

Newborn Resuscitation: The **Science** of NRP 7th Edition

- Webinar will begin at 1PM Central.
- To reduce background noise, all phone lines will be muted during webinar.
- Please submit questions via the Chat panel on WebEx Console.



American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®



3-PART WEBINAR SERIES

July 26

- Highlights of the New NRP 7th Edition
- **Recording Available**

Aug 16

- NRP 7th Edition: What Instructors Need to Know
- **Recording Available**

Sept 7

- Newborn Resuscitation: The Science of NRP 7th Edition

WELCOME!

POLL QUESTION #1



FACULTY DISCLOSURE INFORMATION

In the past 12 months, we have no relevant financial relationships with the manufacturer(s) of any commercial product(s) and/or provider(s) of commercial services discussed in this CME activity.

- J Zaichkin is a compensated editor and consultant for the American Academy of Pediatrics/NRP and, as such, has contractual relationships to produce AAP/Laerdal co-branded educational materials. She receives no financial benefit from the sale of these materials
- S Ringer has nothing to disclose

We do not intend to discuss an unapproved/investigative use of a commercial product/device in this presentation.

POLL QUESTION #1 RESULTS

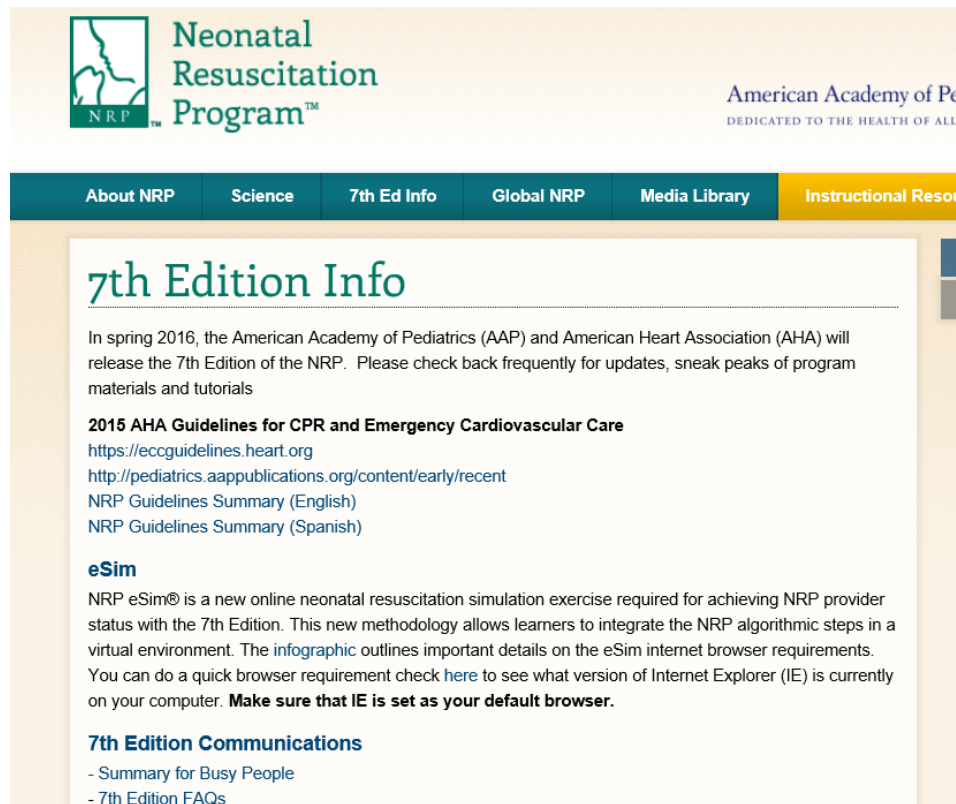
SESSION OBJECTIVE


- Interpret the 2015 American Heart Association Guidelines for neonatal resuscitation and apply them to clinical practice.

WHERE DOES NRP COME FROM?

- The International Liaison Committee on Resuscitation (ILCOR) coordinates a rigorous, 5 year evidence-based review of topics
- ILCOR reaches international consensus on the science of resuscitation for newborns, children, and adults and publishes the science in the CoSTR document
- Each council/country that participates in ILCOR refines the science into resuscitation guidelines that fit the culture and resources of their region
- The American Heart Association and American Academy of Pediatrics wrote the neonatal guidelines for resuscitation and released these in October 2015.
- The NRP Steering Committee uses the guidelines as the foundation for NRP 7th edition materials.

