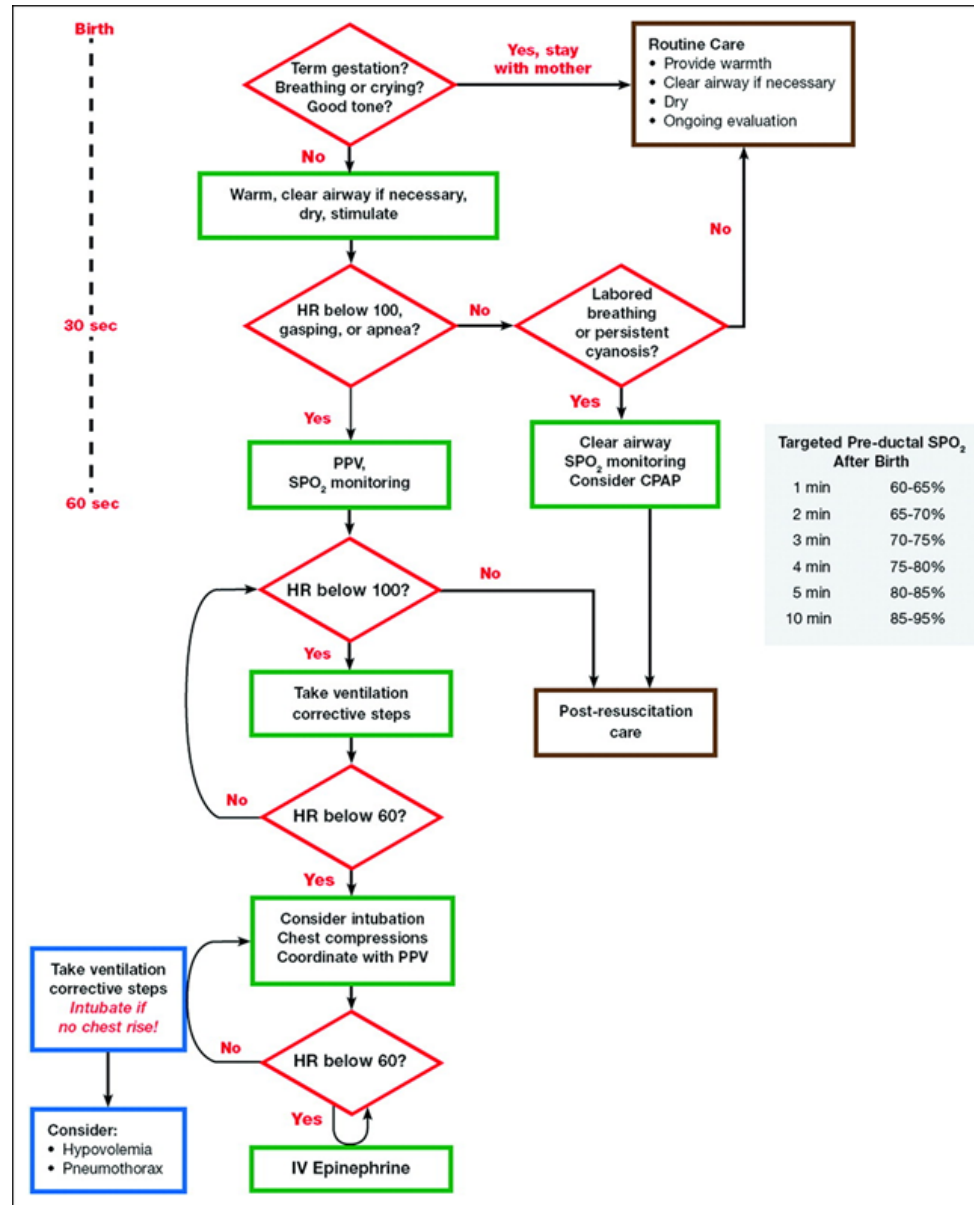


NEONATAL RESUSCITATION: CURRENT GUIDELINES

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WHY LEARN RESUSCITATION

- Birth asphyxia - 19% (5 million) of all neonatal deaths every year (WHO 1995)
- By appropriate resuscitation: Outcome of thousands of newborns may improve
- 10% of all babies require resuscitation; 1% need extensive resuscitative measures



