

Neonatal Resuscitation

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**EMS
CONSORTIUM**



Neonatal
Resuscitation



Neonatal
Resuscitation
Program™

Neonatal Resuscitation

- Assign roles (Airway, PPV, Dry/Pulse check/IO, timer/meds)
- Dry and Stimulate
- Check your own pulse before the baby's!
- When to start PPV?
- When to start Chest Compressions?
- When to think about epinephrine?

Neonatal Resuscitation

- Ten percent of neonates born at term will require some degree of resuscitation
 - Difficult to predict which neonates will require resuscitation
- Only about 1% of neonates will require very aggressive resuscitation efforts to survive
 - Vascular access
 - Chest compressions
 - Intubation
 - Epinephrine Administration
- Vast majority of neonates will transition to extra-uterine life with minimal efforts and a focus on positive pressure ventilation

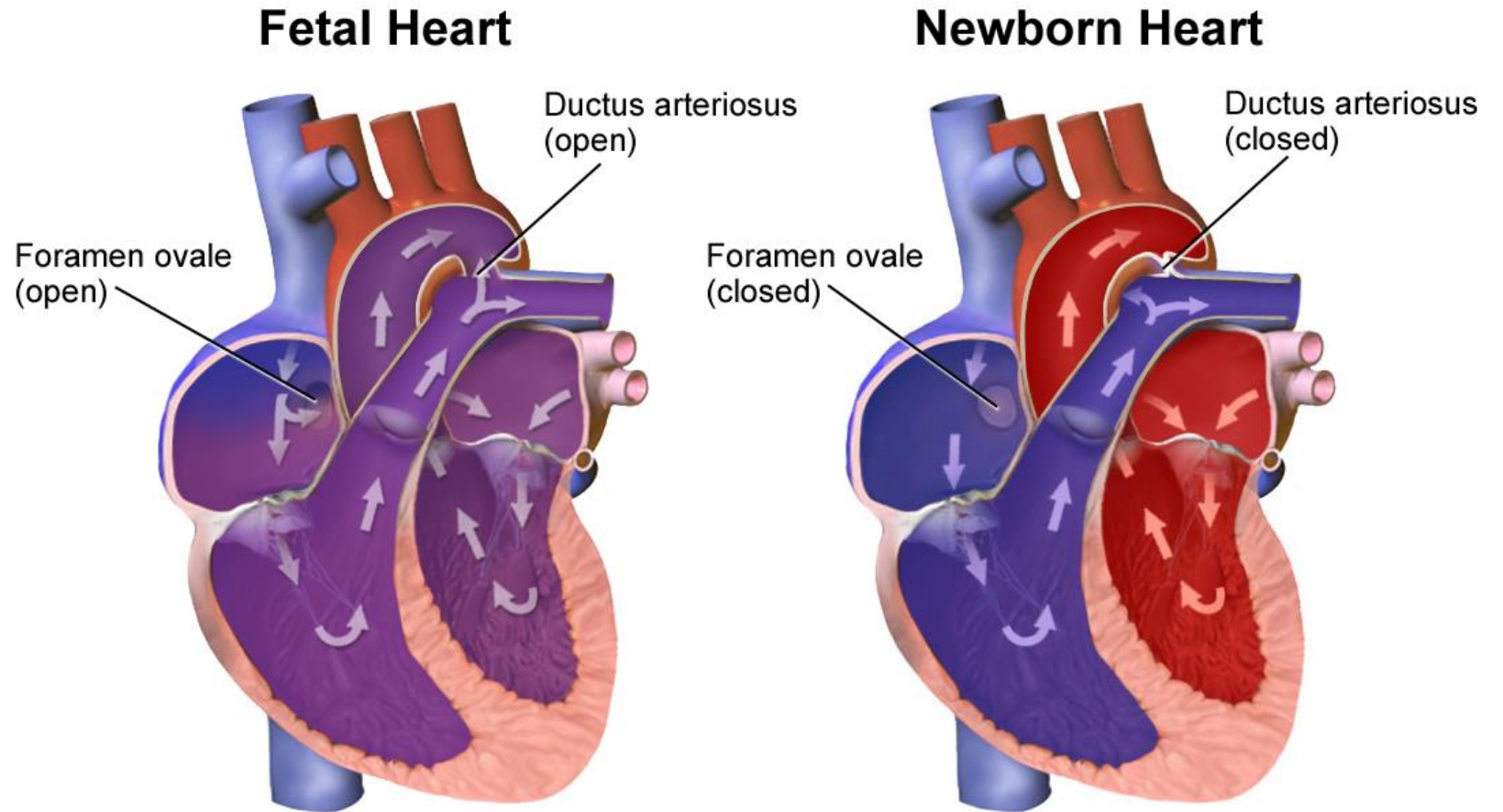
Neonatal Resuscitation

Ventilation of the baby's lungs is the most important and effective action in neonatal resuscitation



Neonatal Resuscitation:

Why is PPV so important?



If you have
time and/or
enough
people...

