e - ISSN – 2349-0683

Asian Pacific Journal of Nursing

Journal homepage: www.mcmed.us/journal/apjn

HIGHLIGHTS OF 2015 AHA GUIDELINES ON NEONATAL RESUSCITATION - A REVIEW ARTICLE

Sanjeeta Dara[1], S.K.Mohanasundari[2], T. Poovishnu Devi[3]

[1]Tutor, Faculty of College of Nursing, All India Institute of Medical Sciences, Jodhpur, Rajasthan, India.
[2]Tutor, Faculty of College of Nursing, All India Institute of Medical Sciences, Jodhpur, Rajasthan, India.
[3]Associate Professor, Faculty of Physiotherapy, Krishna College of physiotherapy, Karad, Maharastra, India.

ABSTRACT

Readiness for neonatal resuscitation requires assessment of perinatal risk, a system to assemble the appropriate personnel based on that risk, an organized method for ensuring immediate access to supplies and equipment, and standardization of behavioral skills that help assure effective teamwork and communication. AHA guidelines for Neonatal resuscitation (NR) were updated in 2015; all team of NR need to be trained not less than two years interval to keep skilled and updated. The present review focused on highlights of current updates in NR by AHA guidelines mainly focuses on, Order of the assessment: a) Is it term gestation? b) Is it good tone? C) Is the newborn breathing or crying?, The sequence of actions during Golden minute (60 seconds): a) Initial steps, b) reevaluation, c) beginning of ventilation (if required), Time of cord clamping for term and preterm, Temperature management, Intervention for Newborn born with meconium-stained amniotic fluid. Way to assess of accurate heart rate, level of Oxygenation, need of laryngeal mask, Chest compression rate and depth, Epinephrine during CPR and volume administration, Induced therapeutic hypothermia for HIE and ethical decision about Withholding or withdrawing resuscitation. The actions which are not supported by scientific evidence were excluded from the previous practice and current updates and practice were purely based on recent scientific evidences available.

Key words: Chest compression, Communication, Induced therapeutic hypothermia.

Corresponding Author

Sanjeeta Dara
Email:- sanjeetasandeepgrewal@gmail.com

Article Info

Received 02/07/2017; Revised 20/07/2017
Accepted 09/08/2017

INTRODUCTION

Neonatal resuscitation (NR) skills are essential for all health care providers who are involved in the delivery of newborns because every single delivery is considered to be risky delivery. Physiological transition from fetus to newborn is crucial period to handle by the health care team [1].

Neonatal Asphyxia accounts for 20.9% of neonatal deaths. Although the vast majority of newly born infants (90%) do not require intervention to breathe during transition from intrauterine to extra uterine life, approximately 10% of newborns require some assistance to begin breathing at birth. Less than 1% requires extensive resuscitation measures, such as cardiac compressions and medications. Although most newly born infants successfully transition from intrauterine to extra uterine life without special help, only a significant number will require some degree of resuscitation [2-5].

Every birth should be attended by at least 1 person who can perform the initial steps of newborn resuscitation and PPV, and whose only responsibility is care of the newborn. In the presence of significant perinatal risk factors that increase the likelihood of the need for resuscitation, additional personnel with resuscitation skills, including chest compressions, endotracheal intubation, and umbilical vein catheter insertion, should be immediately available. Furthermore, because a newborn without apparent risk factors may unexpectedly require resuscitation, each institution should have a procedure in place for rapidly mobilizing a team with complete newborn resuscitation skills for any birth.

Neonatal Resuscitation is intervention after a baby is born to help it breathe and to help its heart beat, it helping with Temperature, Airway, Breathing, and Circulation (TABCs) [6-8].

The first 60 second of a newborn's life can be the most critical and considered as Golden minute.. If needed, effective emergency care during this transition can prevent lifelong consequences. Proper resuscitation requires essential equipment and knowledge of necessary protocols before delivery. NR protocols are getting updated very frequently because of the emerging clinical researches and it is suggested to update the knowledge not less than 2 years interval. By keeping this in view, the current review study was undertaken to gather the NR updates by AHA 2015 [9-14].