HTTP://WWW2.AAP.ORG/NRP/



 Neonatal Resuscitation Program™

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN

About NRP | Science | 7th Ed Info | Global NRP | Media Library | **Instructional Resources**

7th Edition Info

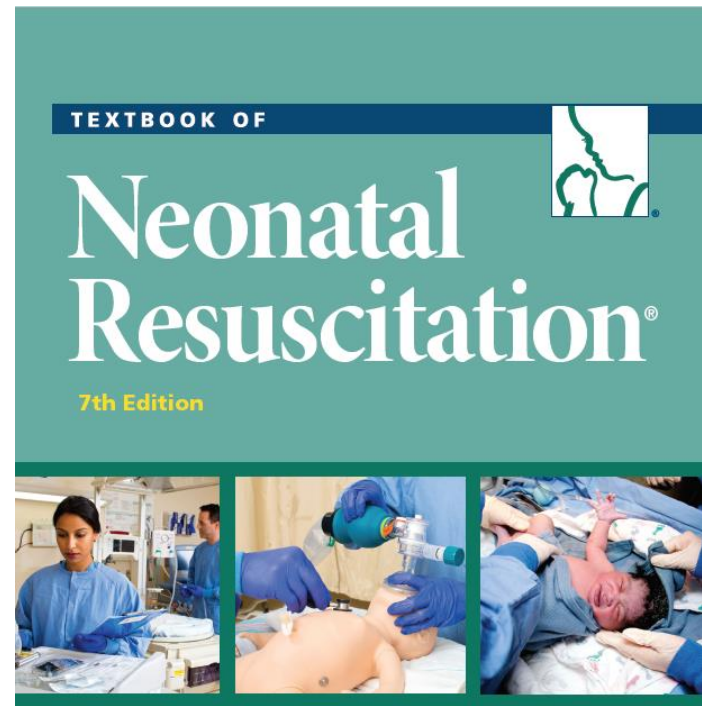
In spring 2016, the American Academy of Pediatrics (AAP) and American Heart Association (AHA) will release the 7th Edition of the NRP. Please check back frequently for updates, sneak peaks of program materials and tutorials

2015 AHA Guidelines for CPR and Emergency Cardiovascular Care
<https://eccguidelines.heart.org>
<http://pediatrics.aappublications.org/content/early/recent>
NRP Guidelines Summary (English)
NRP Guidelines Summary (Spanish)

eSim
NRP eSim® is a new online neonatal resuscitation simulation exercise required for achieving NRP provider status with the 7th Edition. This new methodology allows learners to integrate the NRP algorithmic steps in a virtual environment. The [infographic](#) outlines important details on the eSim internet browser requirements. You can do a quick browser requirement check [here](#) to see what version of Internet Explorer (IE) is currently on your computer. **Make sure that IE is set as your default browser.**

7th Edition Communications
- Summary for Busy People
- 7th Edition FAQs

What's new about the textbook's structure?