ABCS OF RESUSCITATION

Temperature

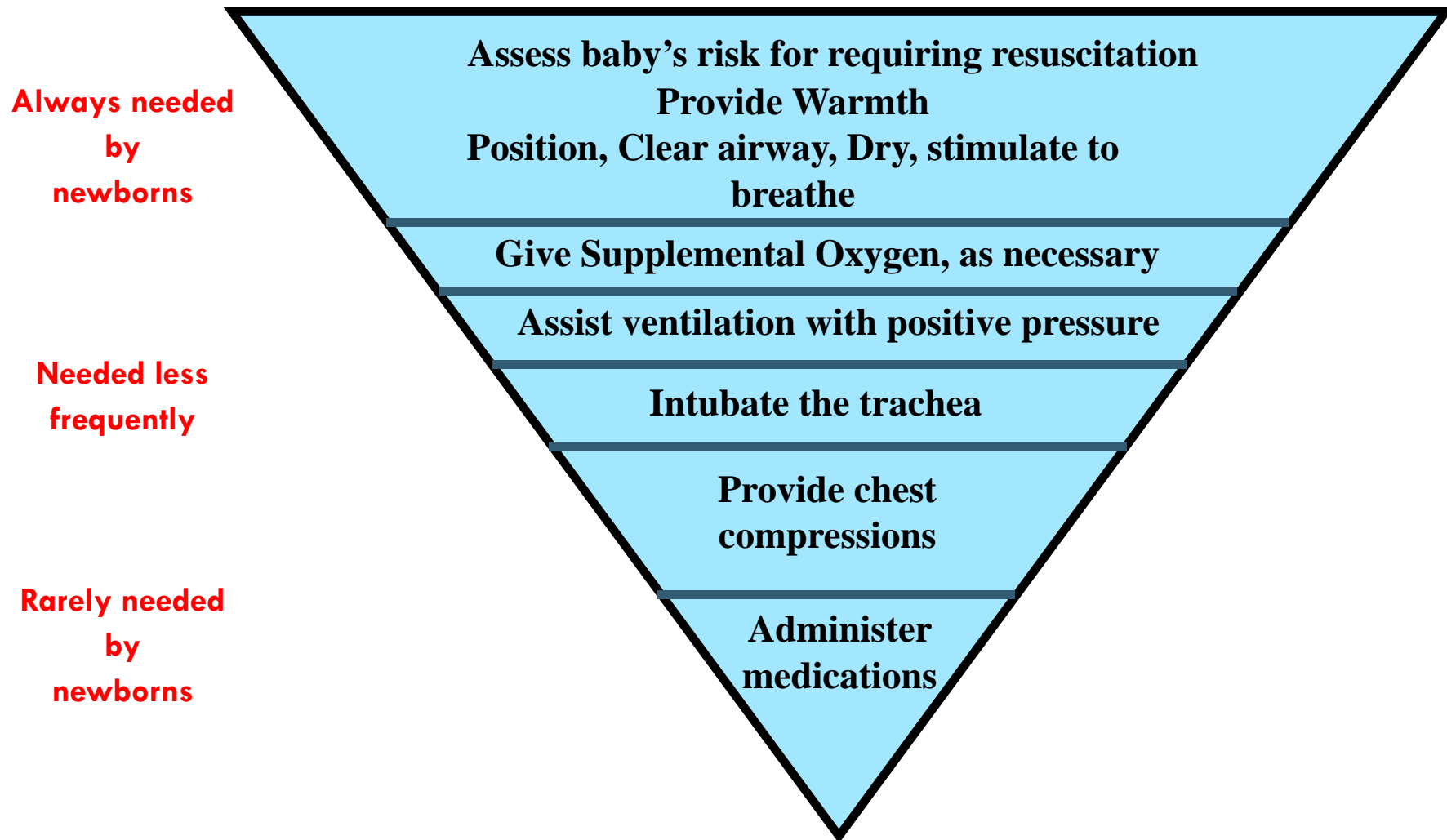
Airway (position and clear)

