

Research Article

EFFECTIVE RESUSCITATION TECHNIQUES IN NEONATAL

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ABSTRACT

Neonatal Resuscitation is an intervention after a baby is born to help breathe and heart beat. However, an approximate 5% to 10% of the newly born population requires some degree of active resuscitation at birth (e.g., stimulation to breathe), and 1% to 10% born in the hospital are reported to requires assisted ventilation.

Keywords: Resuscitation, ventilation, Breathe, Chest compressions.

INTRODUCTION



Newborn Resuscitation is a challenging task, needs an expertise skills to save the life Newborns. The term “newly born” refers specifically to the infant in the first minutes to hours after birth. The term “neonate” is generally defined as an infant during the first 28 days of life. Infancy includes the neonatal period and extends through 12 months of age. However all the newborns doesn’t require support for developing the spontaneous respiration but few newborns need the some degree of resuscitation with ventilation during birth.



Neonatal Resuscitation is an intervention after a baby is born to help breathe and heart beat. An approximately, 5% to 10% of the newly born population requires some degree of active resuscitation at birth (e.g., stimulation to breathe), and 1% to 10% born in the hospital are reported to requires assisted ventilation. Neonatal resuscitation can be divided into 4 categories of action:

- Basic steps, including rapid assessment and initial steps in stabilization
- Ventilation, including bag-mask or bag-tube ventilation.
- Chest compressions.
- Administration of medications or fluids.



Normal Physiology of Newborn

The transition from fetal to extra uterine life is characterized by a series of unique physiological events: the lungs change from fluid-filled to air filled, after the baby is delivered, the baby normally takes a deep breath resulting in the clearing of lung fluid, dilation of the pulmonary vessels so that gas exchange can occur, pulmonary blood flow increases dramatically and intra cardiac and extra cardiac shunts (foramen ovale and ductus arteriosus) initially reverse direction and subsequently close. Such physiological considerations affect resuscitative interventions in the newly born.

Equipments Needs for Neonatal Resuscitation

- 2 Dry Towels
- Warm Linen

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- Press rubber bulb, or Oral Suction
- Feeding tube (5&6 R)
- Mucus trap
- Plastic Oral airway
- Stethoscope
- Needles (24)
- Shoulder roll (1.5" to 2.2") diameter
- Disposable syringes
- O2 tubing and cylinder
- Masks (0,1)
- Resuscitation bag
- Scissors
- Masks (0,1)
- Roll of adhesive plaster
- Warmer

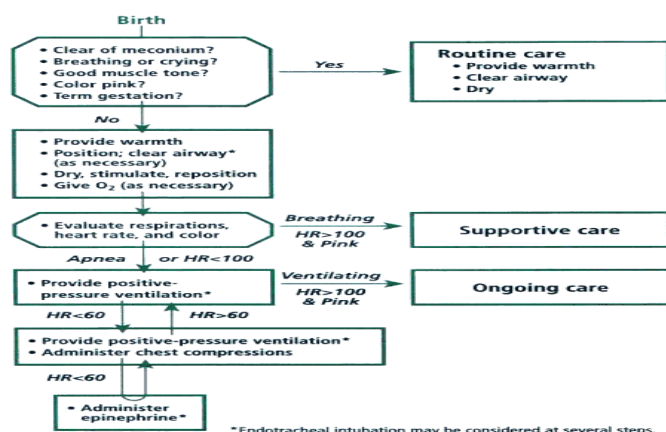
Initial Assessment of Baby

Most newly born infants will respond to the stimulation of the extra uterine environment with a vigorous cry, and movement of all extremities. If these responses are intact, color improves steadily from cyanotic or dusky to pink, and heart rate can be assumed to be adequate. However, the infant who responds vigorously to the extra uterine environment and who is term can remain with the mother to receive routine care (warmth, clearing the airway, drying). Indications for further assessment under a radiant warmer and possible intervention include:

- Meconium in the amniotic fluid or on the skin
- Absent or weak responses
- Persistent cyanosis
- Preterm birth

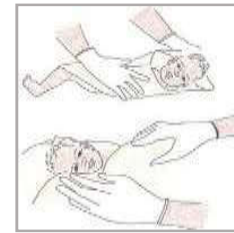


Techniques of Resuscitation Process



Warmth

As soon as the baby is born, the baby should be dried using the clean warm cloth and the wet cloth should be discarded and the baby should be wrapped in a dry pre warmed cloth including the head. Baby should be kept in radiant warmer, if there is no radiant warmer than baby should be kept in warm area.