NRP 7TH EDITION TEXTBOOK

1. Foundations of Neonatal Resuscitation



2. Preparing for Resuscitation

3. Initial Steps of Newborn Care

4. Positive-pressure Ventilation

5. Alternative Airways

6. Chest Compressions



7. Medications



8. Post-resuscitation Care

9. Resuscitation and Stabilization of Babies Born Preterm

10. Special Considerations

11. Ethics and Care at the End of Life

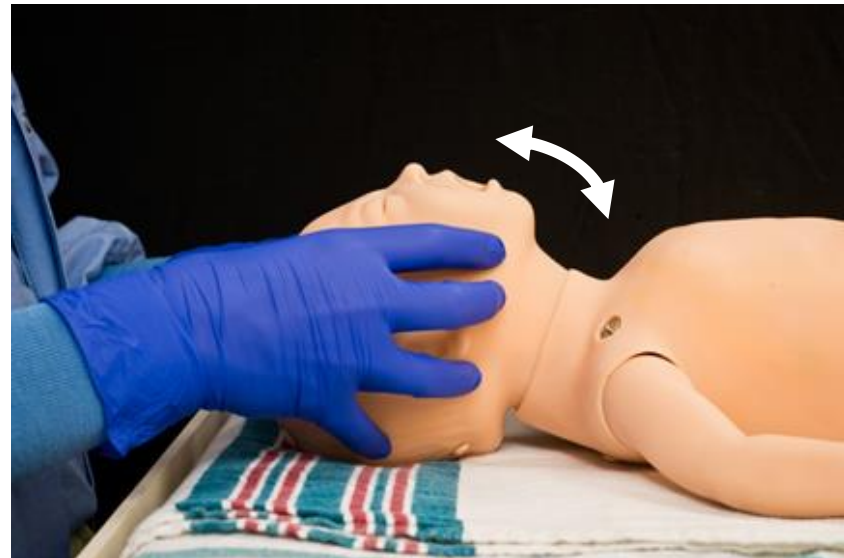
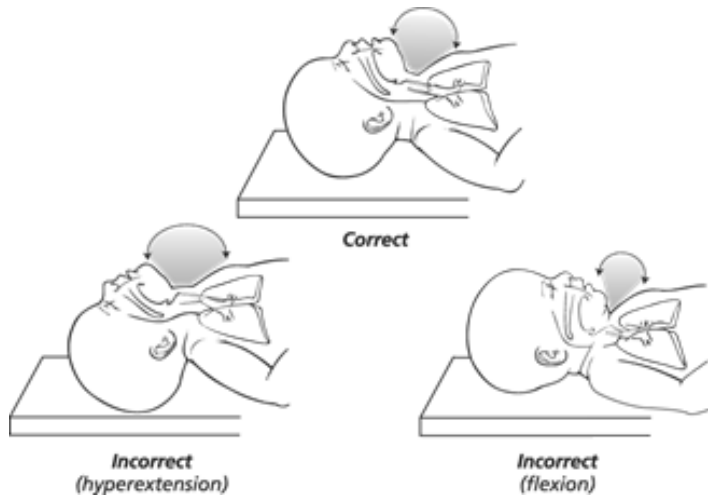
No textbook DVD-ROM

NEW SECTIONS IN EACH LESSON

- *Focus on Teamwork*
Integrates emphasis on teamwork and communication with lesson content
- *Frequently Asked Questions*
Controversies and questions commonly sent to the NRPSC
- *Ethical considerations*
Highlight questions to consider in context of lesson content
- *Additional reading*



DRAWINGS REPLACED WITH COLOR PHOTOS



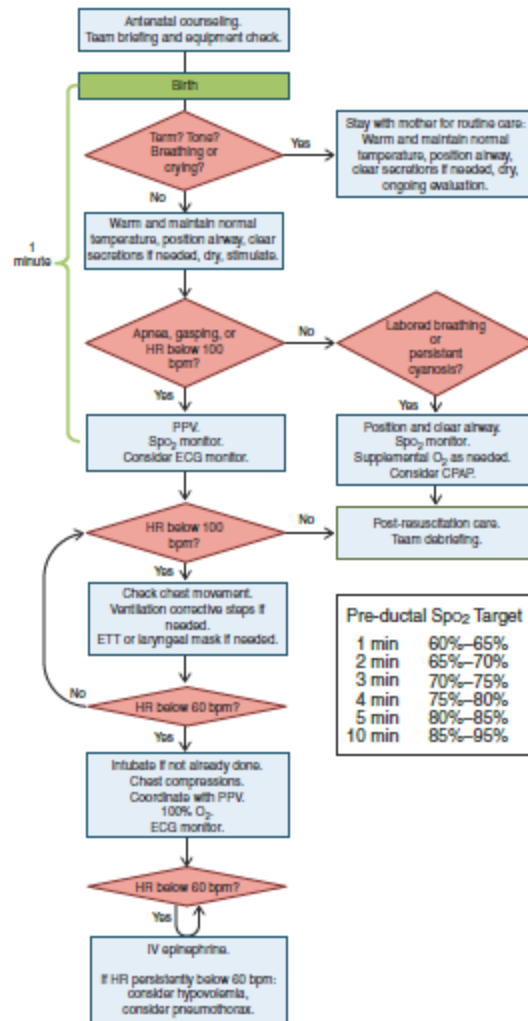
What are the major changes in the NRP practice recommendations?



American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®





INCREASED EMPHASIS

- Teamwork
- Preparation before resuscitation
 - Structured check of equipment and supplies
 - Identifying roles
- Accurate documentation



BEFORE THE BIRTH



Preparing for Resuscitation

Resuscitation team is requested to attend a birth

Ask the Four Pre-birth Questions to Assess Perinatal Risk



1

What is the expected gestational age?

