

Why?

- Most newborns make the transition to extrauterine life without intervention
- 5% of term NB- PPV
- 2% of term NB- intubated
- 1 to 3 per 1000 births- CC or emergency medications



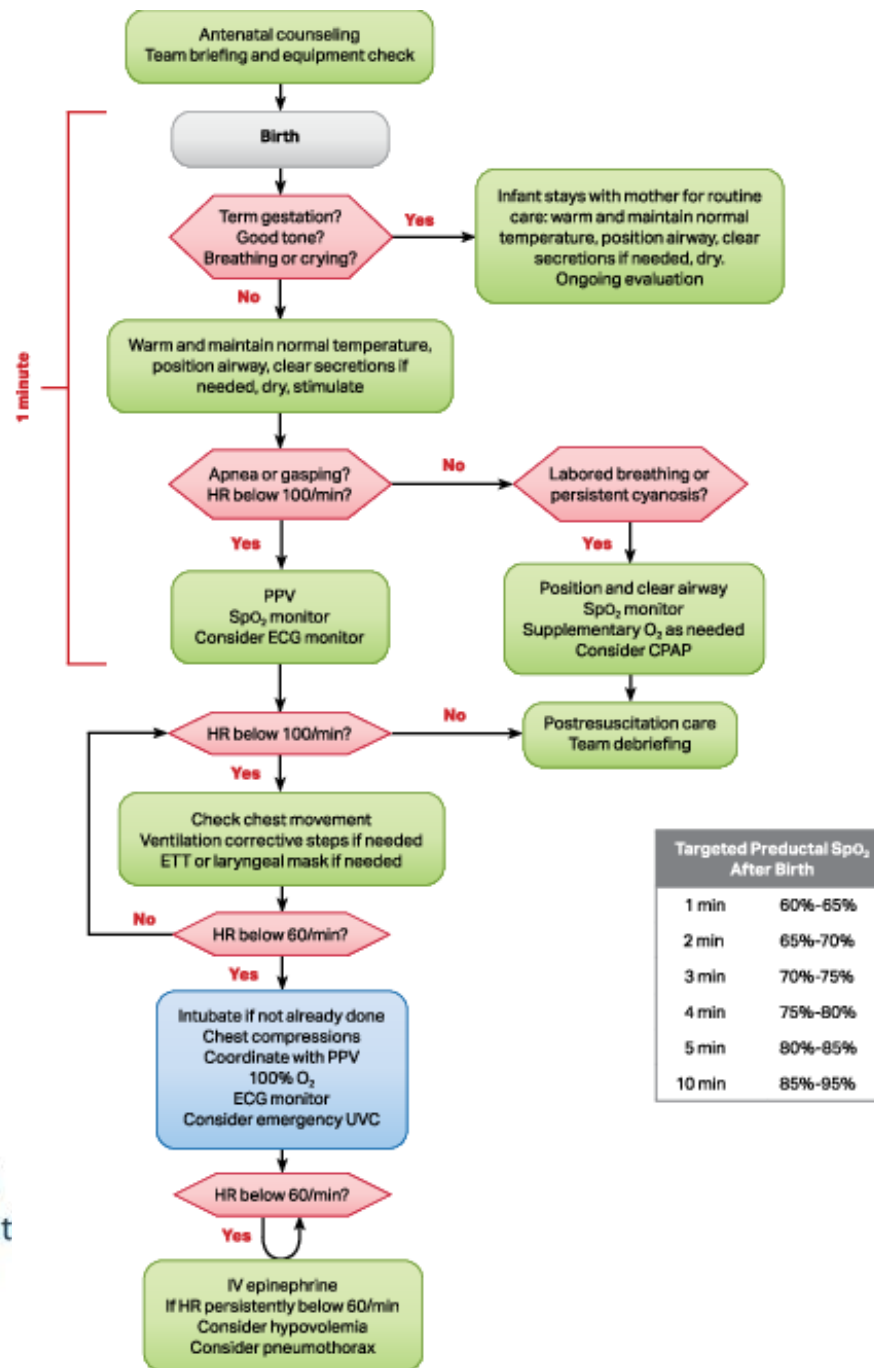
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Targeted Preductal SpO ₂ After Birth	
1 min	60%-65%
2 min	65%-70%
3 min	70%-75%
4 min	75%-80%
5 min	80%-85%
10 min	85%-95%



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Preparing for resuscitation

Team and equipment preparation: the “brief”