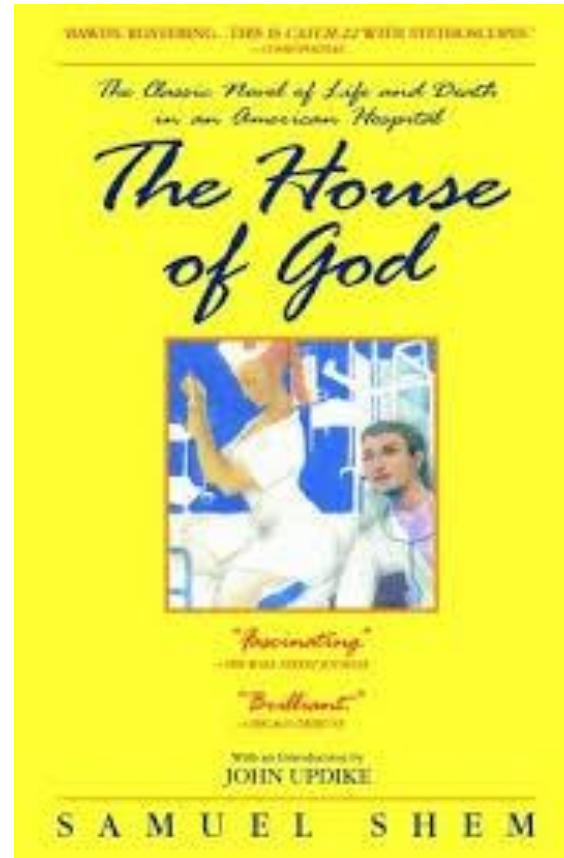
Assess the likelihood that the infant will
require resuscitation

Identify a team leader

Assign roles

Timer

Remember

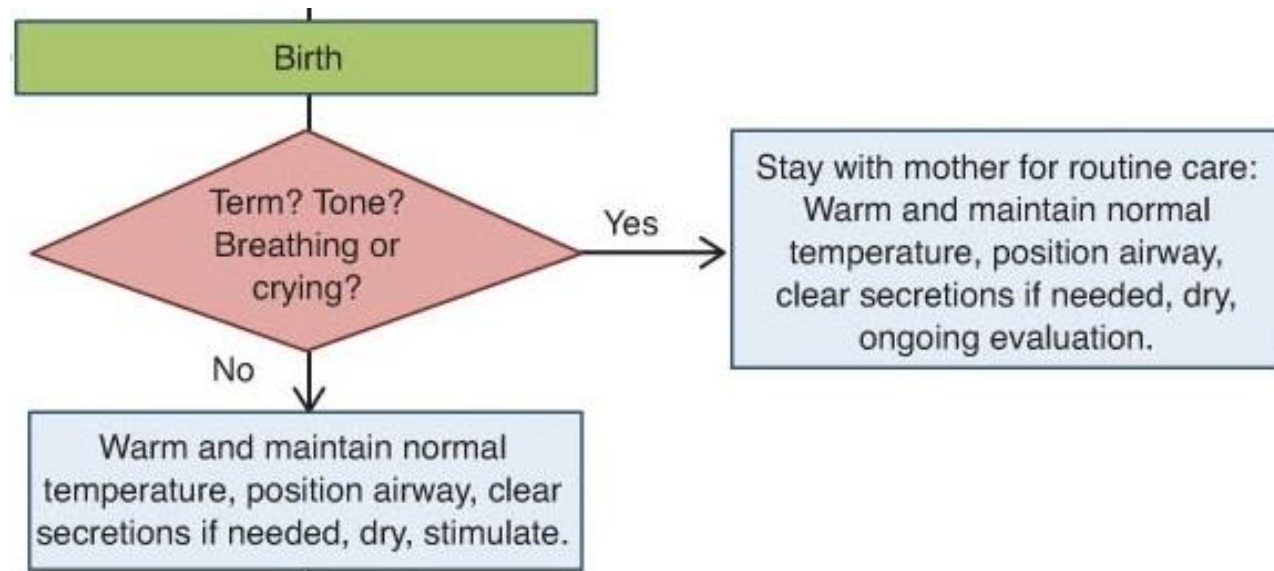


"The most important procedure in a code is to take your own pulse."
-The Fat Man

Neonatal Resuscitation:

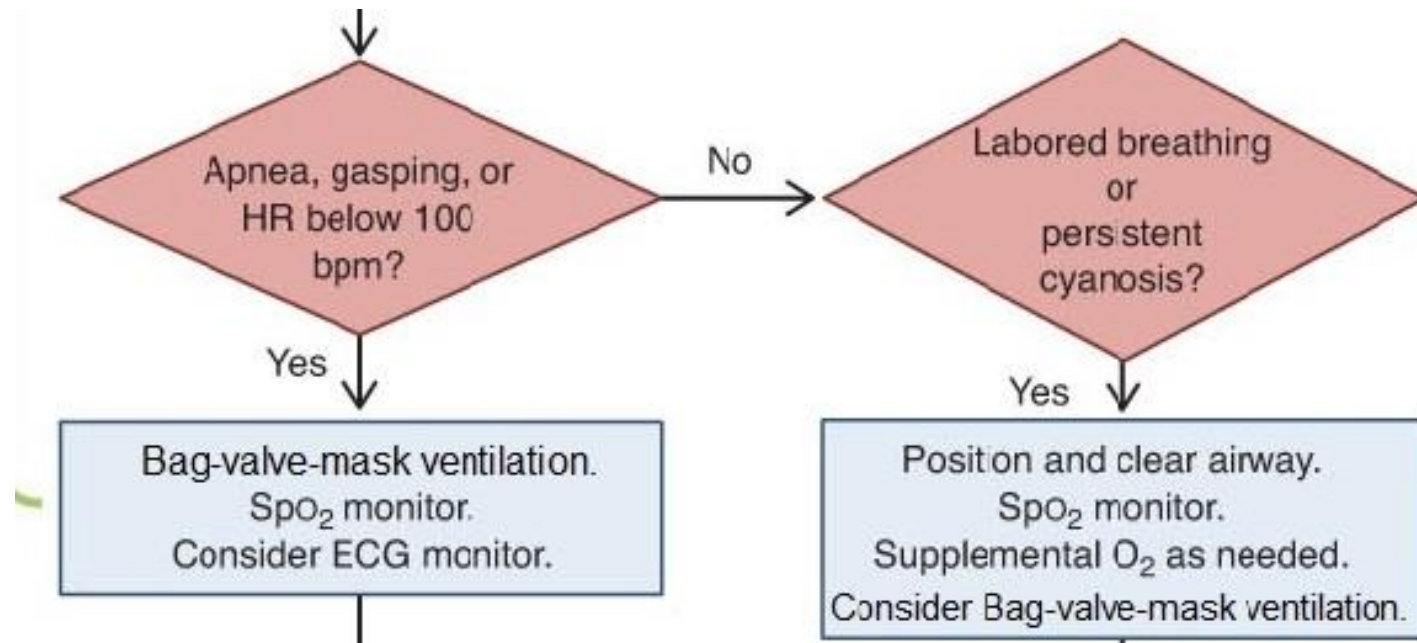
The First 30 Seconds

- Start a timer
- Dry and Stimulate
- Maintain open airway
- Suction baby's mouth and nose
- Anticipate next actions



Neonatal Resuscitation: The Next 30 Seconds

- Assess respiratory effort
- Assess circulation



Start PPV



Mask Sizing



Mask Sizing



Correct
Covers mouth, nose, and
chin but not eyes

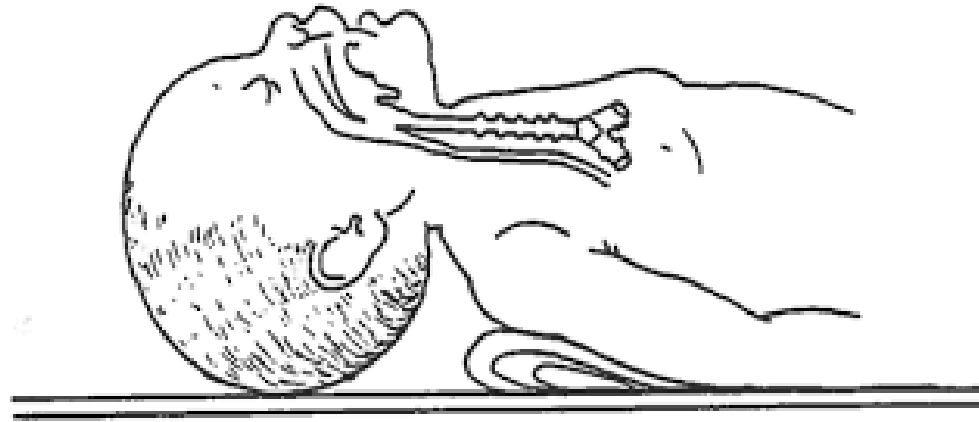


Incorrect
Too large: covers eyes
and extends over chin



Incorrect
Too small: does not cover
nose and mouth well

Start PPV



15 seconds of
PPV



15 seconds of
PPV

Rate
PEEP
Oxygen



15 seconds of
PPV



Is Chest Rising and Falling?

MR SOPA mnemonic

Table 4-2. The 6 Ventilation Corrective Steps: MR. SOPA

	Corrective Steps	Actions
M	Mask adjustment.	Reapply the mask. Consider the 2-hand technique.
R.	Reposition airway.	Place head neutral or slightly extended.
<i>Try PPV and reassess chest movement.</i>		
S	Suction mouth and nose.	Use a bulb syringe or suction catheter.
O	Open mouth.	Open the mouth and lift the jaw forward.
<i>Try PPV and reassess chest movement.</i>		
P	Pressure increase.	Increase pressure in 5 to 10 cm H ₂ O increments, maximum 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>		

MR SOPA mnemonic

Table 4-2. The 6 Ventilation Checks

	Corrective Steps	Actions
M	Mask adjustment.	Reapply the mask. Consider the 2-hand technique.
R.	Reposition airway.	Place head neutral or slightly extended.
<i>Try PPV and reassess chest movement.</i>		
S	Suction mouth and nose.	Use a bulb syringe or suction catheter.
O	Open mouth.	Open the mouth and lift the jaw forward.
<i>Try PPV and reassess chest movement.</i>		
P	Pressure increase.	Increase PEEP in 5 cm H ₂ O increments, maximum 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>		



The stem hold



The two point top hold



The OK rim hold

Mask Adjustment

MR SOPA mnemonic

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Airway Adjuncts



4765 - 4767
(110mm, X Large)



4735 - 4737
(80mm, Small)



4755 - 4757
(100mm, Large)



4725 - 4727
(60mm, Child)



4745 - 4747
(90mm, Medium)



4715 - 4717
(40 mm, Infant)

Airway Adjuncts



15 seconds of
PPV



Is Chest Rising and Falling?