OBJECTIVES OF THE STUDY

Review the updated protocols of Neonatal resuscitation

INDICATIONS FOR NEONATAL RESUSCITATION

1. Preterm
2. Poor muscle tone
3. Poor breathing or crying

KEY UPDATES

Order of the assessment

a) Is it term gestation? b) Is it good tone? C) Is the newborn breathing or crying?

The sequence of actions during Golden minute (60 seconds)Initial steps, b) reevaluation, c) beginning of ventilation (if required).

The sequence of Initial steps in stabilization includes

a) Dry, warm and maintain normal temperature b) Position c) Clear secretions only if copious and/or obstructing the airway d) stimulate.

Reevaluation includes

Two vital characteristics such as heart rate (<100/minute) and respiration(apnea, gasping, or labored or unlabored breathing.

Ventilation and oxygen

Supplementary O2 or positive pressure ventilation(PPV)

Time of cord clamping

Delayed cord clamping for longer than 30 seconds for both term and preterm infants who do not require resuscitation at birth is recommended. it is not clear whether delayed cord clamping is good or bad for preterm <29 weeks of gestation.

Temperature

It should be recorded as a predictor of outcomes and as a quality indicator. Temperature of newly born non-asphyxiated infants should be maintained between 36.5°C and 37.5°C after birth. Hyperthermia (> 38°C) should be prevented to avoid potential associated risks.

In fully equipped hospital

A variety of strategies (radiant warmers, plastic wrap with a cap, thermal mattress, warmed humidified gases, and increased room temperature plus cap and thermal mattress) may be uses to prevent hypothermia in preterm infants.

In resource-limited settings

Simple measures to prevent hypothermia in the first hours of life (use of plastic wraps, skin to-skin contact, and even placing the infant after drying in a clean food-grade plastic bag up to the neck) is recommended.

Intervention for Newborn born with meconium-stained amniotic fluid

Newborn presents with meconium-stained amniotic fluid, poor muscle tone and inadequate breathing efforts, the infant should be placed under a radiant warmer and PPV should be initiated if needed. Routine intubation for tracheal suction is no longer suggested for all newborns instead ventilation and oxygenation should be initiated as indicated for each individual infant (intubation & suction if the airway is obstructed).

Assessment of accurate heart rate

A 3-lead ECG is recommended, because auscultation or palpation, and pulse oximetry may underestimate heart rate but pulse oximetry is recommended to evaluate the newborn’s oxygen saturation only.

Oxygenation

It is recommended that newborn < 35 weeks of gestation should be initiated with low oxygen (21% to 30%) and the oxygen titrated to achieve pre-ductal oxygen saturation approximating the range achieved in healthy term infants.

Laryngeal mask

It may be considered as an alternative to tracheal intubation if face-mask ventilation is unsuccessful, and a laryngeal mask is recommended during resuscitation of newborns of 34 weeks or more of gestation when tracheal intubation is unsuccessful or not feasible

Chest compression

Two thumb–encircling hands technique and 3:1 (90 compressions and 30 breaths per minute) compression-to ventilation ratio with 100% O2 remain unchanged. It is recommended to wean the oxygen concentration as soon as the heart rate recovers.

Epinephrine during CPR and volume administration

It remains unchanged. Intravenous administration of epinephrine may be considered at a dose of 0.01 to 0.03 mg/kg of 1:10 000epinephrine. If endotracheal administration is attempted while intravenous access is being established, higher dosing at 0.05 to 0.1 mg/kg may be reasonable

Induced therapeutic hypothermia

with evolving moderate to severe hypoxic-ischemic encephalopathy for newborn >36 weeks in resource-abundant area is remain unchanged and in resource-limited settings, it may be considered under clearly defined protocols similar to those used in clinical trials and in facilities with the capabilities for multidisciplinary care and follow-up.