4 pre-birth questions

- Expected gestational age
- Is the AF clear ?
- Any additional risk factors?
- *Umbilical cord management plan*



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Warm	<ul style="list-style-type: none"> • Preheated warmer • Warm towels or blankets • Temperature sensor and sensor cover for prolonged resuscitation • Hat • Plastic bag or plastic wrap (< 32 weeks' gestation) • Thermal mattress (< 32 weeks' gestation)
Clear airway	<ul style="list-style-type: none"> • Bulb syringe • 10F or 12F suction catheter attached to wall suction, set at 80 to 100 mm Hg • Tracheal aspirator
Auscultate	<ul style="list-style-type: none"> • Stethoscope
Ventilate	<ul style="list-style-type: none"> • Flowmeter set to 10 L/min • Oxygen blender set to 21 % (21 %-30% if < 35 weeks' gestation) • Positive-pressure ventilation (PPV) device • Term- and preterm-sized masks • 8F orogastric tube and 20-ml syringe • Laryngeal mask (size 1) and 5-ml syringe (if needed for inflation) • 5F or 6F orogastric tube if insertion port is present on laryngeal mask • Cardiac monitor and leads
Oxygenate	<ul style="list-style-type: none"> • Equipment to give free-flow oxygen • Pulse oximeter with sensor and cover • Target Oxygen Saturation Table



Intubate

- Laryngoscope with size 0 and size 1 straight blades (size 00, optional)
- Stylet (optional)
- Endotracheal tubes (sizes 2.5, 3.0, 3.5)
- Carbon dioxide (CO₂) detector
- Measuring tape and/or endotracheal tube insertion depth table
- Waterproof tape or tube-securing device
- Scissors

Medicate

Access to

- Epinephrine (0.1 mg/ml= 1 mg/10 ml)
- Normal saline (100-ml or 250-ml bag, or prefilled syringes)
- Supplies for placing emergency umbilical venous catheter and administering medications
- Table of pre-calculated emergency medication dosages for babies weighing 0.5 to 4 kg



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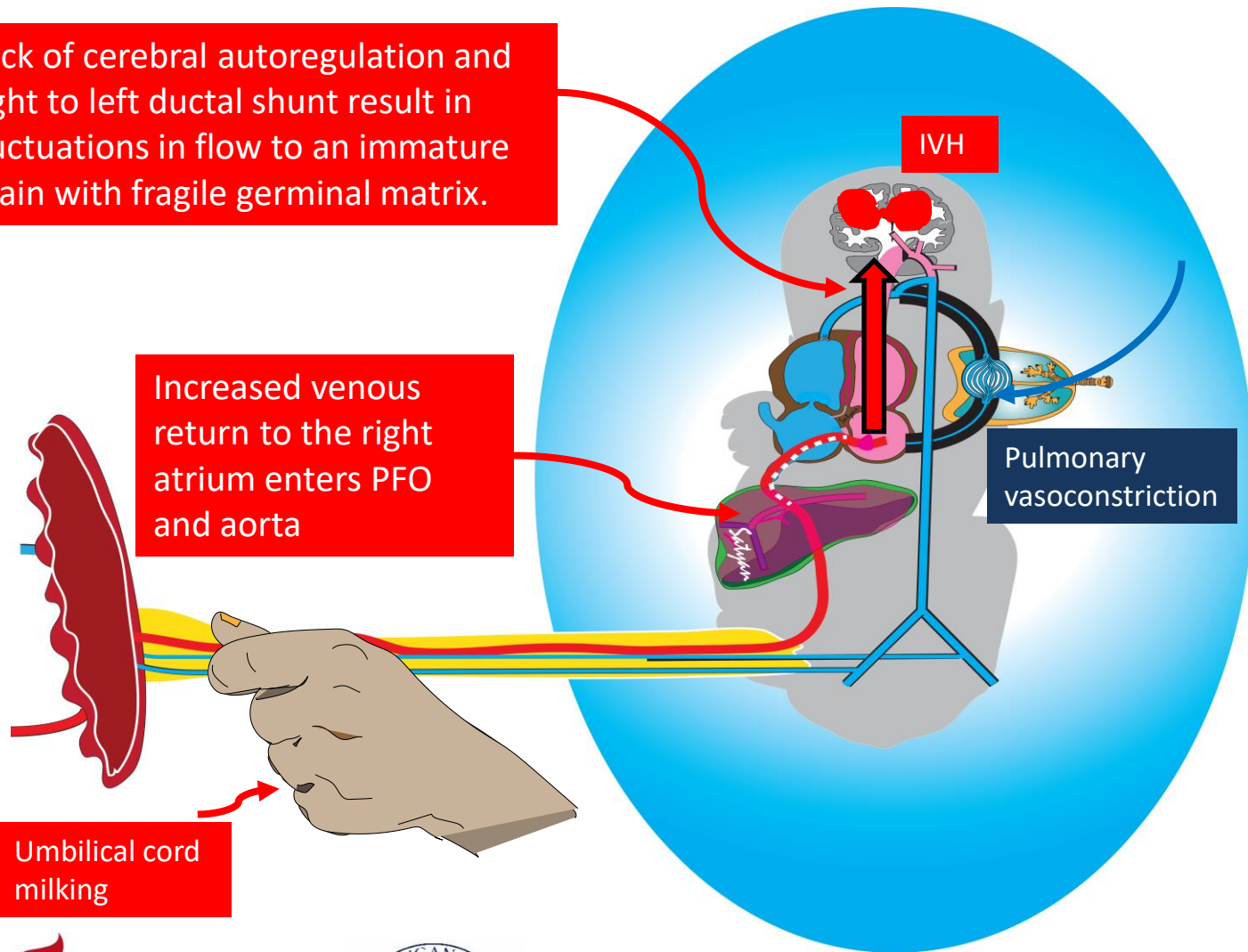
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Hemodynamic Changes During Cord Milking

