

Neonatal Resuscitation Program

7th edition Update

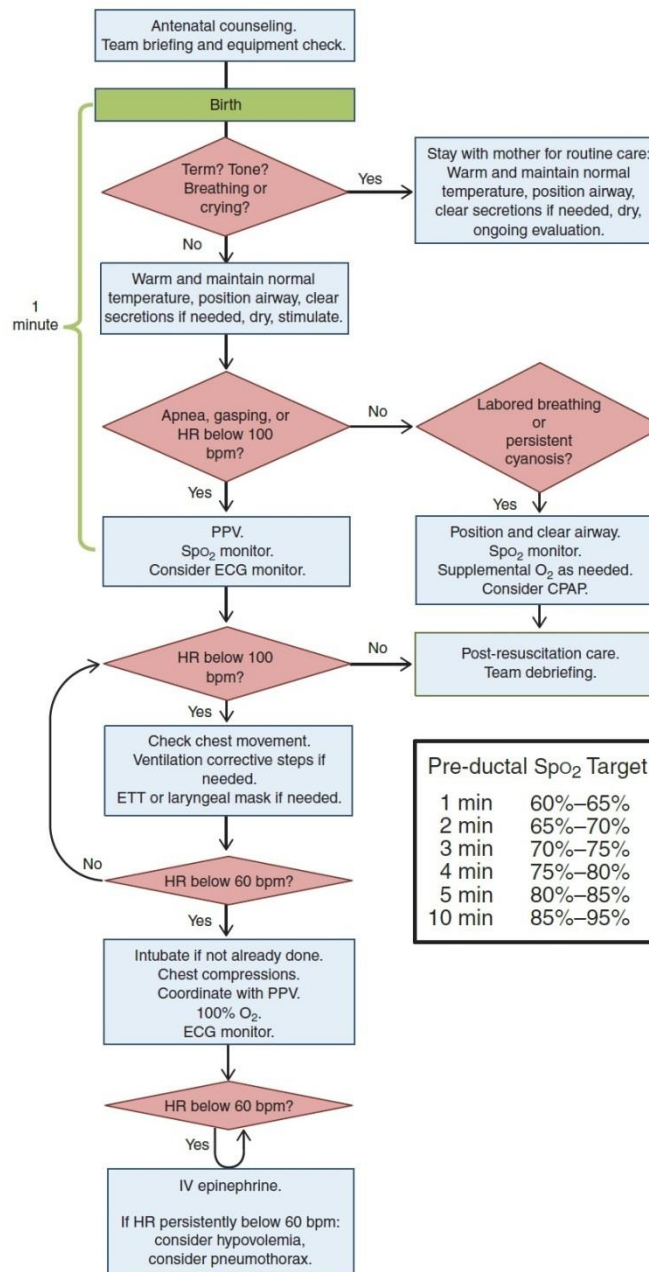
June 21, 2016

An excerpt from the 2016 CPS NRP Resuscitation Science Club



Background

- 5-year resuscitation science review by International Liaison Committee on Resuscitation Neonatal Task Force
- Guidelines reviewed and integrated into education programs such as the 7th edition NRP guidelines and resources developed by AAP
- CPS NRP Committee review of ILCOR consensus statement and 7th edition materials
- AAP launched 7th edition NRP Spring 2016. Launch in Canada Fall 2016: September and November
- September 30, 2017: 7th edition mandatory implementation date



Preparation

- Focus on history
- Team briefing and role assignment
- Equipment check

Initial Steps

- Non-vigorous infants delivered through meconium stained amniotic fluid (MSAF) do not **routinely** require intubation and tracheal suction

- **MSAF remains a risk factor for abnormal transition, and teams must ensure a member with advanced airway and resuscitation skills is in attendance**

Initial Steps

- Initial assessment: term, tone and breathing/crying?
- Warmth and position airway
- Suction if necessary
- Dry and stimulate

Initial Steps

- Temperature should be maintained between 36.5 and 37.5 Celsius
- For preterm infants, combination of interventions
 - Plastic wrap or bag
 - Thermal mattress
 - Hat
- **Focus on thermoregulation throughout resuscitation**