Is SpO₂ increasing?

Oxygen Saturation in the Neonate

Targeted Pre-ductal SPO₂ (Term infants)

1 min	60-65%
2 min	65-70%
3 min	70-75%
4 min	75-80%
5 min	80-85%
10 min	85-90%

15 seconds of PPV



Is Chest Rising and Falling?

Is SpO₂ increasing?

Is Heart Rate Increasing?

After You've
Done PPV for
15-30
seconds...

- **TWO IMPORTANT NUMBERS**

- Heart Rate <100
- Heart Rate <60

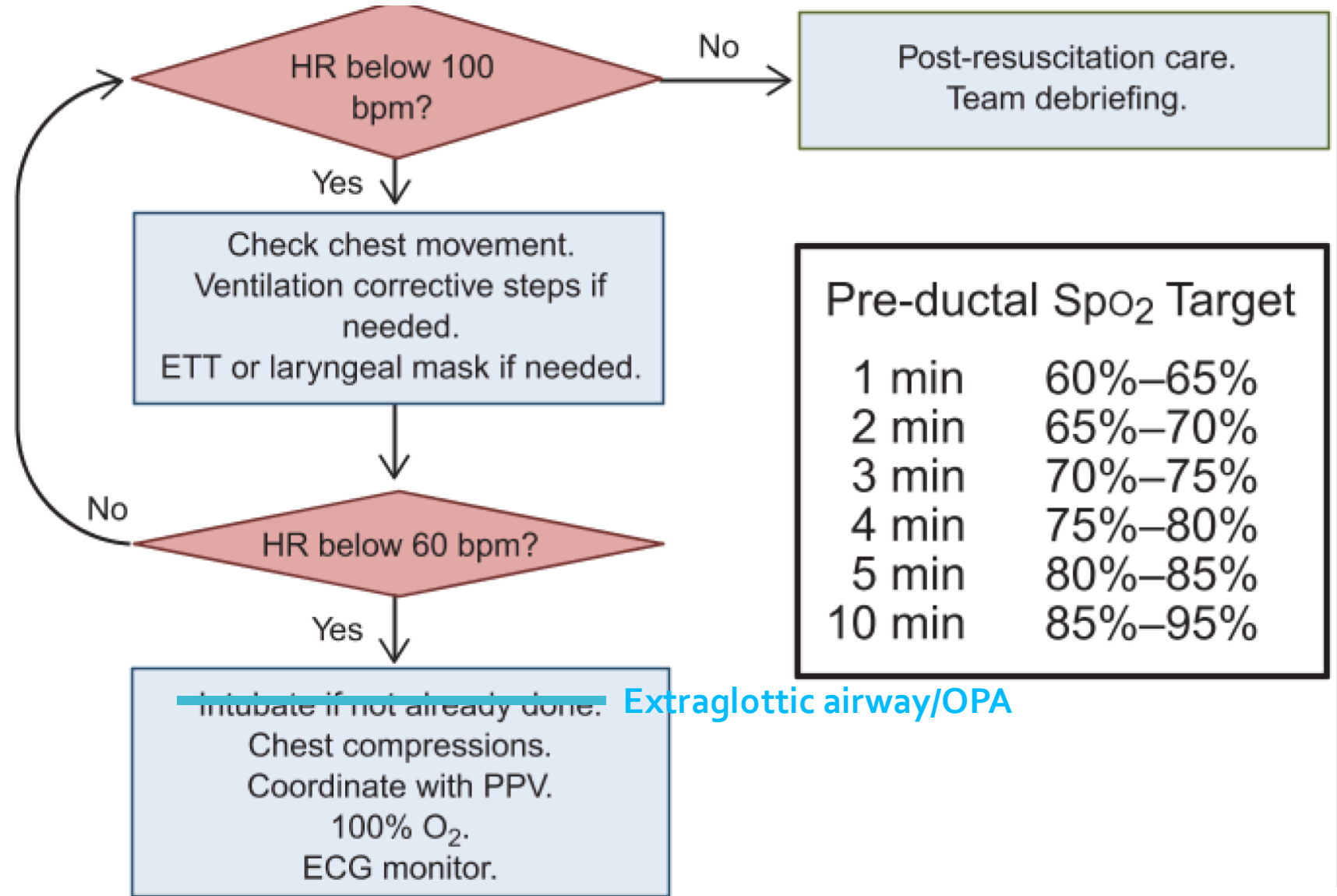
- **Heart Rate <100**

- Continue ventilations
- Continue MR SOPA corrective/additional actions

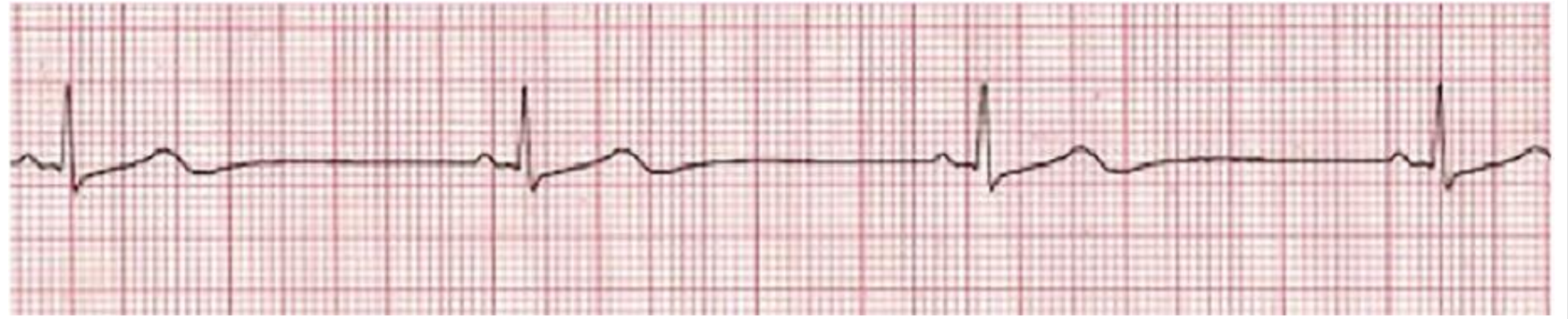
- **Heart Rate <60**

- Chest compressions

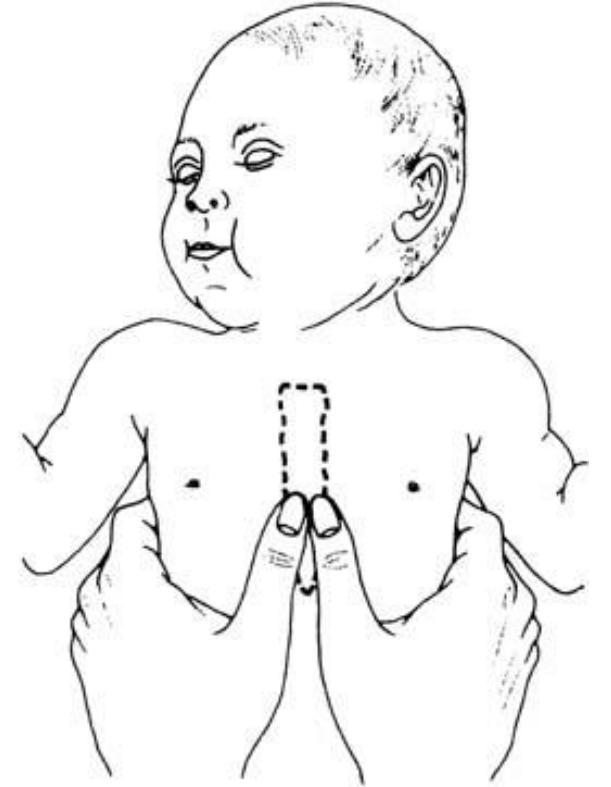
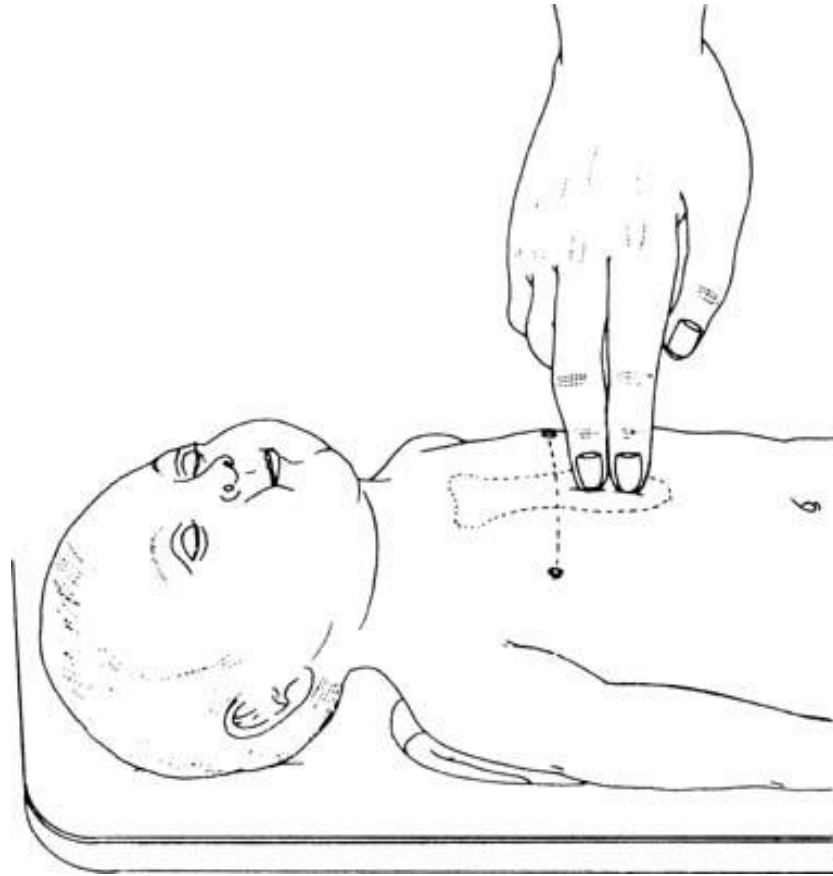
HR <60
HR <100



Heart Rate
Less than
60....now
what?