Lack of cerebral autoregulation and right to left ductal shunt result in fluctuations in flow to an immature brain with fragile germinal matrix.

Increased venous return to the right atrium enters PFO and aorta

Umbilical cord milking



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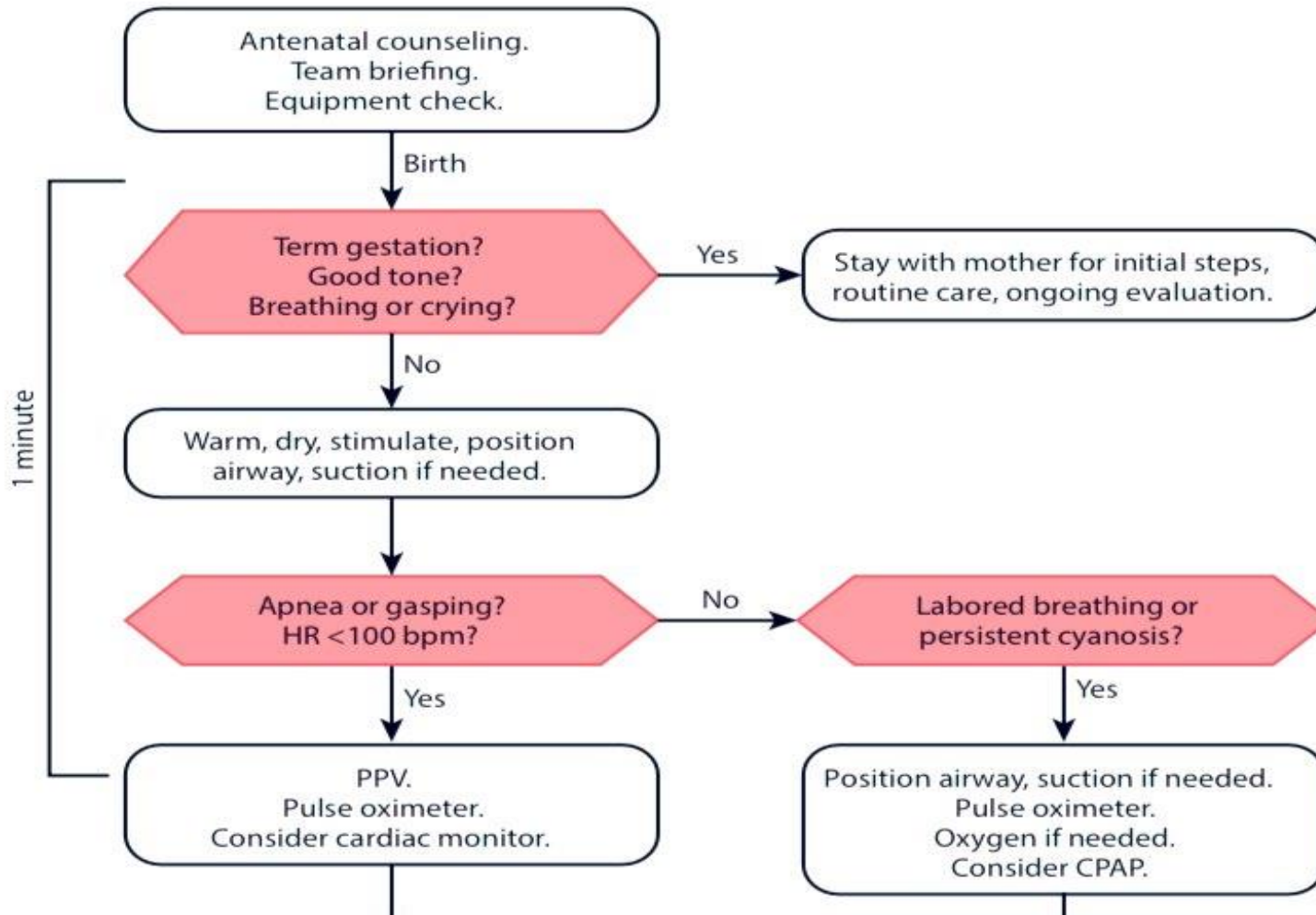


