Neonatal Resuscitation Guidelines 2005: Salient Changes

Deepak Chawla, Ashok Deorari, Division of Neonatology, Department of Pediatrics, All India Institute of Medical Sciences, Ansari Nagar, New Delhi-110029
ashokdeorai_56@hotmail.com

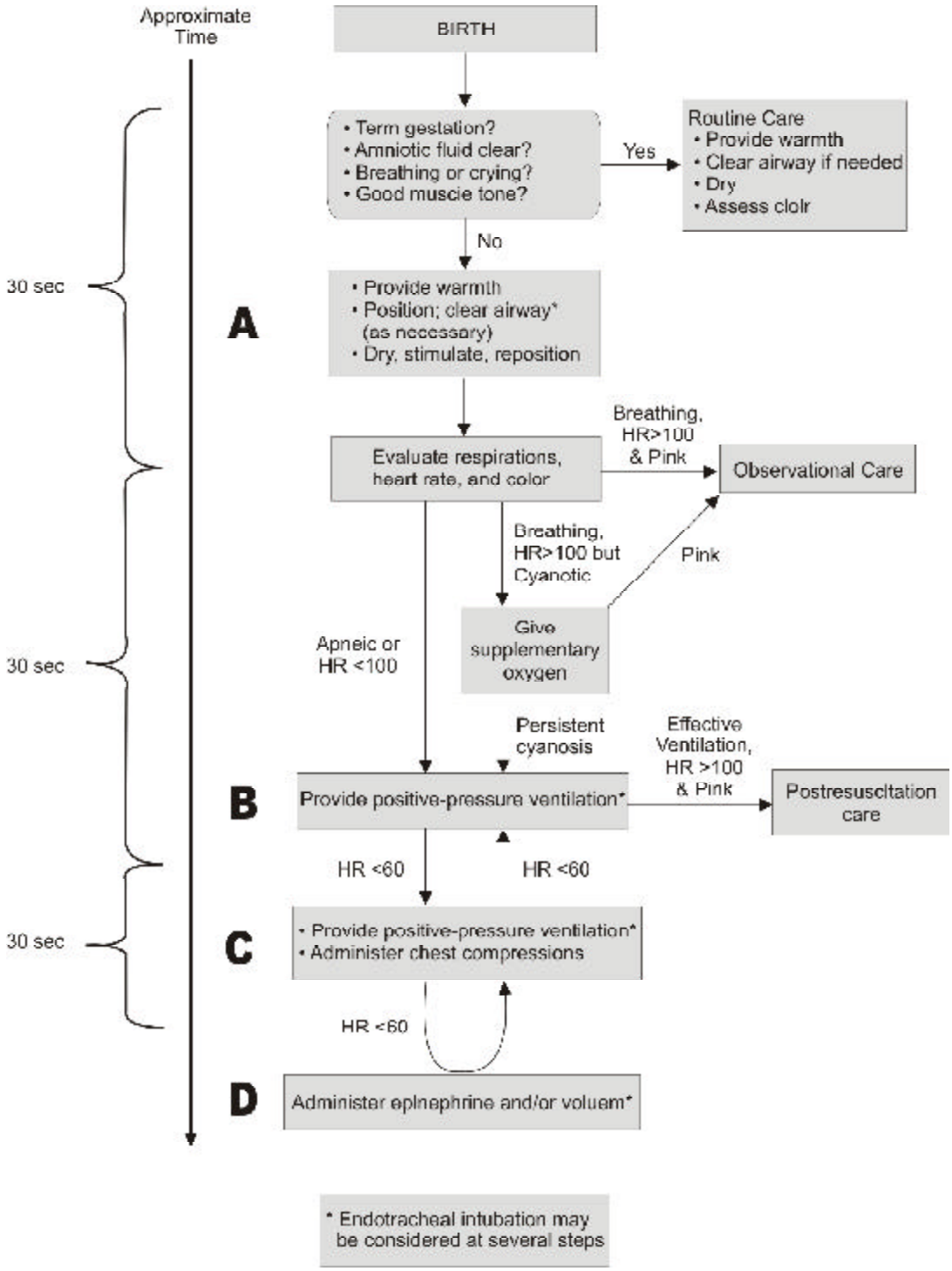
Revised guidelines for neonatal resuscitation have been released by American Heart Association- American Academy of Pediatrics.[1] Following table outlines the salient differences as compared to previous guidelines.[2] These guidelines will be released in the form of a textbook by AHA-AAP late spring next year.