Chest Compressions



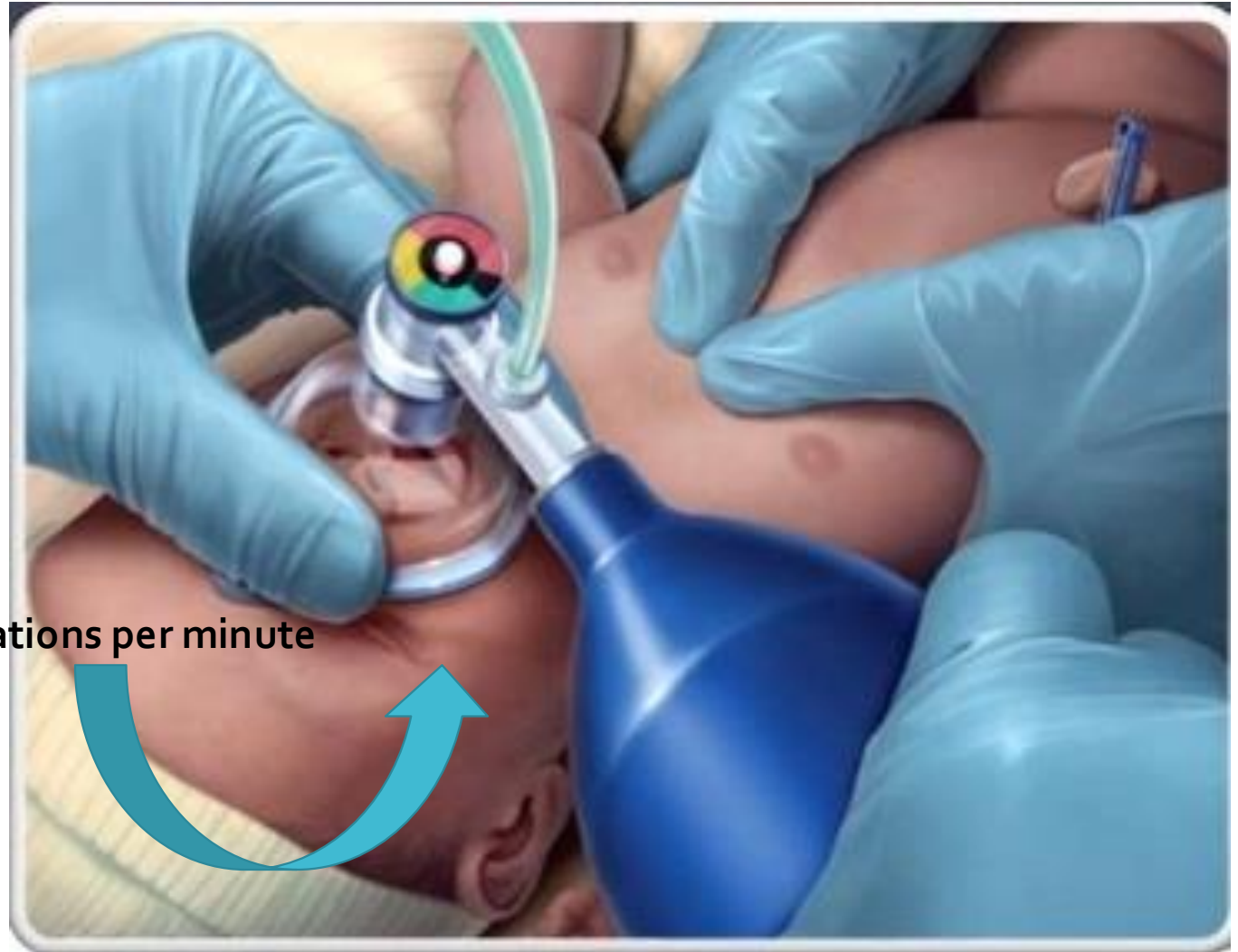
Coordinating
Chest
Compressions
with
Ventilations



"1 and 2 and 3 and Breathe"