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The “Golden minute”



Routine care



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Sniffing the morning air position



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Target Oxygen Saturation Table

1 min	60%-65%
2 min	65%-70%
3 min	70%-75%
4 min	75%-80%
5 min	80%-85%
10 min	85%-95%
Initial oxygen concentration for PPV	
- 35 weeks' GA	21% oxygen
< 35 weeks' GA	21%-30% oxygen



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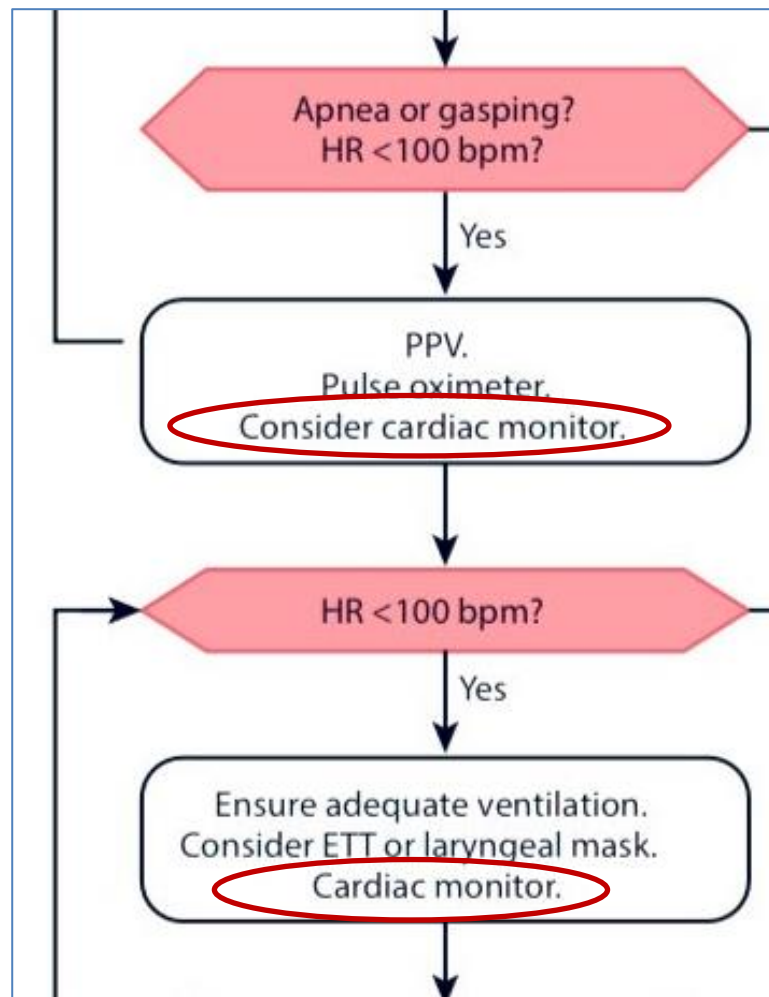


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Ventilation is key



- MR.SOPA if no \uparrow HR/no chest movement after 15 secs
- If HR low despite ventilation, alternate airway and 30 secs PPV
- Saturation targets unchanged



Figure 4.6. Testing a self-inflating bag

Testing a self-inflating bag

Block the mask or gas outlet and squeeze the bag.

