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***Pediatric Newborn Assessment, Treatment and Resuscitation***

This protocol should be followed for all newly born infants.

**Pre-Medical Control**

**MFR/EMT/SPECIALIST/PARAMEDIC**

1. **Immediately after birth, rapidly evaluate each of these three (3) criteria:**
  - A. Is this a full term delivery?
  - B. Is the newborn breathing or crying
  - C. Is there good muscle tone? (vigorous vs. limp)
  
2. **If the observation to ALL 3 criteria is YES:**
  - A. Place the baby with the mother (preferably skin to skin)
  - B. Dry the baby
  - C. Provide warmth (See Preventing Heat Loss below)
  - D. Clear the airway if necessary (See Airway Management below)
  - E. Clamp and cut the umbilical cord (see Umbilical Cord Management below)
  - F. Provide ongoing evaluation
  - G. Record APGAR scores at 1, 3 and 5 minutes (see APGAR chart)
  - H. Encourage breastfeeding to stimulate placental delivery
  
3. **If the observation to ANY of the 3 criteria is NO:**
  - A. Dry the baby and provide warmth (See Preventing Heat Loss below)
  - B. Clear the airway if necessary (see Airway Management below)
  - C. Stimulate the baby by rubbing the back or thumping soles of the feet.
  
4. **Check Heart Rate & Breathing**
  - A. Assess adequacy of breathing and palpate the base of the cord at the umbilicus to assess heart rate.
  - B. Non-labored breathing and no cyanosis
    - a. HR 100+- assure warmth and observe to ensure baby is transitioning well.
    - b. HR below 100, assist ventilations using infant bag valve mask (see Airway Management below)
    - c. Monitor SpO<sub>2</sub> (see Target SpO<sub>2</sub> goals below)
  - C. Apnea, labored breathing or persistent cyanosis
    - a. Clear airway
    - b. Monitor SpO<sub>2</sub> (see target SpO<sub>2</sub> goals)
    - c. Assist ventilations via BVM if HR below 100 or core cyanosis

**Michigan**  
**Pediatric Treatment Protocols**

**PEDIATRIC NEWBORN ASSESSMENT, TREATMENT & RESUSCITATION**

Date: July 18, 2014

Page 2 of 5

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**5. Reevaluate HR**

- A. HR100+ see 4.B. above.
- B. HR Below 100 but greater than 60: continue to support ventilations
- C. HR Under 60:
  - a. Begin compressions at 3:1 ratio (See CPR below)
  - b. Coordinate compressions with ventilations

**6. Reevaluate HR**

- A. 100+: monitor closely to ensure stability of transition
- B. Below 100 but more than 60: continue to support ventilations
- C. HR Below 60: Continuous CPR at 3:1

**SPECIALIST/PARAMEDIC**

- D. If HR begins to decline or cyanosis worsens despite ventilatory support, consider intubation
- E. Establish IO or IV
- F. Reevaluate

**PARAMEDIC**

- G. Provide epinephrine (1:10,000) 0.01mg/kg IO or IV

**7. Other considerations**

**SPECIALIST/PARAMEDIC**

- A. If known blood loss, consider Normal Saline bolus 10mL/kg IV/IO.
- B. Evaluate blood glucose, if < 60 mg/dl administer dextrose 10% (1 gm/10 ml), 0.2 gm/kg IV/IO.
- C. To obtain 10 % Dextrose mixture draw 40 ml out of one amp of D50 and discard, then add 40 ml of NS.
- D. If known or suspected narcotics use by the mother, consider naloxone 0.1mg/kg IO or IV

**MFR/EMT/SPECIALIST/PARAMEDIC**

**8. Preventing Heat Loss:**

- A. Dry off amniotic fluid and remove all wet linen.
- B. Maintain a warm environment for the infant
- C. Rubber gloves filled with warm water (if available) can serve as heat packs. DO NOT apply directly to skin.
- D. Extreme CAUTION should be used if chemical heat packs are used to provide warmth. Never place directly on or near the infant's skin. Keep multiple layers between to avoid burns.

**9. Airway Management**

- A. If the newborn is vigorous (strong respiratory effort, good muscle tone, and a heart rate > 100 bpm), there is no need to suction the airway, even if meconium was in the amniotic fluid or there was meconium staining.
- B. Positive pressure ventilation should use the minimum volume and pressure to achieve perceptible chest rise and/or achieve or maintain a HR>100.

**PARAMEDIC**

- C. If there is visible meconium in the airway and the newborn is having difficulty breathing, has poor muscle tone, or has a heart rate less than 100bpm
  - a. The patient should be intubated and the lower airway suctioned via ET tube (with LOW PRESSURE (80-120mmHg) suction to the tube)
  - b. Repeat suction with new tube each time.
- D. Consider placing a gastric tube, if available, to decompress the stomach when positive pressure ventilation is required.
- E. If intubation is indicated due to ongoing and persistent central cyanosis, lack of chest rise or other complication, despite adequate ventilation:
  - a. SpO2 must be measured
  - b. Waveform capnography must be used if available
  - c. Consider potential for pneumothorax

**MFR/EMT/SPECIALIST/PARAMEDIC**

**10. CPR**

- A. Two thumbs encircling the chest technique is preferred. Compressions and ventilations should occur in a 3:1 ratio and should be done quickly enough to provide 90 compressions and 30 ventilations per minute.
- B. Newborns who have required resuscitation are at risk for deterioration even after a return to normal vital signs, reassess frequently
- C. Avoid excessive volume or rate with ventilation.

**11. Umbilical Cord Management**

- A. The umbilical cord **should not** be cut immediately; wait until the child is breathing adequately, the cord has stopped pulsating or, in the vigorous infant, a minimum of two to three minutes post delivery. When prepared to cut the cord, it must be tied or clamped approximately 8” from the infant’s abdominal wall with a second tie or clamp 2” further. The cord should be cut between the ties / clamps.

**12. Target SpO2 Goals**

- A. Monitor SpO2 and apply oxygen only if SpO2 goes below target of :

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**PEDIATRIC NEWBORN ASSESSMENT, TREATMENT & RESUSCITATION**

Date: July 18, 2014

Page 4 of 5

- 1 minute post delivery (60-65%)
- 3 minutes post delivery (70-75%)
- 5 minutes post delivery (80-85%)

**10 minutes post delivery (85-95%) APGAR SCORING**

Sign	0	1	2
Appearance – skin color	Bluish or paleness	Pink or ruddy; hands or feet are blue	Pink or ruddy; entire body
Pulse – heart rate	Absent	Below 100	Over 100
Grimace – reflex irritability to foot slap	No response	Crying; some motion	Crying; vigorous
Activity – muscle tone	Limp	Some flexion of extremities	Active; good motion in extremities
Respiratory effort	Absent	Slow and Irregular	Normal; crying

NOTE: Resuscitation may not be appropriate in rare cases where gestational age (confirmed gestational age <20 weeks) or fatal birth defects (for example anencephaly or absence of skull bones and brain hemispheres) are consistently associated with certain early death. Contact Medical Control in these cases.

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**Pediatric Treatment Protocols**

**PEDIATRIC NEWBORN ASSESSMENT, TREATMENT & RESUSCITATION**

Date: July 18, 2014

Page 5 of 5