Initial Steps

- **In stable infants**, delayed cord clamping should be performed for at least 30 seconds. Insufficient evidence to recommend approach in those requiring resuscitation
- Starting resuscitation gas for term infant should be 21%
- In infants <35 weeks, starting gas should be 21-30%. Specific starting concentration of oxygen should be incorporated into local-agreed guidelines
- Continue to target saturations using preductal saturation monitor

PPV

- Positive pressure ventilation (PPV) if HR <100 bpm or ineffective respirations. Initial PIP 20-25 cm H₂O
- When resuscitation of preterm baby is required, PEEP is recommended (starting PEEP 5 cm H₂O)
- Consider electronic cardiac monitor when resuscitation required
- After PPV started, **reassess in 15 seconds**. If no response, MR SOPA corrective measures should be incorporated. If no response to MR SOPA, consider obstruction and suction through ETT or with meconium aspirator

Advanced airway

- Intubation recommended before chest compressions
- If intubation is not successful or feasible, laryngeal mask airway (LMA) should be used
- Depth of insertion using table or by measuring nasal-tragus length (NTL) + 1 cm

Table 5-4. Initial endotracheal tube insertion depth ("tip to lip") for orotracheal intubation

Gestation (weeks)	Endotracheal tube insertion depth at lips (cm)	Baby's Weight (grams)
23-24	5.5	500-600
25-26	6.0	700-800
27-29	6.5	900-1000
30-32	7.0	1,100-1,400
33-34	7.5	1,500-1,800
35-37	8.0	1,900-2,400
38-40	8.5	2,500-3,100
41-43	9.0	3,200-4,200

Adapted from Kempley ST, Moreira JW, Petrone FL. Endotracheal tube length for neonatal intubation. *Resuscitation*. 2008;77(3):369-373.



Weiner, G. M., & Zaichkin, J. (2016). *Textbook of neonatal resuscitation*. Elk Grove Village, IL: American Academy of Pediatrics

DOPE

Table 5-5. Sudden deterioration after intubation

The <i>DOPE</i> mnemonic	
D	Displaced endotracheal tube
O	Obstructed endotracheal tube
P	Pneumothorax
E	Equipment failure

Adapted from Kleinman ME, Chameides L, Schexnayder SM, et al. Part 14: Pediatric advanced life support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2010;122(18 Suppl):S876-S908.

Chest compressions

- HR <60 bpm in spite of 30 seconds of effective PPV. Oxygen should be increased to 100%
- 2-thumb technique is still recommended. Once airway secured, switch to head of bed
- Electronic cardiac monitor preferred for assessment of heart rate
- Continue chest compressions for **60 seconds** before rechecking



Photo credit : www2.aap.org

Epinephrine

- Indicated if HR remains <60 bpm after at least 30 secs of effective PPV and **another 60 seconds** of chest compressions using 100% oxygen
- One dose may be given through ETT. If no response, give **intravenous** dose via emergency UVC or IO access
- In Canada, simplified Epinephrine dosing continues to be recommended

Other medications

- Ringer's Lactate **no longer recommended** for management of hypovolaemic shock
- UVC preferred route of emergency vascular access, but IO can be used as alternative
- “No evidence to support the routine practice” of NaHCO_3 to correct metabolic acidosis
- “Insufficient evidence to evaluate safety and efficacy” of Naloxone and risks of complications

Preterm Infants

- Temperature control
 - Room temperature 23-25 degrees Celsius
 - Plastic wrap or bag
 - Thermal mattress and hat
- 3-lead EKG monitor for rapid and reliable HR assessment
- If resuscitation required, PEEP recommended; no particular device recommended
- CPAP can be used if stable but increased work of breathing (PEEP 5-8 cmH₂O suggested)

Educational Changes

- Instructor Trainer role will continue in Canada.
- Online examination now for both providers and instructors. Instructors will complete with renewal
- **All providers** will complete same components of online exam
- Course continues to focus on learner needs with skills stations adapted to learners' clinical practice
- Course continues to comprise skills stations, integrated skills stations and evaluation (Megacode), simulation and debriefing

Educational Changes con't

- Integrated skills station evaluation (Megacode) will remain as both “basic” and “advanced” evaluative tools. Should be used summatively and formatively
- Recommendation for “recurrent” training outside of two-year course
- Evidence shows benefit particularly in regard to psychomotor skills. Insufficient evidence to recommend particular method of teaching or frequency
- Learner-focused and based on clear objectives