2

Is the amniotic fluid clear?

3

How many babies are expected?

4

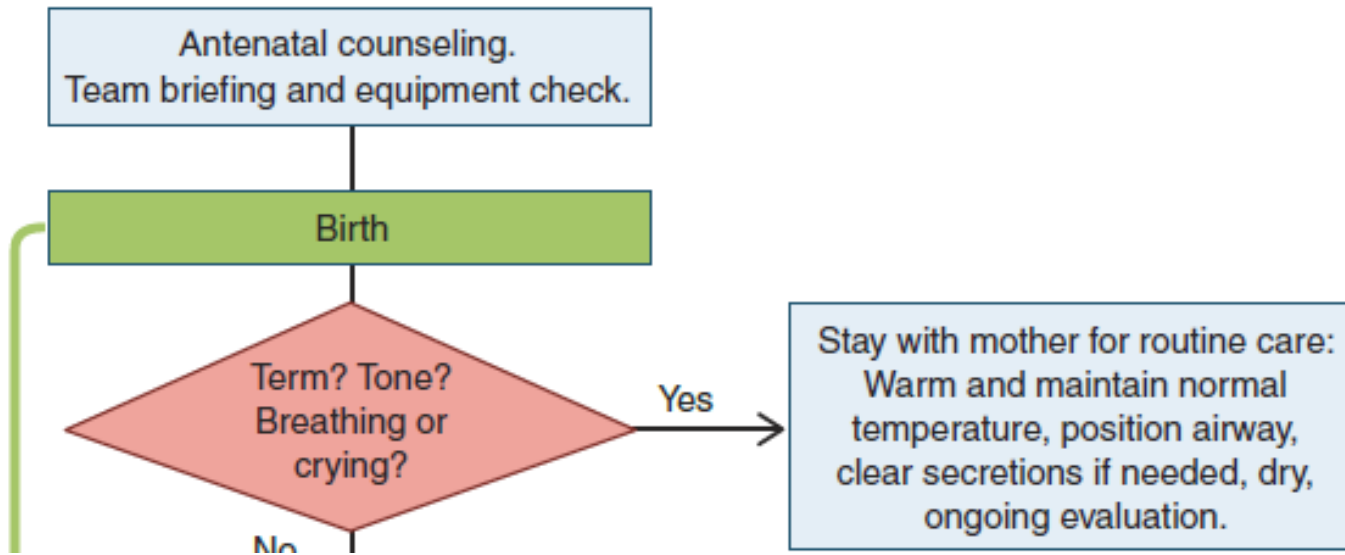
Are there any additional risk factors?



TEAM BRIEFING

- **Determine the leader, clarify roles and responsibilities, delegate tasks**
- **Perform a standardized Equipment Check**
- Introduce yourself and discuss the plan of care with the parent(s) if not already done
- Ask the OB provider the plan for delayed cord clamping

RAPID EVALUATION OF THE NEWBORN



DELAYED CORD CLAMPING

- Delay cord clamping for 30-60 seconds for most vigorous term and preterm newborns
 - May place skin-to-skin with mom
 - May cover with towel or plastic
- No delay if placental circulation is disrupted (abruption, bleeding placenta previa, bleeding vasa previa, cord avulsion)
- Insufficient evidence
 - Timing if baby is not vigorous
 - Multiple gestation births

IMPLICATIONS OF DCC

- Time of birth is when the baby emerges from its mother, not the time of cord clamping
- Determine where the newborn will be placed during DCC
- What are thermoregulation strategies and who does them?
- Who determines when the cord is clamped and cut?



MAINTAIN THE NEWBORN'S AXILLARY TEMPERATURE 36.5° – 37.5° C

- Hypothermia increases risk of RDS, hypoglycemia, IVH, late-onset sepsis
- Increased risk of mortality associated with hypothermia at admission
- ↑ room temp to 74-77°F (23-25°C)
- Use a hat
- If < 32 wks, use a thermal mattress and cover baby in plastic wrap/bag



Consider using temp sensor and servo control mode

INITIAL STEPS OF NEWBORN CARE

- Provide warmth
- Position head and neck
- Suction if needed
- Dry (or cover in plastic)
- Stimulate
- **ASSESS BREATHING**