- Do you feel pressure against your hand?
- Does the manometer register pressure?
- Does the pressure-release valve open when the manometer registers 30 to 40 cm H₂O pressure?
- Does the bag reinflate quickly when you release your grip?

If no,

- Is there a crack or leak in the bag?
- Is the manometer missing, resulting in an open attachment site?
- Is the pressure-release valve missing or blocked?

40 to 60 breaths per minute
Breathe, two, three; breathe, two,
three; breathe, two, three



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Initial Settings for Positive-Pressure Ventilation

	Component	Initial Setting
Oxygen concentration	≥ 35 weeks' gestation < 35 weeks' gestation	21% 21%-30%
Gas flow		10 L/minute
Rote		40-60 breaths/minute
PIP		20-25 cm H ₂ O
PEEP		5 cm H ₂ O



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MR. SOPA

	Corrective Step	Actions
M	Mask adjustment.	Reapply the mask and lift the jaw forward. Consider the 2-hand hold.
R	Reposition the head and neck.	Place head neutral or slightly extended.
Give 5 breaths and assess chest movement. If no chest movement, do the next steps.		
S	Suction the mouth and nose.	Use a bulb syringe or suction catheter.
O	Open the mouth.	Use a finger to gently open the mouth.
Give 5 breaths and assess chest movement. If no chest movement, do the next step.		
P	Pressure increase.	Increase in 5-10 cm H ₂ O increments to maximum recommended pressure. <ul style="list-style-type: none"> • Max 40 cm H₂O term • Max 30 cm H₂O preterm
Give 5 breaths and assess chest movement. If no chest movement, do the next step.		
A	Alternative airway.	Insert a laryngeal mask or endotracheal tube.
Try PPV and assess chest movement and breath sounds.		



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PEEP		5 cm H ₂ O



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Endotracheal intubation

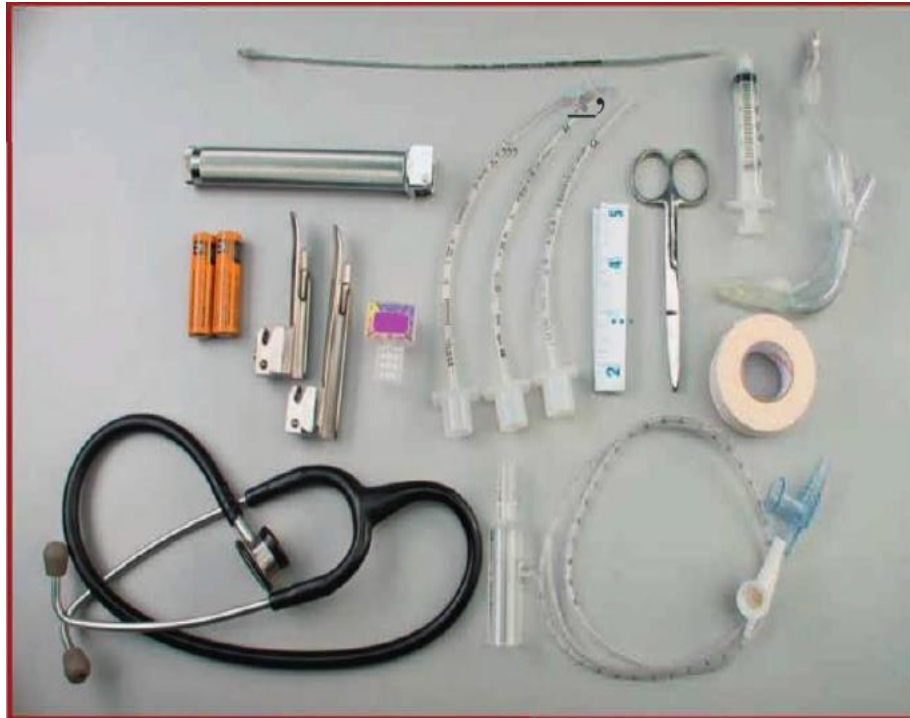


Table 5-1. Endotracheal Tube Size for Babies of Various Weights and Gestational Ages

Weight	Gestational Age	Endotracheal Tube Size
Below 1 kg	Below 28 weeks	2.5 mm ID
1-2 kg	28-34 weeks	3.0 mm ID
Greater than 2 kg	Greater than 34 weeks	3.5 mm ID



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Endotracheal intubation

Table 5-4. Initial Endotracheal Tube Insertion Depth ("Tip to Lip") for Orotracheal Intubation

