



Updates to neonatal, pediatric resuscitation guidelines based on new evidence

by Trisha Koriath, Staff Writer



Credit: Textbook of Neonatal Resuscitation, 7th edition

Positive pressure ventilation remains the foundation of neonatal resuscitation

Resuscitation and life support guidelines for neonatal and pediatric patients have been updated to reflect the latest evidence to improve care.

Pediatric Basic and Advanced Life Support and Neonatal Resuscitation are parts 4 and 5 of the *2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care* released Oct. 21 and published in *Pediatrics* (see resources).

The Neonatal Resuscitation guideline emphasizes developing skills and practicing positive pressure ventilation (PPV). The Pediatric Basic and Advanced Life Support guideline includes changes to the cardiac arrest chain of survival and updated timing for assisted ventilation rate.

Each guideline went through an extensive evidence evaluation by a writing group comprised of numerous experts, including AAP members.

Neonatal Resuscitation guidelines

Major concepts in the 2020 Neonatal Resuscitation guidelines are the same as in the 2015 guidelines. Changes include a new look for the algorithm and the addition of 10 take-home messages.

There is an emphasis on skills development and practice to improve PPV.

"PPV has been an emphasis of NRP (Neonatal Resuscitation Program) for a while. Effective PPV is considered the main intervention for babies who require further intervention to help them breathe - for babies who are apneic, breathing ineffectively or in bradycardia," said Henry C. Lee, M.D., FAAP, vice chair of the neonatal writing group and NRP Steering Committee co-chair.

Individual and team training are crucial to ensure PPV is implemented effectively, Dr. Lee said.



"In addition to the scientific knowledge of neonatal resuscitation, we are continually looking at how we can perform resuscitation better, improve the algorithm that we follow and how we can improve the way clinicians learn neonatal resuscitation and perform in teams," he added.

Neonatal resuscitation concepts that were reaffirmed in the 2020 guideline include the following.

- Delay umbilical cord clamping for uncomplicated term and preterm neonates. This allows the baby to be placed on the mother immediately, dried and assessed for breathing, tone and activity. Other situations in which immediate clamping and cutting of the cord can be deferred are described. New research supports the 2015 position that umbilical cord milking is not recommended for preterm infants.
- Do not use endotracheal suctioning routinely for vigorous and non-vigorous infants born with meconium-stained amniotic fluid.
- Support skin-to-skin care for bonding, breastfeeding and normothermia.
- Use supplemental oxygen judiciously.
- Administer epinephrine, preferably intravenously, if response to chest compressions is poor.

The guidelines form the basis of the AAP/American Heart Association (AHA) Neonatal Resuscitation Program (NRP), 8th edition, which will be available in June 2021.

A new Resuscitation Quality Improvement (RQI) program for NRP focused on PPV will be introduced. The RQI program is co-developed by the AHA and Laerdal Medical (<https://bit.ly/2GKTwnT>).

Pediatric Basic and Advanced Life Support guidelines

Numerous updates have been made to the pediatric guidelines. The biggest is a change in the respiratory rate to 20 to 30 breaths per minute for infants and children who are receiving CPR with an advanced airway in place or receiving rescue breathing and have a pulse.

"There were improved outcomes for those patients who had increased ventilations compared to those who had lower ventilations," said Tia Raymond, M.D., FAAP, vice chair of the AHA pediatric writing group.

The following pediatric life support concepts also were updated.

- For out-of-hospital cardiac arrest, bag-mask ventilation is reasonable compared with advanced airway interventions such as endotracheal intubation.
- Using a cuffed endotracheal tube decreases the need for endotracheal tube changes.
- The routine use of cricoid pressure does not reduce the risk of regurgitation during bag-mask ventilation and may impede intubation success. "It actually impeded a successful endotracheal intubation if somebody performed a cricoid pressure," Dr. Raymond said.
- Earlier administration of epinephrine in patients with non-shockable rhythms after CPR initiation is recommended as it appears to improve patient survival. "The recommendation now will be to get epinephrine in within five minutes of the start of resuscitation for non-shockable rhythms of asystole and pulseless electrical activity. Obviously, if there's a shockable rhythm, VT (ventricular tachycardia) or VF (ventricular fibrillation), the most important thing is defibrillation, defibrillation, defibrillation," Dr.



Raymond said.

- A section has been added on the resuscitation of the infant with single ventricle congenital heart disease.

The guideline includes new and updated pediatric algorithms.

- In addition to standard basic life support care, naloxone is recommended for all pediatric patients with respiratory arrest due to suspected opioid overdose. New algorithms for lay responders and health care providers address opioid-associated emergency for adolescents.
- A sixth link called "Recovery" is included in the new in-hospital chain of survival for cardiac arrest algorithm and the updated out-of-hospital chain of survival for cardiac arrest algorithm. The Recovery link acknowledges that resuscitation does not end with return of spontaneous circulation. It brings more attention to the needs of cardiac arrest survivors after discharge, such as physical, cognitive and emotional challenges that will require ongoing therapy and interventions. A post-cardiac arrest care checklist also is included.
- A new algorithm combines two previous algorithms for tachycardia with a pulse and shifts the focus to what Dr. Raymond calls "evaluation for cardiopulmonary compromise first, followed by evaluation of the QRS duration, in order to help differentiate SVT (supraventricular tachycardia) vs. VT."
- A new Pediatric Basic Life Support algorithm was created for lay providers.

New learning format

Busy practitioners will appreciate the new format of the updated guidelines. Modular chunks of information include a table of related recommendations, brief synopsis, detailed support, flow diagram and additional table (when appropriate), and hyperlinked references.

Resources

- [Part 4: Pediatric Basic and Advanced Life Support](#)
- [Part 5: Neonatal Resuscitation](#)
- [Neonatal Resuscitation Program](#)