Clearing the Airway

The infant's airway is cleared by positioning of the infant and removal of secretions if needed.

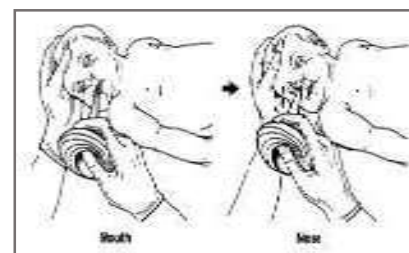
Positioning

The newly born infant should be placed supine or lying on its side, with the head in a neutral or slightly extended position. A blanket or towel placed under the shoulders may be helpful in maintaining proper head position.



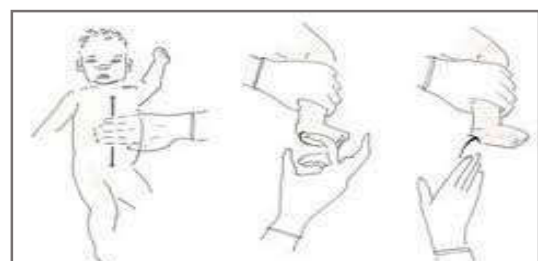
Suctioning

If time permits, the person assisting delivery of the infant should suction the infant's nose and mouth with a bulb syringe after delivery of the shoulders but before delivery of the chest. Secretions may be wiped from the nose and mouth with gauze or a towel. If suctioning is necessary, clear secretions first from the mouth and then the nose with a bulb syringe or suction catheter (8F or 10F).



Tactile Stimulation

Drying and suctioning produce enough stimulation to initiate effective respirations in most newly born infants. If an infant fails to establish spontaneous and effective respirations after drying with a towel or gentle rubbing of the back, flicking the soles of the feet may initiate spontaneous respirations.



Oxygen Administration

Hypoxia is nearly always present in a newly born infant who requires resuscitation. Therefore, if cyanosis, bradycardia, or other signs of distress are noted in a breathing newborn during stabilization, administration of 100% oxygen is indicated while determining the need for additional intervention. The oxygen source should deliver at least 5 L/min, and the oxygen should be held close to the face to maximize the inhaled concentration. However, the goal of supplemental oxygen use should be normoxia; sufficient oxygen should be administered to achieve pink color in the mucous membranes.



Evaluation

There is no need to count the respiration, but the rhythm and regularity should be checked for. However, the baby should be breathing regularly and comfortably. The heart rate should be evaluated for 6 seconds and multiply by 10 if heart rate is > 100bpm than go for general care but if HR is <100bpm than proceed to next step.

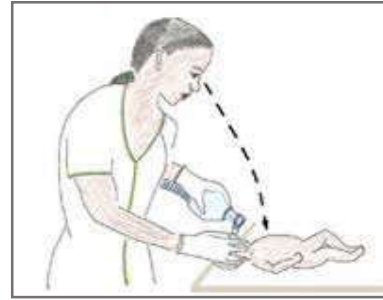
Bag and Mask Ventilation

Most, newly born infants who require positive-pressure ventilation can be adequately ventilated with a bag and mask. Indications for positive pressure ventilation include apnea or gasping respirations, heart rate <100bpm, and persistent central cyanosis despite 100% oxygen. In addition that the assisted ventilation rate should be 40 to 60 breaths per minute. Signs of adequate ventilation include bilateral expansion of the lungs, as assessed by chest wall movement and breath sounds, and improvement in heart rate and color. If ventilation is inadequate, check the seal between mask and face, clear any airway obstruction (adjust head position, clear secretions, open the infant's mouth), and finally increase inflation