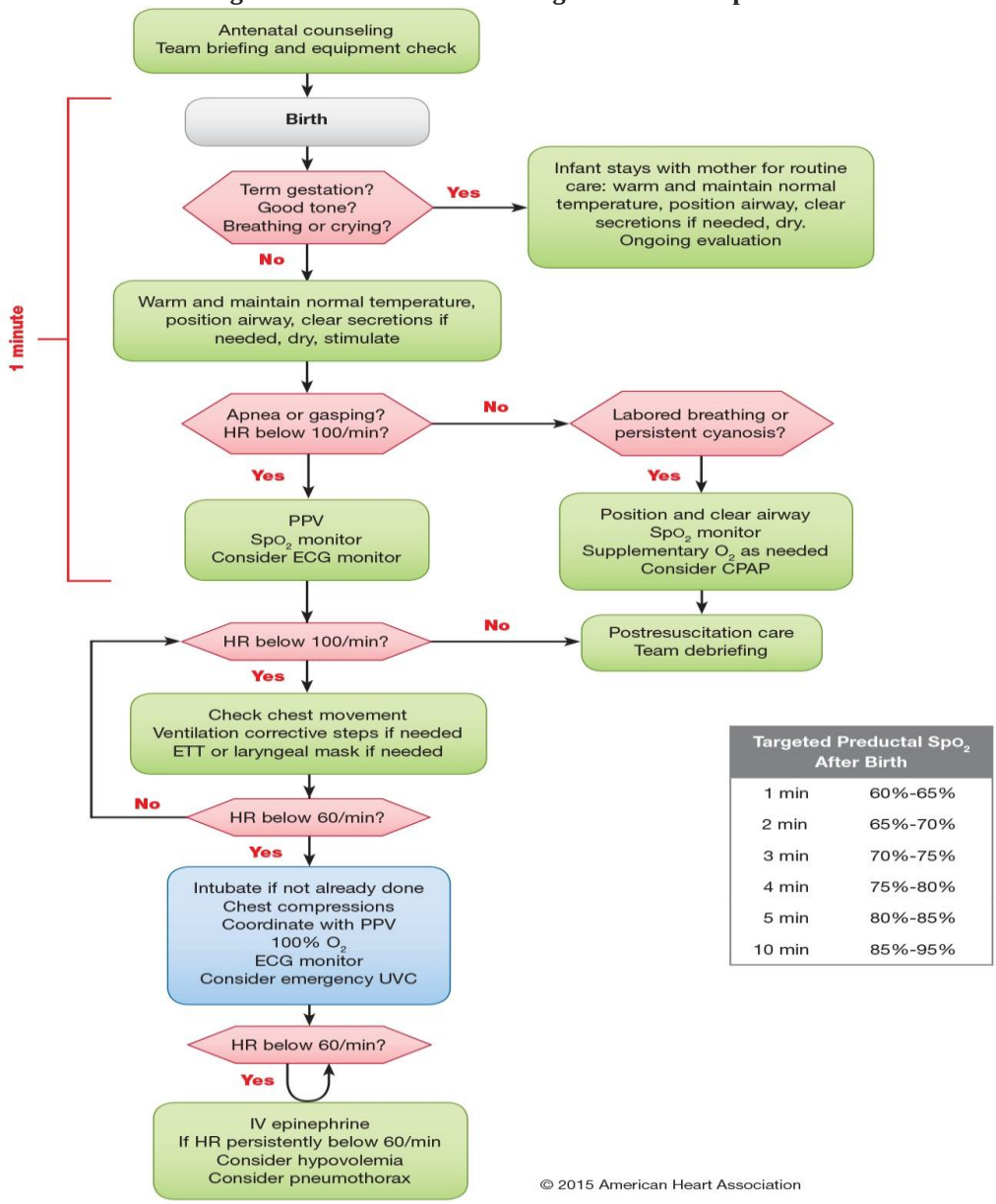
Withholding or withdrawing resuscitation

An APGAR score of 0 at 10 minutes is a strong predictor of mortality and morbidity in late preterm and term infants, but decisions to continue or discontinue resuscitation efforts must be individualized.

NR task training interval

It is suggested that neonatal resuscitation task training occur more frequently than the current 2-year interval.