If breathing, assess heart rate

If apneic, START PPV



Routine tracheal suction no longer recommended for **NON-VIGOROUS** babies with meconium stained fluid

- MSAF is a risk factor that requires at least 2 people at the birth and
- Someone with intubation skills IMMEDIATELY available
- **If there are additional risk factors**, someone with full resuscitation skills should be present at the birth



ASSESS HEART RATE BY AUSCULTATION

- Palpation of the umbilical cord is less reliable and less accurate than auscultation
- Auscultation is often inaccurate; if baby is not vigorous and you can't assess HR with stethoscope, apply pulse oximeter.
- If pulse oximeter unreliable, apply ECG leads and use cardiac monitor



Apply ECG leads (chest or limb leads) and a monitor

- When auscultation is difficult and baby is not vigorous
- When the pulse oximeter doesn't work due to low HR
- Consider a monitor when PPV begins
- **A monitor is the preferred method for assessing HR when compressions begin**



OXYGEN MANAGEMENT

Start free-flow oxygen at 30%

Liter flow is 10 L/min.

Initial FiO_2 for PPV

- ≥ 35 weeks' GA = **21%**
- < 35 weeks' GA = **21-30%**

Always use pulse oximetry to guide oxygen concentration

Use 100% oxygen during compressions



BABIES LESS THAN 32 WEEKS' GESTATION

- Consider CPAP if baby is breathing immediately after birth as an alternative to routine intubation and surfactant administration
- 5 cm H₂O PEEP is recommended



TO ADMINISTER PPV, STAND AT THE BABY'S HEAD



PPV TECHNIQUES TO NOTE IN NRP 7TH EDITION

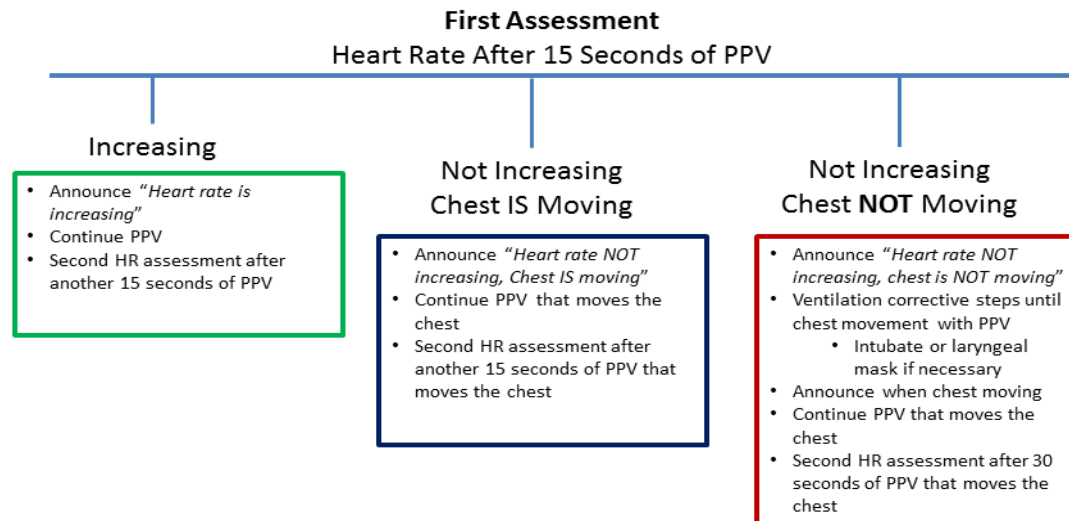
Two-hand technique
with jaw thrust



Use PEEP when providing PPV to
preterm infants



PPV STEPS CLARIFIED: ASSESS THE HR IN THE FIRST 15 SECONDS OF PPV



CHECK HR AFTER 15 SECONDS OF PPV

Increasing

- Announce "*Heart rate is increasing.*"
- Continue PPV.
- Second HR assessment after another 15 seconds of PPV.

CHECK HR AFTER 15 SECONDS OF PPV

Not Increasing Chest IS Moving

- Announce *"Heart rate NOT increasing, chest IS moving."*
- Continue PPV that moves the chest.
- Second HR assessment after another 15 seconds of PPV that moves the chest.

