

Deaconess

PURPOSE

To improve the stabilization of the neonate in order to reduce neonatal morbidity and mortality.

DEFINE

Neonate = baby < 28 days old

POLICY

1. Appropriately trained staff in neonatal resuscitation (NRP) will be notified of impending delivery or neonate in need of resuscitation.
2. Equipment needed for effective neonatal resuscitation will be obtained and available
3. Notify Deaconess Women's Hospital Neonatal Transport/ Neonatology consultation:
812-598-6428 (NICU)
4. Clinical staff will participate annually in education related to neonatal resuscitation – NRP and S.T.A.B.L.E.

EQUIPMENT (best practice)

Initial resuscitation supplies are available and should include:

1. Radiant warmer, heated and ready for use- *alternative option – isolette*
2. Bag and mask or T-piece resuscitator connected to blended oxygen supply (preferred), where neonatal resuscitation will take place
- 3.
4. Both newborn and premature masks available
5. Cord clamp, tie and scissors or scalpel
6. Bulb syringe
7. 6, 8 and 10F French suction catheter
8. Infant hat
9. Warm blankets

***See Appendix B for documentation record ***

In addition- for premature or unknown gestation:

8. Warming mattress (<32 weeks gestation)
9. Polyethylene bag (<32 weeks gestation)
10. "Jiffy Pop" pop - hat (<32 weeks gestation)

PROCEDURE

INITIAL STEPS

1. Initial steps should be completed in 30 seconds as follows:
 - a. For term neonate: place on pre-warmed radiant warmer, dry thoroughly, and remove wet linen to prevent heat loss. Dry head and put on infant hat.
 - b. For preterm neonate or suspected less than 32 weeks gestation, activate warming mattress, place *clear side down* and cover with thin infant blanket. Place neonate on warming mattress and directly inside polyethylene bag **before** – do not dry infant. Gently dry head and put on jiffy pop hat.
 - c. Position infant's head in sniffing position to assure open airway, gently suction mouth and nose with bulb syringe.
 - d. Use tactile stimulation if needed to initiate breathing for an infant with primary apnea. Slapping the foot or rubbing the back should be sufficient to reverse primary apnea.

ASSESS CONDITION

2. Observe infant's respirations and heart rate and make decisions regarding further step; utilizing NRP algorithm. ***see Appendix A***
 - a. If infant appears term, is breathing spontaneously without difficulty, and heart rate is above 100 beats per minute, continue to offer supportive care while positioning the infant on mother in proper skin to skin holding position, covered with warm blanket and hat.
 - 1) If hands and feet are cyanotic, continue to observe.
 - 2) If central cyanosis is observed, place pulse oximeter probe on the infant's right hand or wrist to measure pre-ductal saturation.
 - 3) Monitor infant's oxygen saturation and provide supplemental oxygen if needed to achieve the minute by minute target values for pre-ductal saturations
 - 4) Pulse oximetry is indicated when:
 - a) Resuscitation is anticipated
 - b) PPV is required for more than a few breaths
 - c) Central cyanosis is persistent or confirmation of central cyanosis
 - d) Supplemental blended oxygen is administered

VENTILATIONS

3. a. Ventilation with bag and mask or T-piece resuscitator and blended oxygen (preferred) is necessary when:
 - 1) The infant is in secondary apnea or has gasping respirations after the initial steps have been completed, or

- 2) Respirations are established but heart rate is below 100 beats per minute.
- b. Recheck infant's position to assure an open airway. The head should be in sniffing position.
- e. Observe the infant for chest movement when providing positive pressure ventilation with either the T-piece resuscitator or ambu bag.
 - 1) The infant should appear to display shallow or "easy" breaths.
 - 2) If there is no chest rise, try the following steps in order until the chest expands:

"MR SOPA"

M - mask: Adjust mask to assure good seal

R - reposition head (sniffing position)

S - suction mouth and nose

O - open mouth

P- pressure - Increase pressure until chest rises. Initial pressures on manometer should be at 20 cm/H₂O pressure for all infants and pressure increases should be done incrementally in 2-3 cm H₂O pressure each time it is decided to increase pressure.

A- airway- If clinician skilled in neonatal intubation is available -consider airway alternative (ET tube)
- f. When chest rise is present, continue to ventilate at the rate of 40-60 breaths per minute while monitoring the amount of positive pressure on manometer until the infant responds. Clinician providing positive pressure ventilations with T-piece resuscitator or ambu bag should communicate aloud the rate of ventilations which is breathe- two- three, breathe- two- three, etc.
- g. Effective positive pressure ventilations should be done for 30 seconds before checking the heart rate.

CHEST COMPRESSIONS

5. a. Initiate chest compressions if heart rate is below 60 and **after 30 seconds of effective positive pressure ventilation** (defined by visible chest rise) **with 100% oxygen**.
- b. A second person is needed to perform chest compressions and may use the two-finger method or the two thumbs encircling the chest method. The thumb method is preferred.
- c. The sternum should be compressed at the rate of 100 times a minute, to a depth of 1/3 of the anterior-posterior diameter of the chest.
- d. Chest compressions and ventilations must be well coordinated with the compressor communicating the rate by stating one, and two, and three and breathe, at which time a quick pause in compressions is given for the clinician providing positive pressure ventilations can give a breath. Repeat this cadence for compression and ventilations.