Breathing (stimulate to breathe)

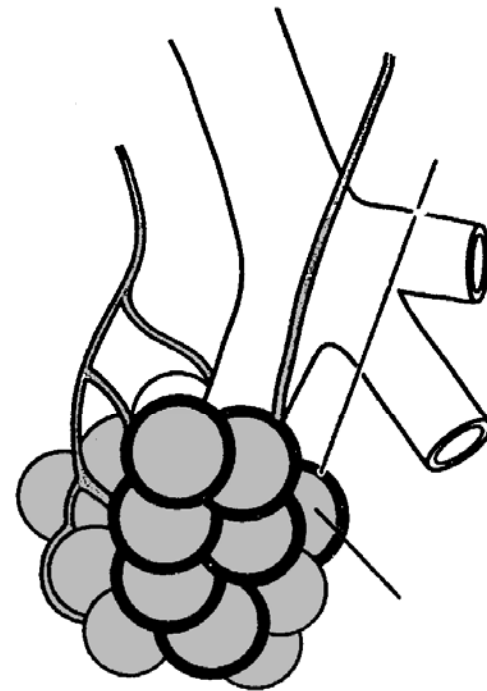
Circulation (assess heart rate and color)

Drugs (Medications)

Need For Resuscitation



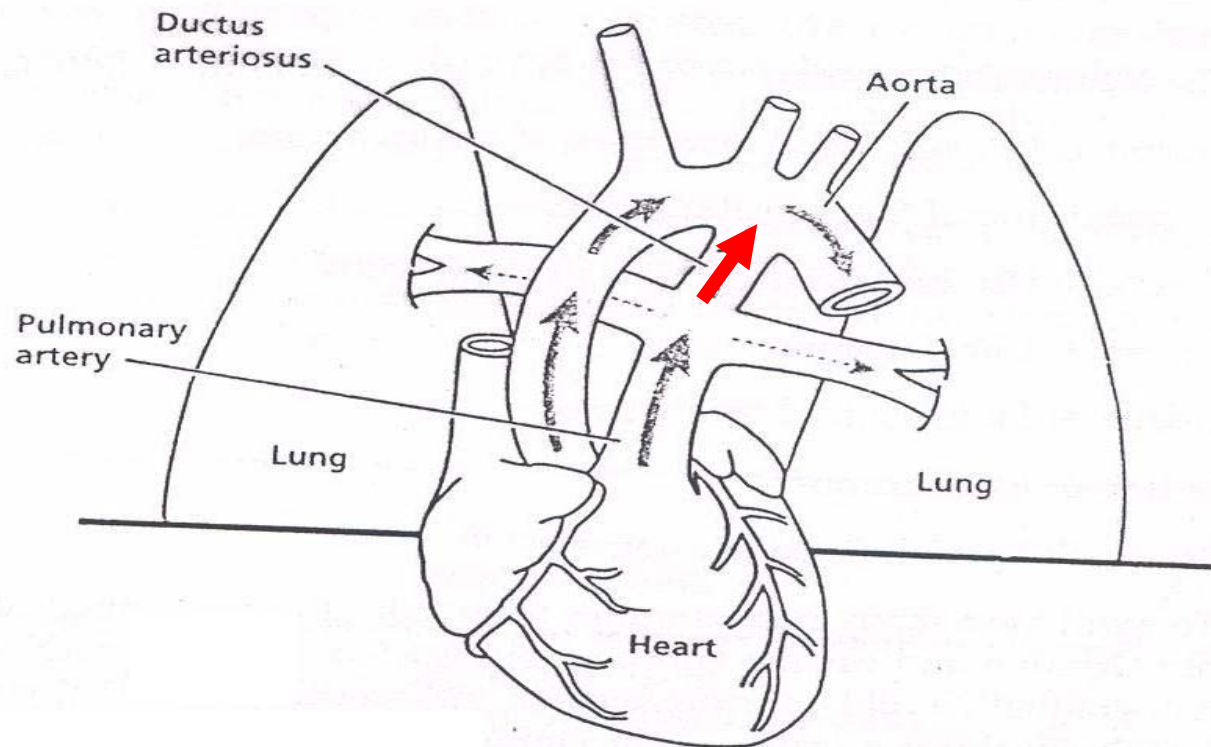
FLUID FILLED ALVEOLI AND CONSTRICTED BLOOD VESSELS IN THE LUNGS BEFORE BIRTH