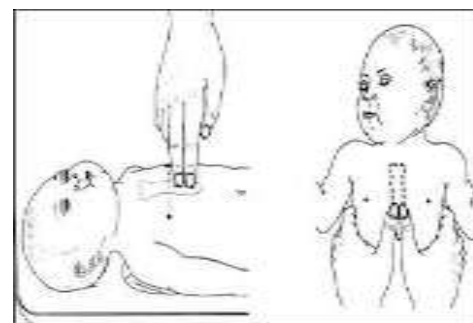
pressure. Prolonged bag-mask ventilation may produce gastric inflation; this should be relieved by insertion of an 8F orogastric tube that is aspirated with a syringe and left open to air. If such maneuvers do not result in adequate ventilation, endotracheal intubation should follow. After 30 seconds of adequate ventilation with 100% oxygen, spontaneous breathing and heart rate should be checked. If spontaneous respirations are present and the heart rate is ≥ 100 bpm, positive-pressure ventilation may be gradually reduced and discontinued. Gentle tactile stimulation may help maintain and improve spontaneous respirations while free-flow oxygen is administered. If spontaneous respirations are inadequate or if heart

rate remains below 100bpm, assisted ventilation must continue with bag and mask or tracheal tube. If the heart rate is <60bpm, continue assisted ventilation, begin chest compressions, and consider endotracheal intubation.



Chest Compressions

Moreover, Asphyxia causes peripheral vasoconstriction, tissue hypoxia, acidosis, poor myocardial contractility, bradycardia, and eventually cardiac arrest. Establishment of adequate ventilation and oxygenation will restore vital signs in the vast majority of newly born infants. In deciding when to initiate chest compressions, consider the heart rate, the change of heart rate, and the time elapsed after initiation of resuscitative measures. The general indication for initiation of chest compressions is a heart rate <60bpm despite adequate ventilation with 100% oxygen for 30 seconds. However, compressions should be delivered on the lower third of the sternum. Acceptable techniques are (1) 2 thumbs on the sternum, superimposed or adjacent to each other according to the size of the infant, with fingers encircling the chest and supporting the back (the 2 thumb-encircling hands technique), and (2) 2 fingers placed on the sternum at right angles to the chest with the other hand supporting the back. Recommend compression to approximately one third the depths of the chest, but the compression depth must be adequate to produce a palpable pulse. However, delivery compressions smoothly. There should be a 3:1 ratio of compressions to ventilations, with 90 compressions and 30 breaths to achieve approximately 120 events per minute. Reassess the heart rate approximately every 30 seconds. Continue chest compressions until the spontaneous heart rate is ≥ 60 bpm.



Discontinuation of Resuscitation

Discontinuation of resuscitative efforts may be appropriate if resuscitation of an infant with cardio respiratory arrest does not result in spontaneous circulation in 15 minutes. Resuscitation of newly born infants after 10 minutes of a systole is very unlikely to result in survival or survival without severe disability We recommend local discussions to formulate guidelines consistent with local resources and outcome data.

Post Resuscitation are and Complications

Continuing Care of the Newly Born Infant after Resuscitation. However, supportive or ongoing care, monitoring, and appropriate

diagnostic evaluation are required after resuscitation. In addition, once adequate ventilation and circulation have been established, the infant is still at the risk and should be maintained or transferred to an environment in which close monitoring and anticipatory care can be provided. Moreover, post resuscitation monitoring should include monitoring of heart rate, respiratory rate, administered oxygen concentration, and arterial oxygen saturation, with blood gas analysis as indicated. Document blood pressure and check the blood glucose level during stabilization after resuscitation. Consider ongoing blood glucose screening and documentation of calcium. A chest radiograph may help elucidate underlying causes of the arrest or detect complications, such as Pneumothorax. Additional post resuscitation care may include treatment of hypotension, treatment of possible infection or seizures, initiation of appropriate fluid therapy, and documentation of observations and actions.

CONCLUSION

Although most of the Newborns are born in good condition. But a small number of New Born would requires resuscitation at birth. Thus, personnel attending to delivery should be well versed and skillful in resuscitation of newborn infants. However, who needs vigorous resuscitation are need to be admitted to the neonatal unit for further monitoring and management.

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