that are too fast or too slow result in insufficient breathing and oxygen delivery

• For effective BM ventilations, the mask must have a tight seal. If an appropriately sized mask is not available, a larger mask may be used. Care should be taken to avoid excessive pressure over the eyes as this can result in bradycardia.• Using minimal inflation pressures assists with increasing and maintain heart rate > 100 beats/minute. Over-inflation causes gastric distention, which will decrease tidal volume by elevating the diaphragm and resulting in hypoxia.• Color is the least important indicator of adequate circulation.* The newborn must also be assessed for activity, pulse, grimace, appearance, and respirations (APGAR).

• The APGAR score is determined at 1 minute and 5 minutes after birth. If the score is less than 7, repeat every 5 minutes for 20 minutes.• An APGAR score should not be attempted if the newborn requires resuscitation measures.* If resuscitation started on a newborn with obvious signs of fetal demise or gross deformities, BLS providers should continue resuscitative efforts during transport (unless Base contact can be made and orders are given to the contrary).
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| ⧫ Assess umbilical cord for:• Bleeding - apply sterile dressing and direct pressure - *if indicated*• Security of clamps or ties - use additional clamps or ties - *if indicated* | • Make sure clamps are secure and will not slip or the newborn may hemorrhage.• Use ties in case of an enlarged umbilical cord.• BLS units shall call for an ALS unit or transport to the most appropriate hospital. |

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| **REASSESSMENT****(Ongoing Assessment)** |
| **Skill Component** | **Key Concepts** |
| ⧫ Continually reassess about every two (2) minutes * Breathing
* Circulation
* Warmth

***\*\*Manage newborn’s condition as indicated.*** | • Assess the newborn every two (2) minutes when the newborn shows S/S of poor perfusion and oxygenation, and if there is a suspicion that the newborn’s condition may deteriorate. * Newborns are at high risk for hypothermia that can lead to bradycardia, respiratory distress, and hypoglycemia. Make every effort to keep the newborn warm. Increase the temperature in the ambulance and keep the newborn covered with only face exposed.
* Re-evaluate the newborn at least about every 2 minutes if any treatment was initiated, medication administered or if a change in condition occurred or was anticipated
* Evaluating and comparing results assists in recognizing if the newborn is improving, responding to treatment, or if their condition is deteriorating.
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| **PATIENT REPORT AND DOCUMENTATION** |
| **Skill Component** | **Key Concepts** |
| § Verbalize/Document:• Time of delivery of newborn• Sex• Problems with this pregnancy• Presence of meconium• Integrity of the cord• Condition of the newborn• Initial and ongoing assessment• Treatment rendered • Response to treatment  | • Time of delivery is the time when the newborn’s body is delivered.• Documenting reassessment information provides a comprehensive picture of patient’s response to treatment.• Last reassessment information (before patient care is transferred) should be documented in the appropriate section of the EMS form. • Documentation must be on either the Los Angeles County EMS Report form, the Departmental Patient Care Record, or ePCR. |

Developed 12/01 Revised 10/2017



OBSTETRICAL EMERGENCY / EMERGENCY CHILDBIRTH

**NEWBORN ASSESSMENT & MANAGEMENT**

**Supplemental Information**

**DEFINITIONS:**

• *Central cyanosis* - bluish color on chest, abdomen, lips, and tongue

• *Inadequate respirations* – respirations that are too fast or too slow resulting in insufficient breathing and oxygen delivery

• *Infant* - includes the neonate period to 1 year (12 months)

• *Meconium* - fetal feces that is normally passed as the newborn’s first bowel movement. However, during fetal or maternal stress,

 defecation may occur before birth

• *Newborn* - neonate in the first minutes to hours after birth

• *Neonate* - infants in first month after birth (28 days)

• *Oxygen administration* - administration of free-flow oxygen blow-by method:

 - mask - at least 5 Liters/minute, held loosely over newborn’s mouth and nose

 - blow-by (free flow) with oxygen tubing or mask - at least 5 Liters/minute, held near the nostrils

• *Peripheral cyanosis* - bluish color limited to hands and feet

• *Poor perfusion – flaccid muscle done, weak cry, bradycardia (HR < 100 beats/minute), inadequate respirations*