CHECK HR AFTER 15 SECONDS OF PPV

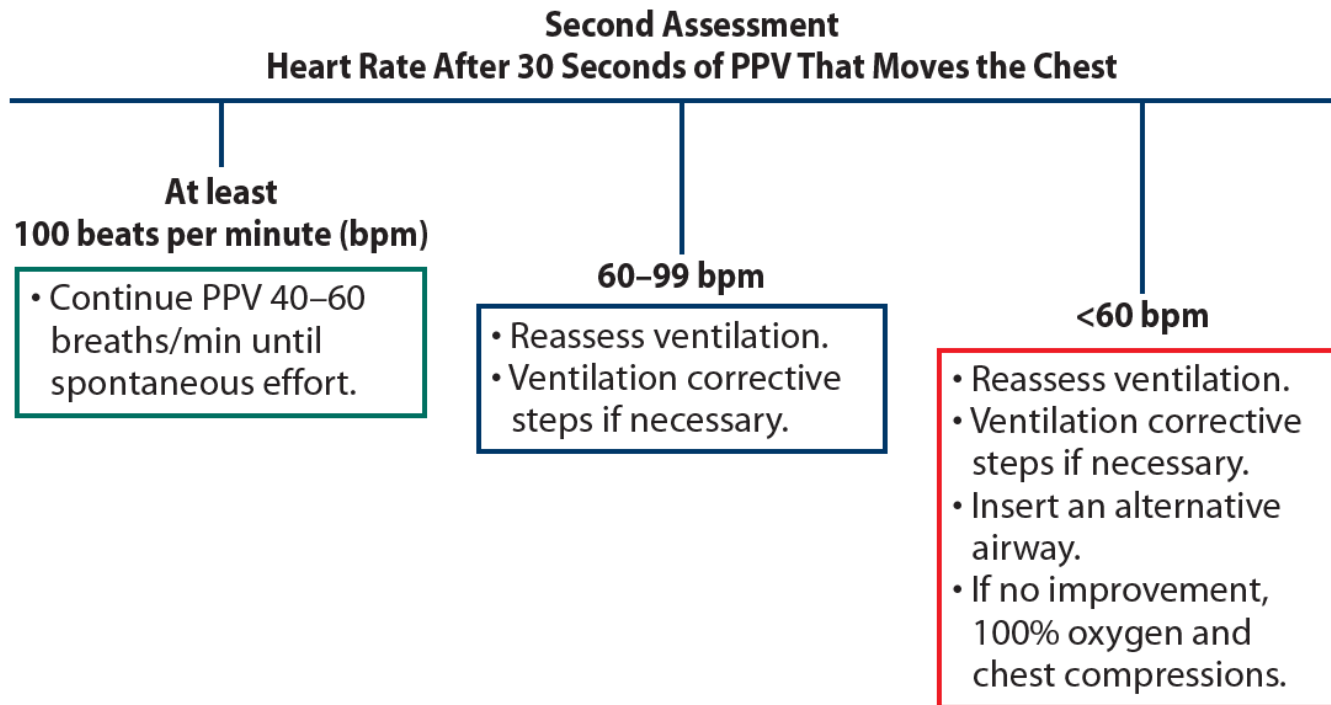
Not Increasing Chest NOT Moving

- Announce *"Heart rate NOT increasing, chest is NOT moving."*
- Ventilation corrective steps until chest movement with PPV.
 - Intubate or laryngeal mask if necessary.
- Announce when chest is moving.
- Continue PPV that moves the chest.
- Second HR assessment after 30 seconds of PPV that moves the chest.

MR. SOPA

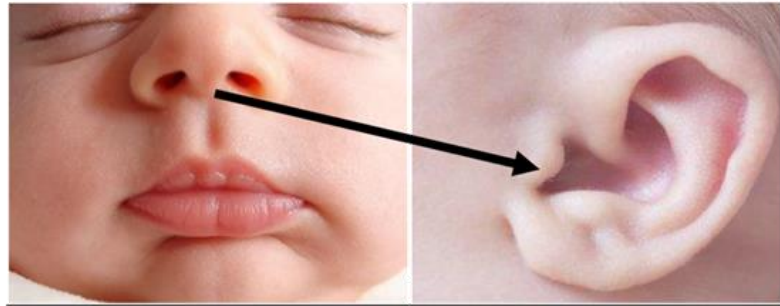
	Corrective Steps	Actions
M	Mask adjustment.	Reapply the mask. Consider the 2-hand technique.
	R	Reposition airway.
<i>Try PPV and reassess chest movement.</i>		
S	Suction mouth and nose.	Use a bulb syringe or suction catheter.
	O	Open mouth.
<i>Try PPV and reassess chest movement.</i>		
P	Pressure increase.	Increase pressure in 5 to 10 cm H ₂ O increments, max 40 cm H ₂ O.
<i>Try PPV and reassess chest movement.</i>		
A	Alternative Airway	Place an endotracheal tube or laryngeal mask.
<i>Try PPV and assess chest movement and breath sounds.</i>		