Fig 1. Neonatal resuscitation algorithm -2015 update



CONCLUSION

Approximately 60 seconds ("the Golden Minute") are allotted for completing the initial steps, reevaluating, and beginning ventilation if required. Although the 60-second mark is not precisely defined by science, a timely reevaluation after initial steps is important to avoid unnecessary delay in initiation of ventilation because this is the most important step for successful resuscitation of the newly born who has not responded to the initial steps. The decision to progress beyond the initial steps is determined by simultaneous assessment of 2 vital characteristics: respirations (apnea, gasping, or labored or unlabored breathing) and heart rate (less than 100/min). 3 lead EGC is used to accurately assess the heart rate. Once positive-pressure ventilation (PPV) or supplementary oxygen administration is started, assessment should consist of simultaneous evaluation of 3 vital characteristics: heart rate, respirations, and oxygen saturation, as determined by pulse oximetry. The most sensitive indicator of a successful response to each step is an increase in heart rate.

STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

ACKNOWLEDGMENTS

Nil.

CONFLICT OF INTEREST

None.

REFERENCES

1. Perlman JM, Wyllie J, Kattwinkel J, *et al.* (2015). On behalf of the Neonatal Resuscitation Chapter Collaborators. Part 7: neonatal resuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. *Circulation*, 132(1), S204–S241.
2. Kattwinkel J, Perlman JM, Aziz K, *et al.* (2010). Part 15: neonatal resuscitation: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*, 122, S909–S919.
3. Barber CA, Wyckoff MH. (2006). Use and efficacy of endotracheal versus intravenous epinephrine during neonatal cardiopulmonary resuscitation in the delivery room. *Pediatrics*, 118, 1028–1034.
4. Aziz K, Chadwick M, Baker M, Andrews W. (2008). Ante- and intra-partum factors that predict increased need for neonatal resuscitation. *Resuscitation*, 79, 444–452.
5. Zaichkin J, *et al*. (2011). Instructor Manual for Neonatal Resuscitation. Chicago, IL: American Academy of Pediatrics.
6. Perlman JM, Wyllie J, Kattwinkel J. (2010). Neonatal Resuscitation Chapter Collaborators. Part 11: neonatal resuscitation: 2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. *Circulation*, 122(2), S516–S538.
7. Wyllie J, Perlman JM, Kattwinkel J, *et al.* (2010). Neonatal Resuscitation Chapter Collaborators. Part 11: neonatal resuscitation: 2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. *Resuscitation*, 81(1), e260–e287.
8. Committee Opinion No.543. (2012). Timing of umbilical cord clamping after birth. *Obstet Gynecol*, 120, 1522–1526.
9. American Academy of Pediatrics. (2013). Statement of endorsement: timing of umbilical cord clamping after birth. *Pediatrics*, 131, e1323.
10. Hosono S, Mugishima H, Fujita H, Hosono A, Minato M, Okada T, Takahashi S, Harada K. (2008). Umbilical cord milking reduces the need for red cell transfusions and improves neonatal adaptation in infants born at less than 29 weeks' gestation: a randomised controlled trial. *Arch Dis Child Fetal Neonatal Ed*, 93, F14–F19.
11. Katheria AC, Leone TA, Woelkers D, Garey DM, Rich W, Finer NN. (2014). The effects of umbilical cord milking on hemodynamics and neonatal out- comes in premature neonates. *J Pediatr*, 164, 1045–1050.
12. March MI, Hacker MR, Parson AW, Modest AM. (2013). The effects of umbilical cord milking in extremely preterm infants: a randomized con- trolled trial. *J Perinatol*, 33, 763–767.
13. Budin P. (1907). The Nursling. The Feeding and Hygiene of Premature and Full-term Infants. Translation by WJ Maloney. London.
14. Hamid S, *et al*. (2012). Effect of the use of a polyethylene wrap on the morbidity and mortality of very low birth weight infants in Alexandria University Children's Hospital. *J Egypt Public Health Assoc,* 87, 104–108.