Constricted vessels
before birth

Fluid in
alveoli

SHUNTING OF BLOOD THRU DUCTUS AWAY FROM LUNGS BEFORE BIRTH

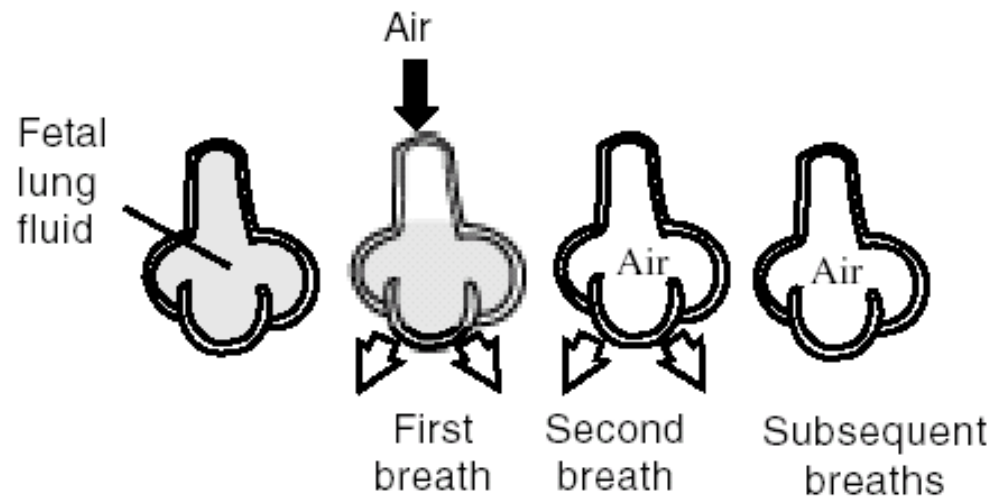


WHAT NORMALLY HAPPENS AT BIRTH

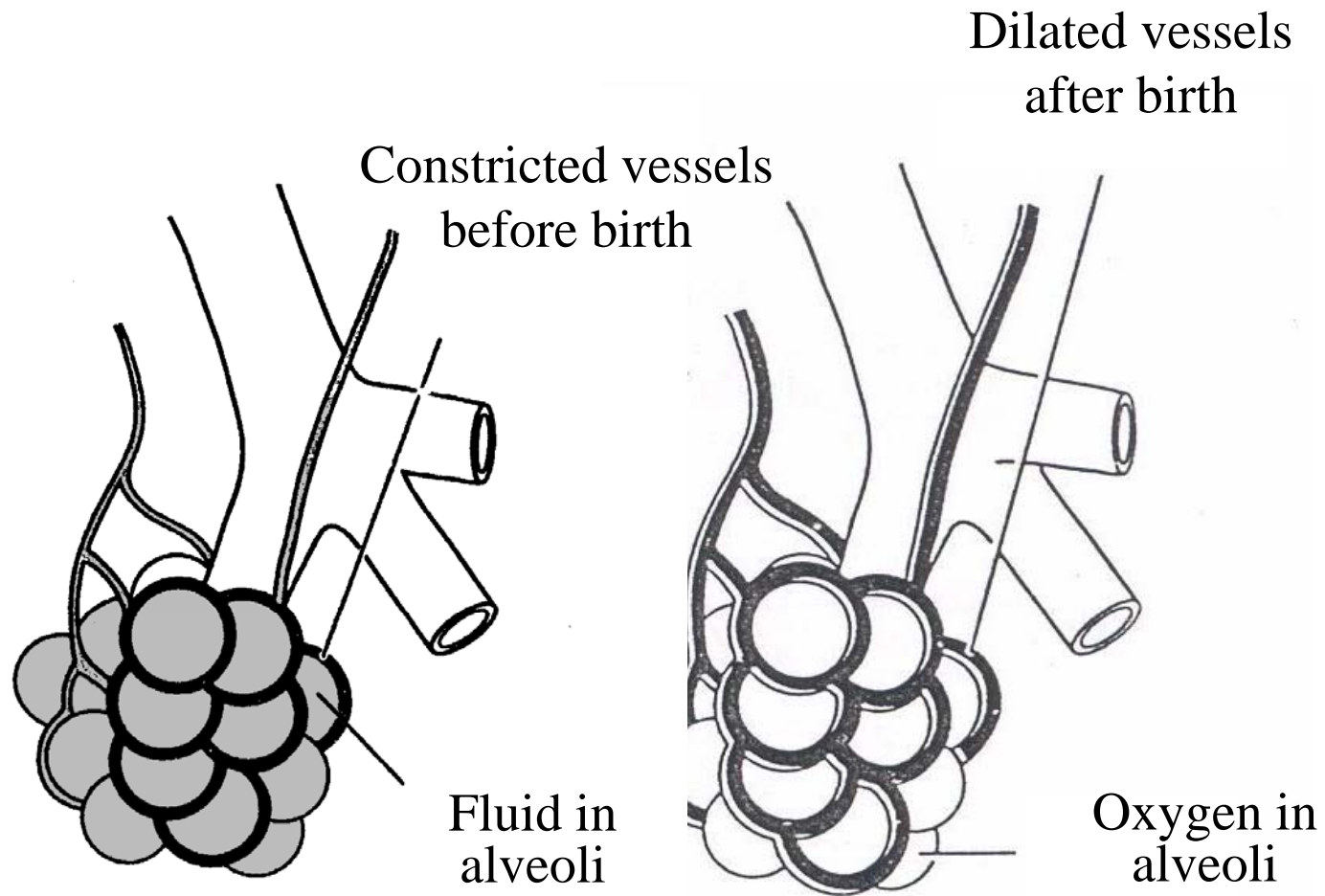
Three major changes occur

- The Fluid in the alveoli is absorbed
- The umbilical arteries and vein constrict and are clamped
 - Removes low-resistance placental circuit
 - Increase systemic blood pressure
- Blood vessels in the lung tissue relax
 - Decrease resistance to blood flow