ASSESS HR AFTER 30 SECONDS OF PPV THAT MOVES THE CHEST



INTUBATION

- Strongly recommended before starting chest compressions
- Estimate tip-to-lip distance
 - nasal-tragus length (NTL)
 - or
 - initial ET tube insertion depth table (in the textbook)



ENDOTRACHEAL TUBE SIZE

Weight (g)	Gestational Age (wks)	ET Tube Size (mm) (internal diameter)
Below 1,000	Below 28	2.5
1,000-2,000	28-34	3.0
Greater than 2,000	Greater than 34	3.5

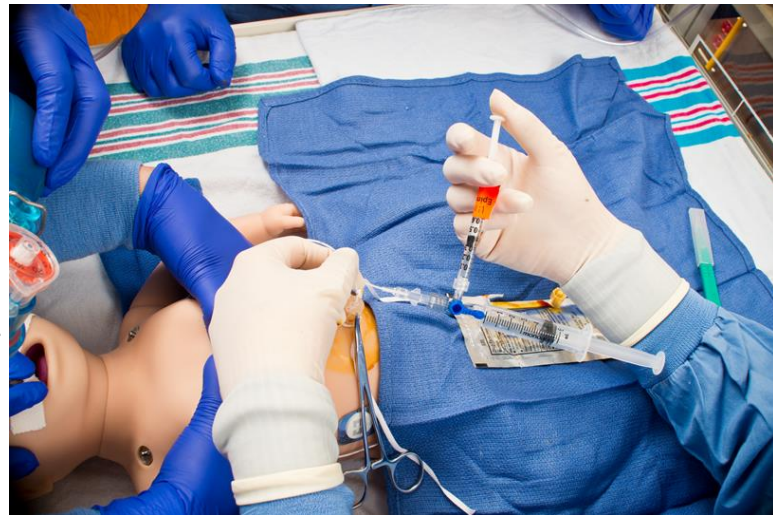
CHEST COMPRESSIONS

- Use 2-thumb technique
- Use 100% oxygen
- Head-of-bed compressions
- One-and-2-and-3-and-breathe-and.....
- Cardiac monitor recommended
- Continue for 60 seconds prior to checking HR



MEDICATIONS

- Only 2 medications to remember
 - Epinephrine
 - IV or IO preferred
 - ET x 1 while achieving intravascular access
 - Normal saline or type-O Rh-negative blood



ETHICS AND CARE AT THE END OF LIFE

- If responsible physicians believe that the baby has no chance for survival, initiation of resuscitation is not an ethical treatment option and should not be offered
 - Birth a confirmed GA of < 22 weeks gestation
 - Some severe congenital malformations and chromosomal anomalies
- Caregivers should allow parents to participate in decisions whether resuscitation is in their baby's best interest
 - Birth between 22 and 24 weeks' gestation
 - Some serious congenital and chromosomal anomalies

WHAT HAS NOT CHANGED?

- AAP requires renewal of Provider status every 2 years
- All learners may practice all skills. NRP is not a certification course.
- Recommended instructor to learner ratio at a Provider course is 1: 3-4

Ventilation of the lungs is the single most important and most effective step in cardiopulmonary resuscitation of the compromised newborn.



NRP RESOURCES:

[HTTP://WWW2.AAP.ORG/NRP](http://www2.aap.org/nrp)

Click the 7th Ed Info tab for:

- 2015 AHA CPR and ECCU Guidelines Information
- eSim practice case and system requirements
- Communications archive
- Helpful infographics

TRANSITION

7th Edition Instructor-Led Events

- May be taught now and recorded in new LMS
- Must be taught beginning January 1, 2017

The NRP 6th Edition

- May be taught through December 31, 2016
- Should be recorded in existing NRP Database.



WRAP-UP

- What questions do you have?



THANK YOU FOR JOINING!

A recording and PPT slides will be sent out to all registrants in a follow-up email from HealthStream.

Contact Us: contact@healthstream.com