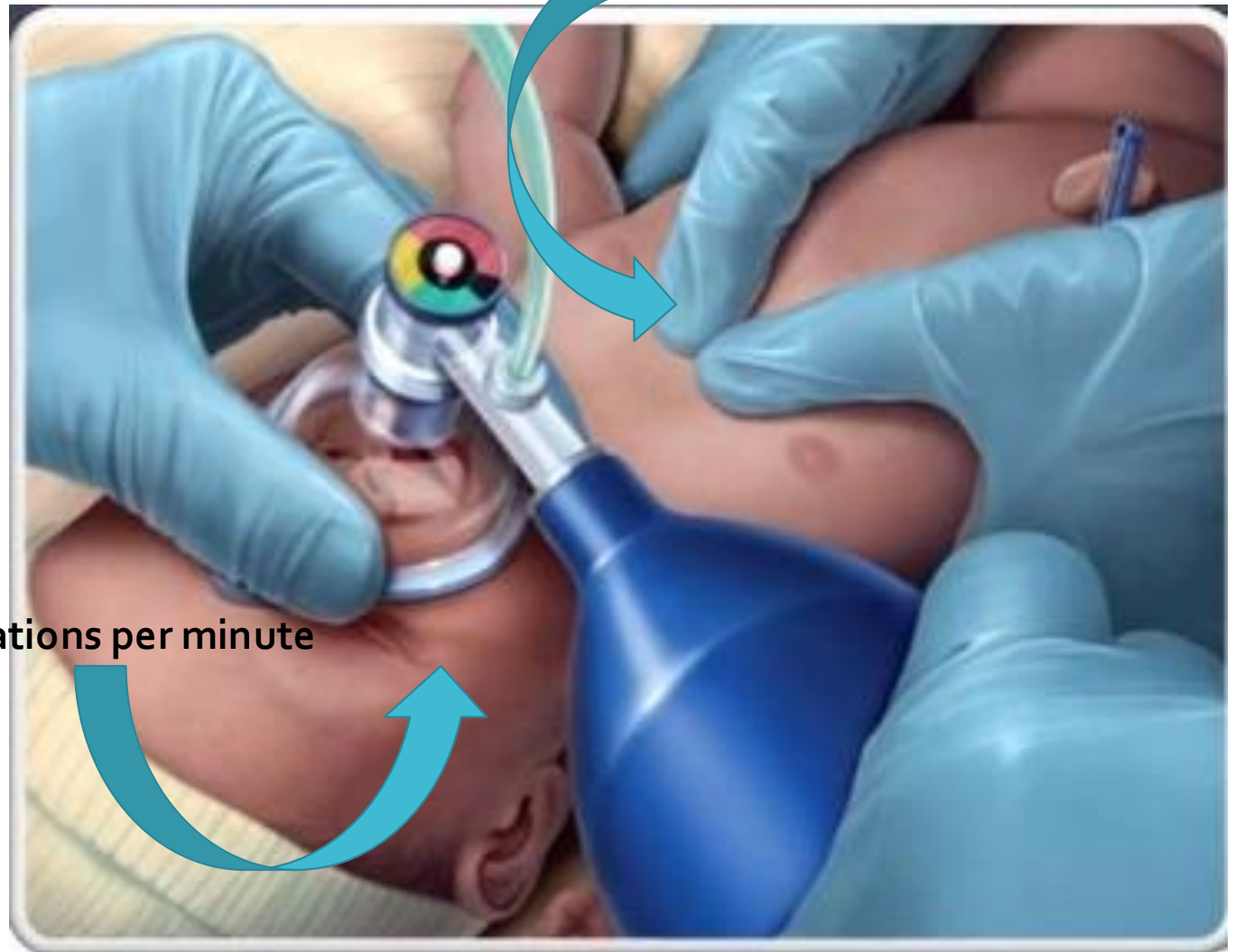
Coordinating Chest Compressions with Ventilations

30 ventilations per minute



"1 and 2 and 3 and Breathe"

Coordinating
Chest
Compressions
with
Ventilations



90 chest compressions per minute

30 ventilations per minute

"1 and 2 and 3 and Breathe"

What Now?

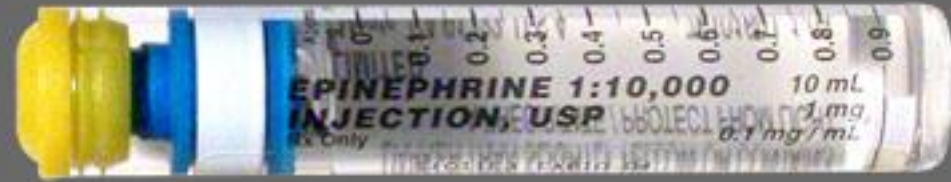
- For the next 60 seconds
 - Gather your thoughts
 - Take a few breaths
 - Review your previous actions
 - MR SOPA

After 60
seconds of PPV
and chest
compressions

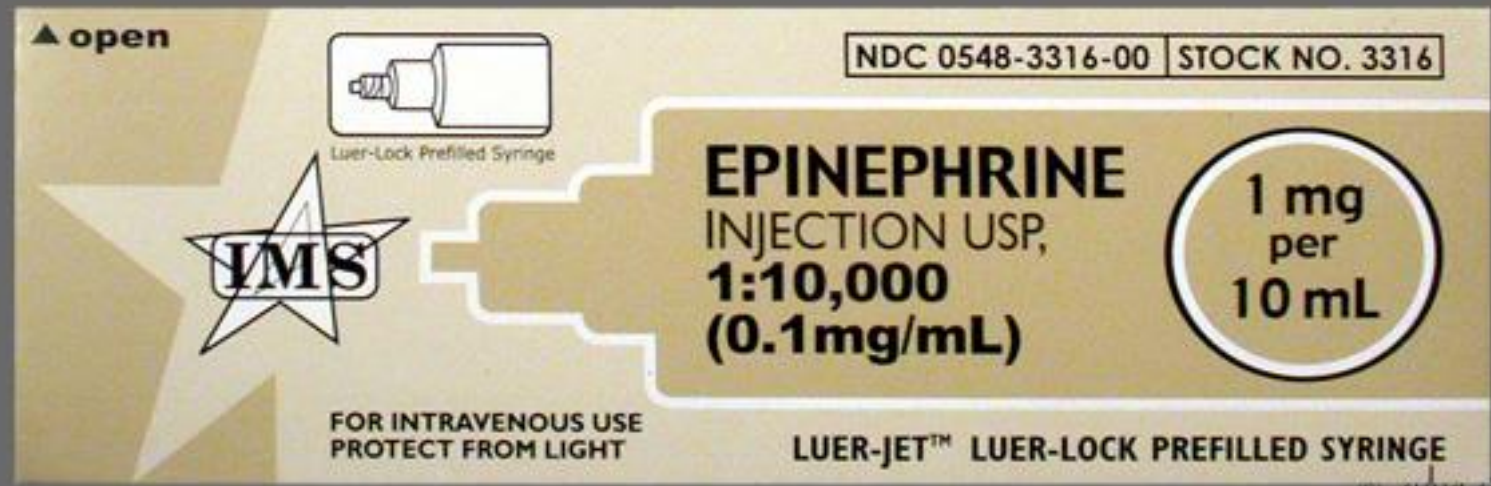
- If HR is >60 , stop chest compressions but continue PPV at 40-60 breaths per minute
- If HR still <60 , prepare to administer epinephrine