CHANGES AT BIRTH

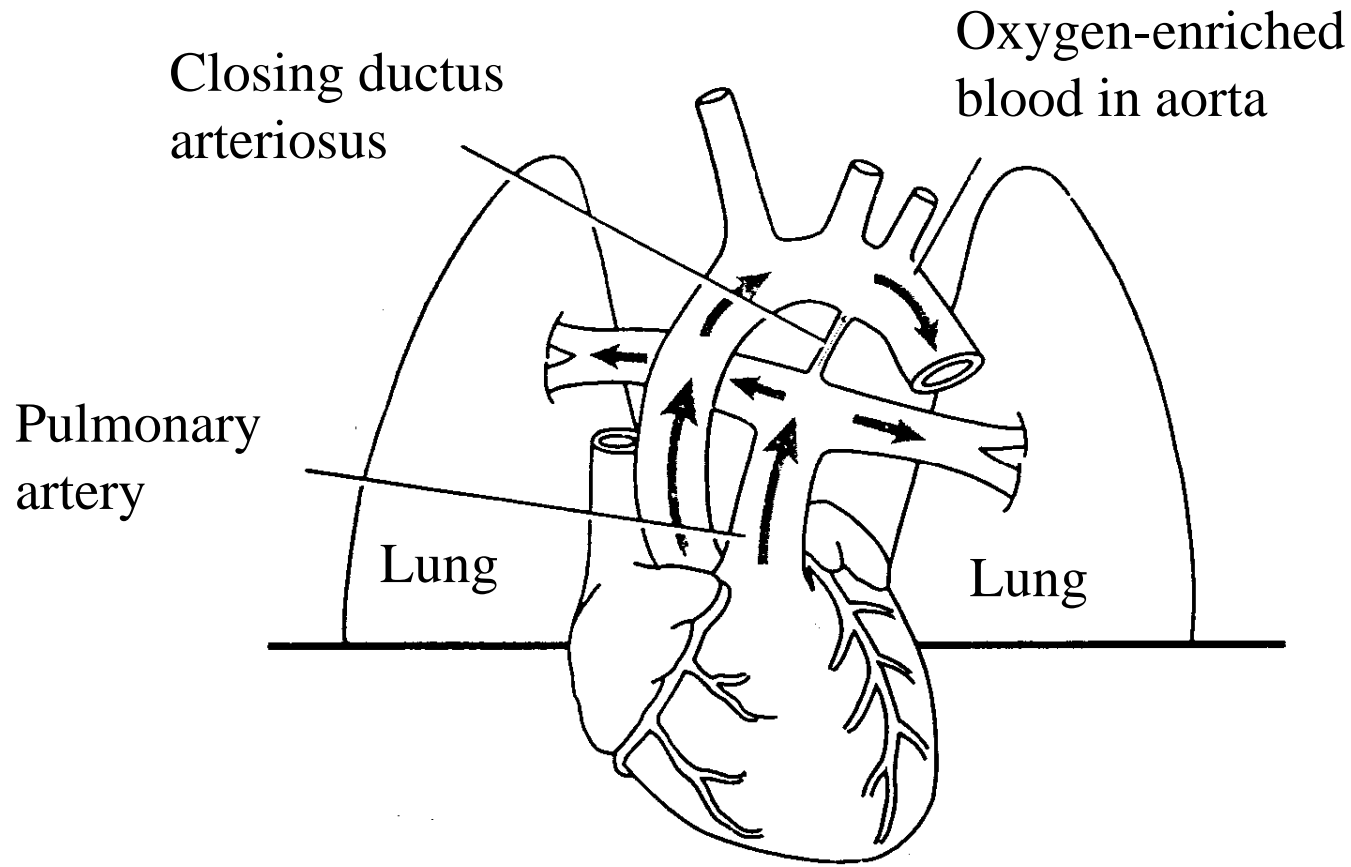


Fluid in the alveoli absorbed and replaced by air



Dilatation of Pulmonary Blood vessels at Birth

CESSATION OF SHUNT THRU DUCTUS AFTER BIRTH AS BLOOD PREFERENTIALLY FLOWS THROUGH LUNGS



WHAT CAN GO WRONG DURING TRANSITION?

- Breaths not forceful → to remove alveolar fluid
or
- Foreign material blocks air entry → oxygen not available
- Excessive blood loss/poor cardiac contractility → systemic hypotension
- Hypoxia → constriction of pulmonary arterioles → oxygen deprivation
(PPHN) tissue

RESPONSE OF THE BABY TO AN INTERRUPTION IN NORMAL TRANSITION

- Poor muscle tone due to insufficient oxygen supply to brain, muscles and other organs
- Depression of respiratory drive from insufficient oxygen supply to the brain
- Bradycardia
 - Insufficient delivery of oxygen to heart, muscle or brain stem
- Low Blood pressure
 - Poor myocardial contractility or blood loss
- Tachypnea from failure to absorb lung fluid
- Cyanosis from insufficient oxygen in blood

KEY PRINCIPLES

Anticipate

- At every delivery - at least 1 person whose primary responsibility is the newborn
- Either that person or someone readily available - skills to perform a complete resuscitation
- If need for resuscitation is anticipated - additional skilled personnel and necessary equipment

INITIAL STEPS

Birth



Term gestation?
Breathing or crying?
Good tone?

