Neonatal Resuscitation

EMS Medical Director:
Signature on File
EMS Administrator:
Signature on File

History
- Due date and gestational age
- Multiple gestation (twins, etc.)
- Meconium
- Delivery difficulties
- Congenital disease
- Medications (maternal)
- Maternal risk factors (substance abuse, smoking)

Signs and Symptoms
- Just born
- Uncut umbilical cord
- Respiratory distress
- Peripheral cyanosis or mottling (normal)
- Central cyanosis or mottling (abnormal)
- Altered level of responsiveness
- Bradycardia

Differential
- Airway failure (secretions, respiratory drive)
- Infection
- Maternal medication effect
- Hypovolemia
- Hypoglycemia
- Congenital heart disease
- Hypothermia

Term gestation?
Breathing or crying?
Good muscle tone?

Yes → E: Provide warmth/dry infant; Clear airway if necessary; Monitor and reassess

No → E: Warm, dry, and stimulate; Clear airway if necessary

AT ANY TIME

Return of spontaneous circulation

Go to Post Resuscitation TG

Targeted Right Upper Extremity SpO_2 after Birth

1 min	60%- 65%
2 min	65%- 70%
3 min	70%- 75%
4 min	75%- 80%
5 min	80%- 85%
10 min	85%- 95%

Heart rate > 100

E: Warm, dry, and stimulate; Clear airway if necessary; Monitor and reassess

Heart rate < 100 *or* Labored breathing or persistent cyanosis

E: Supplemental oxygen; BVM ventilations *40-60 breaths/min*; Maintain warmth

P A: Cardiac monitor

Heart rate < 60

E: Supplemental oxygen; Begin chest compressions 3:1 ratio

A: Cardiac monitor; IV/IO procedure; **Normal saline bolus 20mL/kg** for Hypovolemia

P: **Epinephrine 1:10,000 IV/IO 0.01mg/kg (0.1mL/kg)** every 3-5 minutes as needed to a max dose of 3

Notify receiving facility. Contact Base Hospital if needed

Pediatric Treatment Protocols

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Neonatal Resuscitation

- Neonatal cardiac arrest is predominantly caused by asphyxia; so maintain the C-A-B resuscitation sequence with a 3:1 compression-to-ventilation ratio.
- Once positive-pressure ventilation (PPV) or supplementary oxygen administration is begun, assessment should consist of simultaneous evaluation of 3 clinical characteristics: heart rate, respiratory rate, and evaluation of the state of oxygenation. State of oxygenation is optimally determined by a pulse oximeter rather than by simple assessment of color.
- Pulse oximetry, with a probe attached to the right upper extremity, shall be used to assess any need for supplementary oxygen. For babies born at term, it is best to begin resuscitation with air rather than 100% oxygen. Administration of supplementary oxygen, using "blow-by" method, should be guided by oximetry monitored from the right upper extremity (i.e., usually the wrist or palm).
- Suctioning immediately after birth (including suctioning with a bulb syringe) should be reserved for babies who have an obvious obstruction to spontaneous breathing or require positive-pressure ventilation.
- Positive-pressure ventilation should be administered with sufficient pressure to increase the heart rate or create chest expansion; excessive pressure can seriously injure the pre-term lung.
- If the heart rate is less than 60/min despite adequate ventilation, chest compressions are indicated. Because ventilation is the most effective action in neonatal resuscitation and because chest compressions are likely to compete with effective ventilation, rescuers should ensure that assisted ventilation is being delivered optimally before starting chest compressions.
- The ability to maintain temperature in prehospital settings after birth is a significant problem with a dose dependent increase in mortality for temperatures below 37°C or 98.6°F. Premature newborns are at a much higher risk than those born at term. Simple interventions to prevent hypothermia between birth and arrival to hospital reduce mortality. During transport warm and maintain normal temperature, being careful to avoid

Pearls

- **Most newborns requiring resuscitation will respond to ventilation/BVM, compressions, or Epinephrine. If not responding, consider hypovolemia, pneumothorax, or hypoglycemia (< 40mg/dl).**
- **Transport mother WITH infant whenever possible.**
- **Do not place hot packs directly on baby's skin as it may cause severe burns.**
- Common pediatric terms used to describe children are defined as:
  - Newly born are ≤ 24 hours old
  - Neonates are ≤ 28 days old
  - Infants are ≤ 1 year old
- Term gestation, strong cry/breathing and with good muscle tone generally will need no resuscitation.
- Most important vital signs in the newly born are respirations/respiratory effort and heart rate.
- Place baby skin-to-skin on mother.
- It is extremely important to keep an infant warm.
- Maternal sedation or narcotics will sedate an infant.
- Naloxone is no longer recommended for use in the newly born who may be sedated from maternal medications.

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