Neonatal Epinephrine Dosing

0.01-0.03mg per
kilogram IV/IO

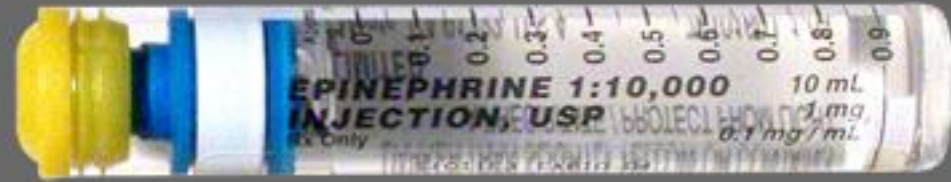


0.1-0.3mL per kilogram of a 1:10,000 concentration



Neonatal Epinephrine Dosing

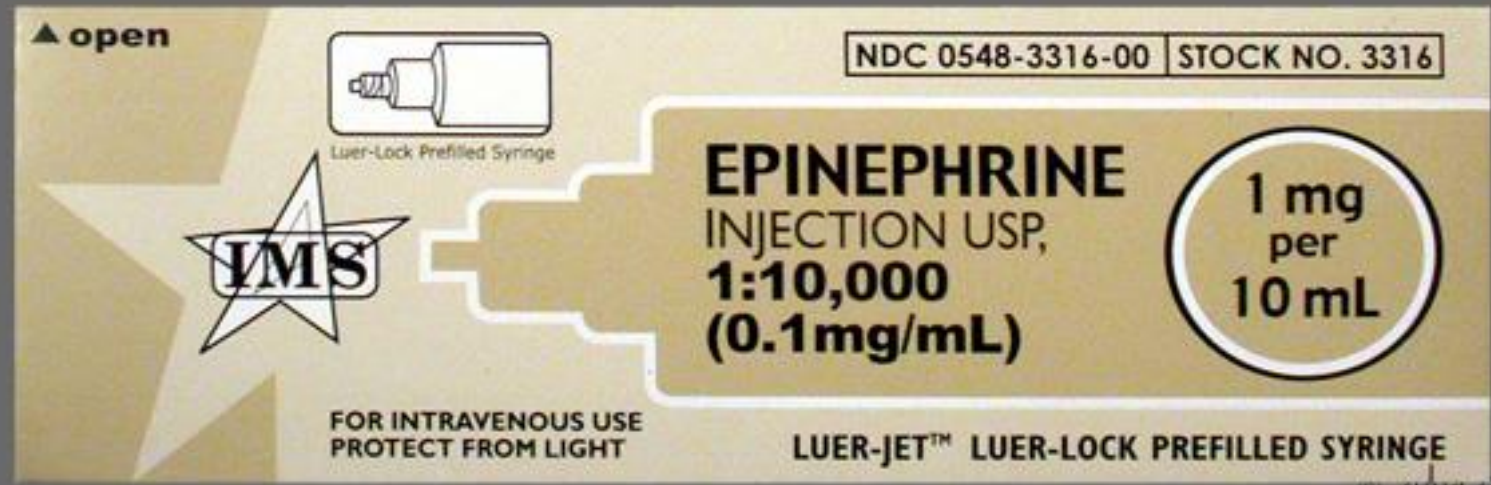
0.01-0.03mg per
kilogram IV/IO



0.1-0.3mL per kilogram of a 1:10,000 concentration



Repeat every 3-5 minutes for persistent bradycardia <60bpm



Can't think?



- 1 mL of 1:10,000

Other Resuscitated Infant Considerations



Warmth



Hypoglycemia



Remember delayed rise in pulse oximetry

Summary

- Single most important thing you can do to resuscitate a neonate is to ventilate the lungs
- PPV: 40-60 breaths per minute
- PPV+chest compressions: 30 breaths/minute and 90 compressions per minute = rate of 120 "events" per minute
- Reassuring signs
 - Heart rate increasing
 - Tone improving
 - Color improving
 - Saturations rising
- Ominous signs
 - Persistent bradycardia (or a falling HR)
 - Chest not moving with PPV
 - Cold, limp, blue baby

Questions?