**Yes, stay
with mother**



Routine care

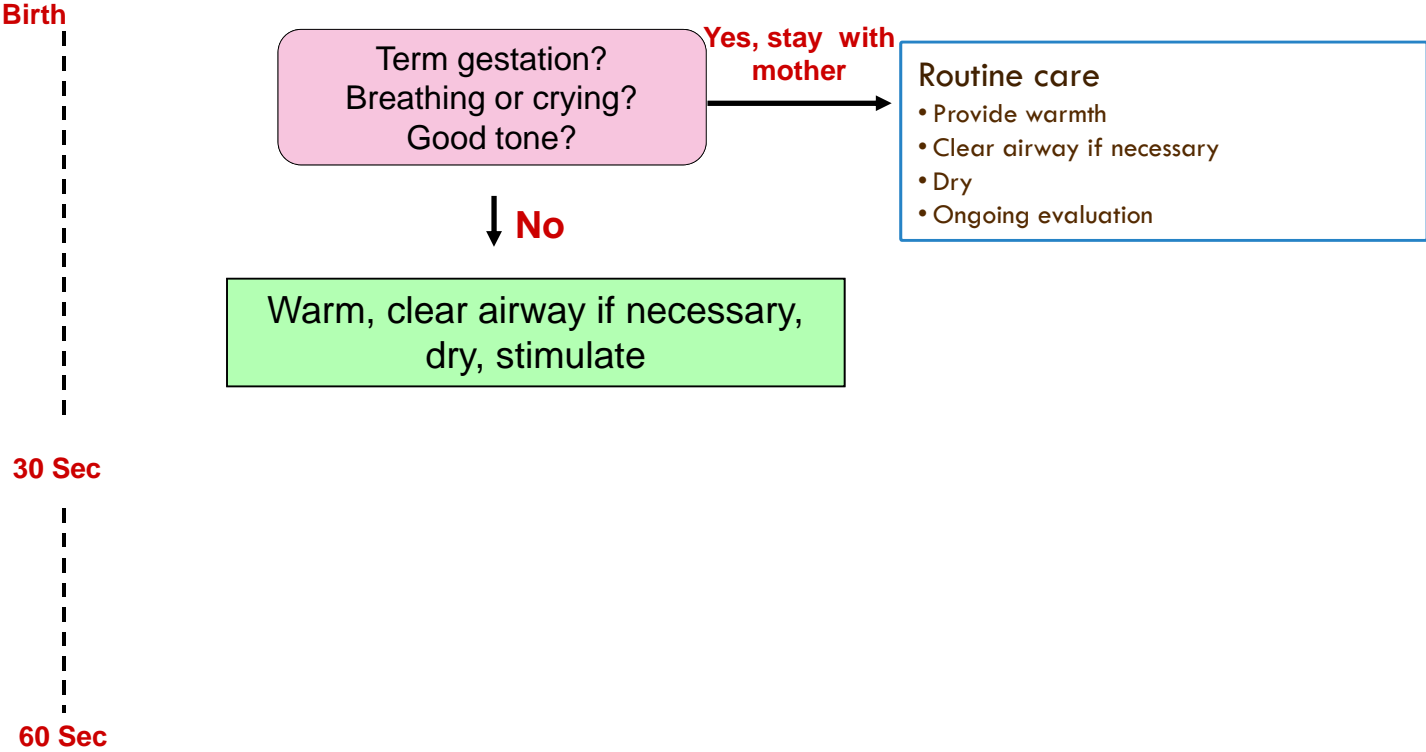
- Provide warmth
- Clear airway if necessary
- Dry
- Ongoing evaluation