- e. After at least 45-60 seconds of chest compressions coordinated with ventilations, check the heart rate. If it is below 60, continue compressions and ventilations. If it is 60 or greater, discontinue compressions but continue ventilations with oxygen.
- f. Reassess heart rate every 45-60 seconds, making decisions based on the rate.
- g. Endotracheal intubation can be performed by a clinician skilled in neonatal intubation, if positive pressure ventilation is not resulting in clinical improvement, chest compressions are being performed, or resuscitation medications are anticipated.
- h. Further resuscitation efforts should be guided by NRP guidelines and through consultation with The Women's Hospital's neonatology team

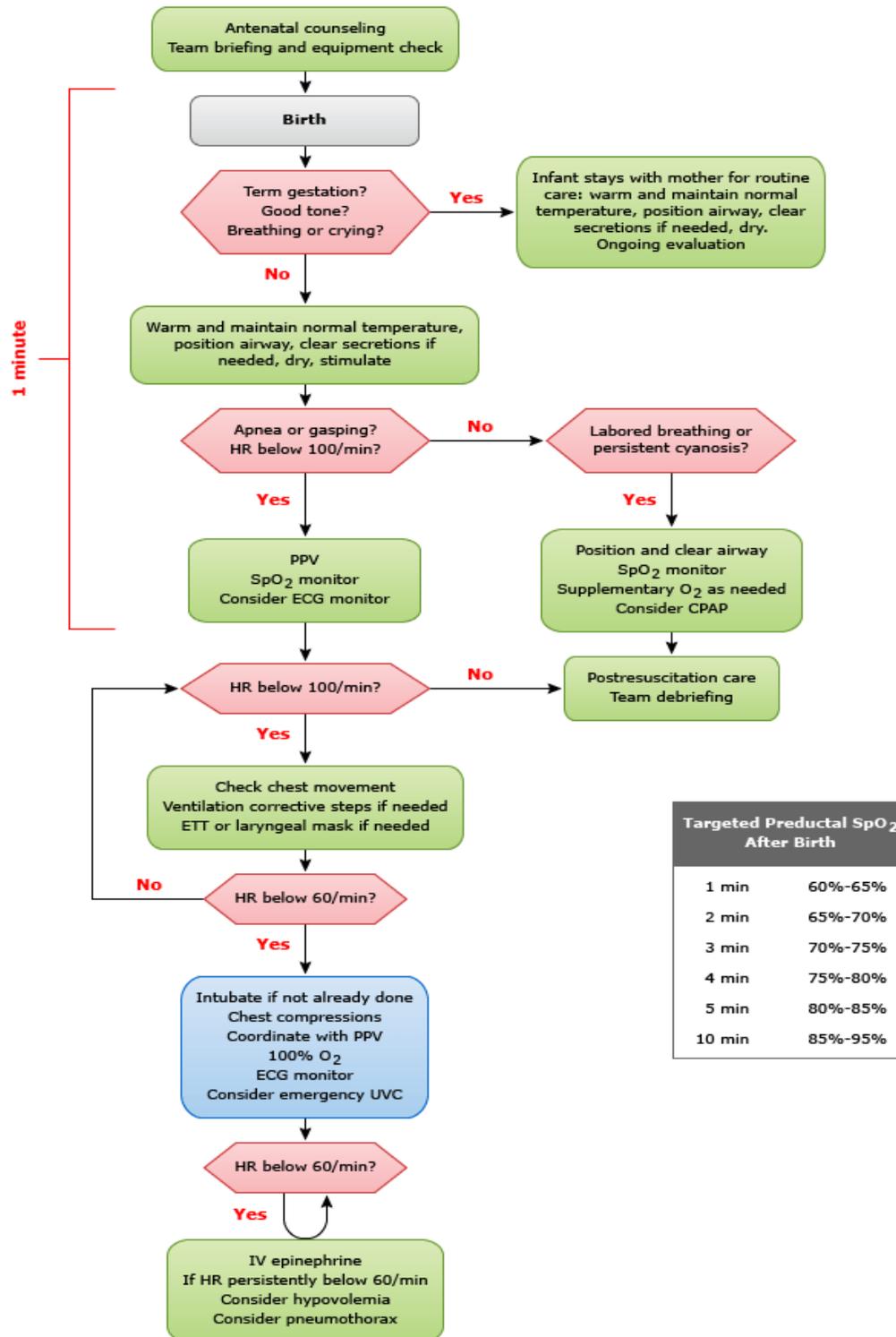
REFERENCE

Barss, V. MD, *Precipitous Birth not Occurring on a Labor and Delivery Unit* . March 28, 2021. UpToDate, INC.

UpToDate.com

Textbook of Neonatal Resuscitation. 7th Edition (2016). American Academy of Pediatrics

Neonatal resuscitation algorithm



HR: heart rate; SpO₂: oxygen saturation measured by pulse oximetry; ECG: electrocardiogram; CPAP: continuous positive airway pressure; min: minute; ETT: endotracheal tube; PPV: positive pressure ventilation; UVC: umbilical vein catheter; IV: intravenous.

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Information still current as of 2020, as found in: Aziz K, Lee HC, Escobedo MB, et al. Part 5: Neonatal Resuscitation: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Pediatrics 2020; 142:S524.

Appendix B - DOCUMENTATION RECORD

Mother's patient label

Delivery Data and time _____ male female

Expected gestational age _____ Delivery position _____ Amniotic fluid color / odor _____

Nuchal cord x _____ Meconium present at birth _____ Was Cord blood collected yes No

Birth weight ____ lbs. ____ oz. / _____ grams

Vitals Temp: ____ HR: ____ RR: ____ O2 Sat: ____ @ how many minutes ____

Skin to Skin initiated at (time) _____ If not, for what reason _____

Delivery Complications: _____

Resuscitation at Delivery

- Warm, dried, stimulated, positioned, and suctioned for at least 30 sec. - no further action needed
- No response to above - Positive pressure ventilation ____ min.
 - After 30 seconds of effective ventilation- HR ____
- After 30 sec of chest rise with PPV and no increase in heart rate – Chest compressions initiated ____ min.