AAP AHA 2000 guidelines[3]	AAP AHA 2005 guidelines[1,4]
Initial steps	
1. If answer to any of these questions is no then proceed to initial steps. If answer to all is yes, then provide routine care. Ask 5 questions. 1.1. Full term? 1.2. Clear of meconium? 1.3. Breathing or crying? 1.4. Good muscle tone? 1.5. Pink?	1. If answer to any of these questions is no then proceed to initial steps. If answer to all is yes, then provide routine care . Ask 4 questions 1.1. Full term? 1.2. Clear of meconium & no evidence of infection? 1.3. Breathing or crying? 1.4. Good muscle tone?
2. Temperature control in preterm neonates 2.1. Need of more assistance for maintaining normal temperature recognized	2. Temperature control in preterm neonates 2.1. Recognizes that VLBW neonates likely to be hypothermic despite use of conventional techniques 2.2. Additional warming techniques should be used like plastic wrapping and monitor for development of hyperthermia
3. Initial steps include supplemental oxygen if needed.	3. Initial steps do not include giving supplemental oxygen. Highlighted as a separate next step. (See flow chart). If cyanosis persists despite free flow oxygen give positive pressure ventilation.
Meconium stained liquor	
1. In case of meconium stained liquor, before delivery of shoulders routine intrapartum oropharyngeal and nasopharyngeal suctioning should be done	1. Routine intrapartum oropharyngeal and nasopharyngeal suctioning of babies born through meconium stained liquor no longer advisable

Oxygen 1. Use of 100% oxygen is recommended when baby is cyanotic or when positive pressure ventilation is required during neonatal resuscitation. 2. In situations where 100% oxygen is not available positive pressure ventilation should be started with room air	1. For term babies 1.1. Use of 100% oxygen is recommended when baby is cyanotic or when positive pressure ventilation is required during neonatal resuscitation 1.2. If oxygen is needed during resuscitation, one may begin with less than 100% oxygen or room air. If so, supplementary oxygen should also be available to use if there is no appreciable improvement within 90 seconds after birth 1.3. Use of variable concentration of oxygen guided by pulse oximetry may improve the ability to achieve normoxia more quickly 1.4. In situations where supplementary oxygen is not readily available positive pressure ventilation should be started with room air 2. For very preterm babies (less than 32 weeks gestation 2.1. Use an oxygen blender and pulse oximeter during resuscitation 2.2. Begin PPV with oxygen concentration between room air and 100% oxygen 2.3. Increase oxygen concentration up or down to achieve saturation between 90 and 95%. 2.4. If heart rate does not respond by increasing rapidly to >100 per minute correct any ventilation problem and use 100% oxygen 2.5. If no facility of blender use 100% oxygen
Positive pressure ventilation (PPV) 1. Devices 1.1. Use self inflating bag or flow inflating bag to provide PPV during resuscitation	1. Devices 1.1. Flow controlled pressure limited mechanical devices (e.g. T-piece resuscitator) also an acceptable method of administering PPV especially in preterm babies. 1.2. Laryngeal Mask Airway (LMA) is effective for ventilating term and near term babies. 1.3. LMA should not to be used

	1.3.1. In the setting of meconium stained amniotic fluid 1.3.2. When chest compression is required 1.3.3. In VLBW babies 1.3.4. For delivery of medications
2. Checking effectiveness of PPV 2.1. Improvement indicated by three signs: increasing heart rate, improving color and spontaneous breathing.	2. Checking effectiveness 2.1. Primary measure of improvement is increasing heart rate. 2.2. If heart rate not improving assess chest movements and check breath sounds.
Medications	
1. Epinephrine or naloxone can be given through endotracheal (ET)route.	1. Naloxone not to be given by ET route. Epinephrine preferably by intravenous route only
Endotracheal intubation	
1. Tube position may be confirmed by capnography.	1. Capnography (exhaled CO_2) recommended method of confirming tube placement. This may have no role in brief period of incubation for clearing meconium from trachea.
Discontinuation	
1. Discontinuation of resuscitative efforts after 15 minutes of absent heart rate in spite of complete and adequate resuscitation efforts.	1. After 10 minutes of continuous and adequate efforts if there are no signs of life (no heart rate and no respiratory effort) discontinue of resuscitative efforts.
Withholding resuscitation	
1. Non-initiation of resuscitation in following conditions 1.1 Confirmed gestation less than 23 weeks or birth weight < 400 g 1.2 Anencephaly 1.3 Babies with confirmed trisomy 13 or 18	1. Non-initiation of resuscitation in following conditions 1.1 In conditions with almost certain death or unacceptable high morbidity in the survivors as in following conditions 1.1.1 Confirmed gestation less than 23 weeks or birth weight < 400 g 1.1.2 Anencephaly 1.1.3 Babies with confirmed trisomy 13 1.2 In conditions associated with high rate of survival and acceptable morbidity resuscitation always indicated (gestation of 25 weeks or more). 1.3 In conditions with uncertain prognosis in which survival is borderline take into account parental desires.

Figure: Neonatal Resuscitation flow chart1



References

1. Neonatal resuscitation guidelines. Circulation. 2005;112:IV-188-IV-195

2. Deorari A K. Newer guidelines for neonatal resuscitation-how my practice needs to change? Indian Pediatr 2001;38:496-9.

3. Kattwinkel J. Textbook of Neonatal Resuscitation, 4th Edition, Elk Grove Village, Illinois, American Academy of Pediatrics and American Heart Association, 2000 .

4. Summary of Major Changes to the 2005. AAP/ AHA Emergency Cardiovascular Care Guidelines for Neonatal Resuscitation: Translating Evidence-Based Guidelines to the NRP. www.aap.org/NRP. Accessed on 12 December 2005