Gestation	Endotracheal Tube Insertion Depth at Lips	Baby's Weight
23-24 weeks	5.5 cm	0.5-0.6 kg
25-26 weeks	6.0 cm	0.7-0.8 kg
27-29 weeks	6.5 cm	0.9-1 kg
30-32 weeks	7.0 cm	1.1-1.4 kg
33-34 weeks	7.5 cm	1.5-1.8kg
35-37 weeks	8.0 cm	1.9-2.4 kg
38-40 weeks	8.5 cm	2.5-3.1 kg
41-43 weeks	9.0 cm	3.2-4.2 kg

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



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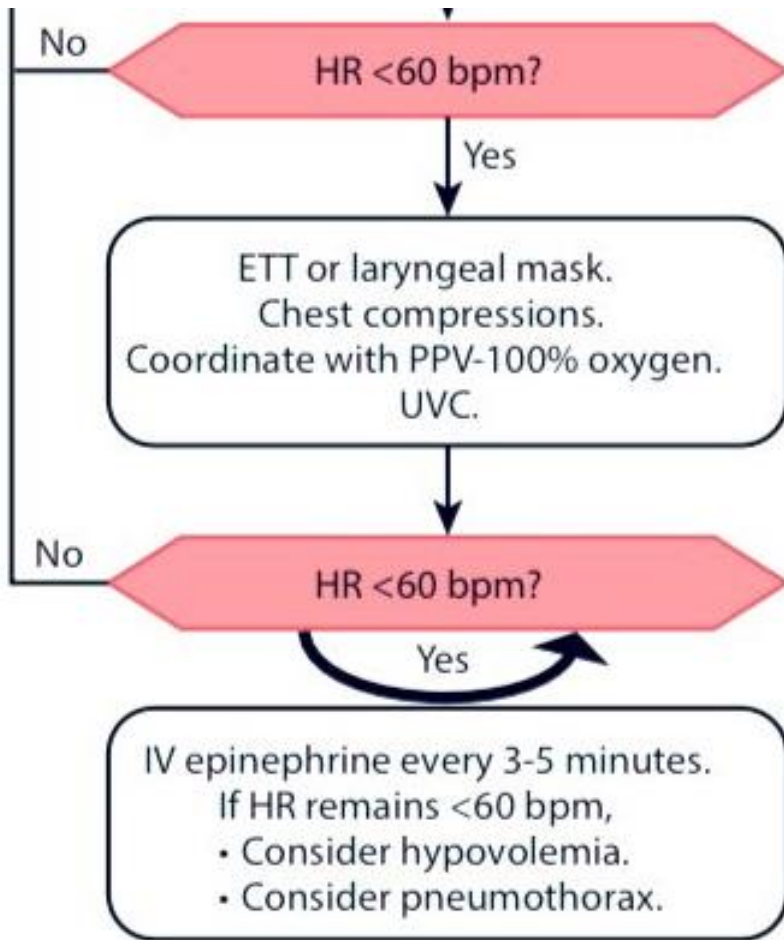


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Chest compressions



- 30 seconds PPV via AA
- 90 compressions per minute and the breathing rate is 30 breaths per minute
- One-and-Two and *Three-and-Breathe-and*
- 100% FiO₂
- 60 seconds- reassess



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CARDIO

1. Chest movement: Is the chest moving with each breath?
2. **Airway:** Is the airway secured with an endotracheal tube or laryngeal mask?
3. **Rote:** Are 3 compressions coordinated with 1 ventilation being delivered every 2 seconds?
4. Depth: Is the depth of compressions one-third of the AP diameter of the chest?
5. Inspired Oxygen: Is 100% oxygen being administered through the PPV device?



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MEDICATIONS

- Epinephrine IV/IO dose range 0.01-0.03mg/kg
- Suggested initial IV/IO =0.02mg/kg.
- Suggested initial ET dose =0.1mg/kg (no max. dose)
- Flush with 3 ml normal saline
- Can repeat every 3-5 mins: “consider ↑subsequent doses”
- Consider pneumothorax/hypovolemia



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POST RESUSCITATION CARE

A baby who required resuscitation must have close monitoring and frequent assessment of respiratory effort, oxygenation, blood pressure, blood glucose, electrolytes, urine output, neurologic status, and temperature during the immediate neonatal period.

Be careful to avoid overheating the baby during or after resuscitation.

If indicated, therapeutic hypothermia must be initiated promptly; therefore, every birth unit should have a system for identifying potential candidates and contacting appropriate resources.



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