 *(< 40 breaths/minute), and central cyanosis*

**INDICATIONS FOR POSITIVE-PRESSURE VENTILATIONS:**

• Apnea, gasping, or inadequate respirations

• Heart rate < 100 beats/minute

**INDICATIONS FOR CARDIOPULMONARY RESUSCITATION:**

• Pulseless

• Heart rate < 60 beats/minute after positive-pressure ventilation with oxygen for 30 seconds (1/2 minute)

**NOTES:**

• Newborns must make three rapid transitions to the outside world from their protected environment in utero:

 - Changing their circulatory pattern

 - Emptying fluid from their lungs and beginning ventilation

 - Maintaining body temperature

• Four main objectives in caring for the newborn:

 - Maintain warmth. Important to dry and wrap newborn with only face exposed, they lose most of their heat from the head.

 - Continually assess respirations, heart rate, and color.

 - Maintain adequate respirations by positioning, suctioning, administration of room air or oxygen, or ventilate with a BVM as indicated

 - Provide cardiac compressions for heart rate < 60 beats/minute after positive-pressure ventilation with oxygen for 30 seconds and no improvement.

• The mother and newborn should be transported to the same facility.

• BLS units shall call for an ALS unit or transport to the most appropriate hospital as per Reference No. 510, 511 and 808

• Signs of poor perfusion are weak cry, bradycardia (heart rate < 100 beats/minute), inadequate respirations (< 40 breaths/minute), and central cyanosis.

• Hyperextension or flexion of neck may cause an airway obstruction. To maintain airway position, place a folded blanket or towel under the neck and shoulders.

• If copious secretions are present, position the newborn on their side and slightly extend the neck. This allows the secretions to collect in the mouth and not in the posterior pharynx.

• If ventilating with a BMV, use *only* enough force to allow for good chest rise. Over-inflation causes gastric distention which will affect tidal volume by elevating the diaphragm

• If ventilating with a bag-valve-mask device ventilate with room air for > than 90 seconds and there is no response to treatment, switch to O2 @ 15L/minute and re-evaluate after 30 seconds. (1/2 minute) The heart rate must be reassessed every

 30 seconds (1/2 minute).

• For blow-by method hold tubing or mask 1/2” near the nose and mouth, but keep flow away from eyes since it can dry out the conjunctiva.

• Check pulse by one of the following:

 - auscultate apical pulse

 - palpate brachial or femoral pulse

• Normal newborn heart rate is 120-160 beats/minute.

• Compression to ventilation ratio is 3 compressions to 1 ventilation.

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**NEWBORN ASSESSMENT & MANAGEMENT**

**Supplemental Information (Continued)**

• *APGAR score is assessed at 1 minute and 5 minutes and if score is less than 7, it is repeated every 5 minutes for 20 minutes.*

***DO NOT ASSESS APGAR IF RESUSCITATION MEASURES ARE NEEDED.***

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| **APGAR SCORE** |
| **Evaluation Factor** | **Findings** | **Score** |
| Appearance (color) | - cyanotic or pale- blue hands and feet with pink body- extremities and trunk pink | 0 points1 point2 points |
| Pulse | - no pulse- < 100/ minute- > 100/minute | 0 points1 point2 points |
| Grimace (reflex irritability) | - no reflex to stimulation- slight reflex to stimulation- grimace, cough, sneeze, or cry in response to stimulation | 0 points1 point2 points |
| Activity (extremity movement, degree of flexion and resistance to straightening them) | - limp, no extremity movement- some flexion with no movement- actively moving | 0 points1 point2 points |
| Respirations | - no respiratory effort- slow, irregular effort with weak cry- good effort with strong cry | 0 points1 point2 points |
|  7-10 points = normal - provide routine care  4-6 points = moderately depressed - provide stimulation and oxygen 0-3 points = severely depressed - provide CPR and BVM ventilations |

****The inverted pyramid reflects the frequencies for neonatal resuscitation

 **Always needed**

 **Infrequently needed**

 **Rarely needed**

**• Always assess and manage:**

 Temperature (warm & dry)

 Airway (position & suction if indicated)

 Breathing (stimulate to cry if indicated)

 Circulation (heart rate & color) A***merican Heart Association Pyramid***

 **Neonatal Resuscitation**