30 Sec



60 Sec

INITIAL STEPS

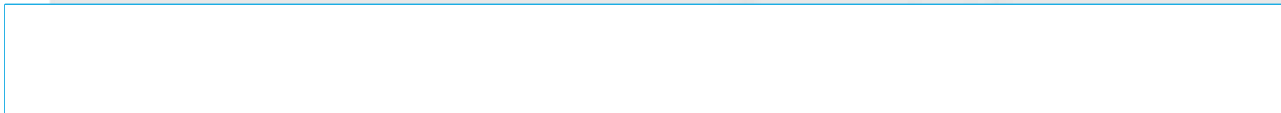
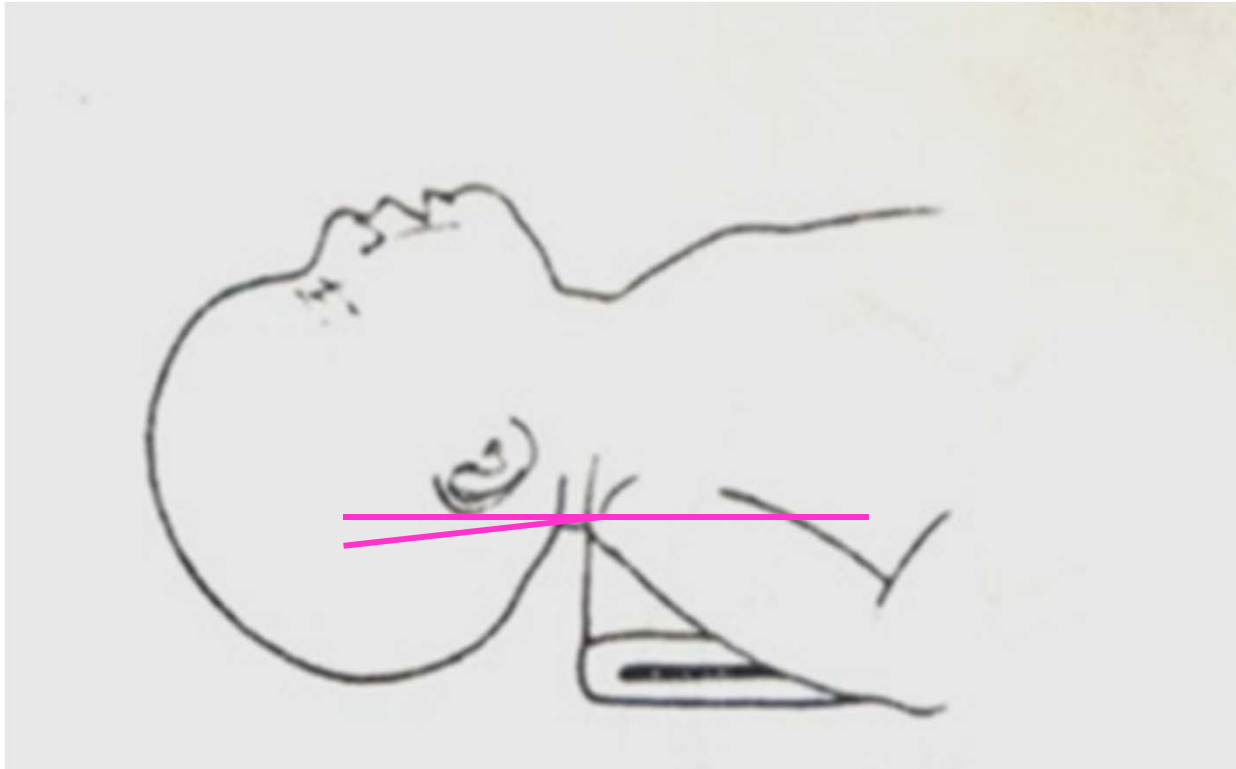


Provide warmth...

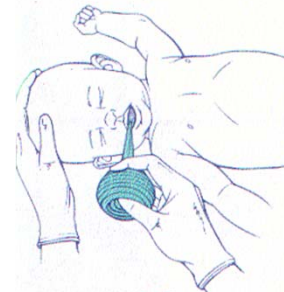


Place under the warmer!

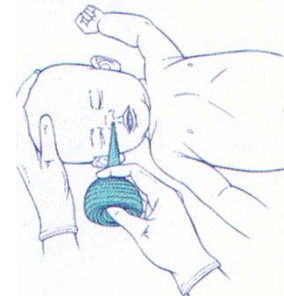
Clear airways



Clear airways: suction



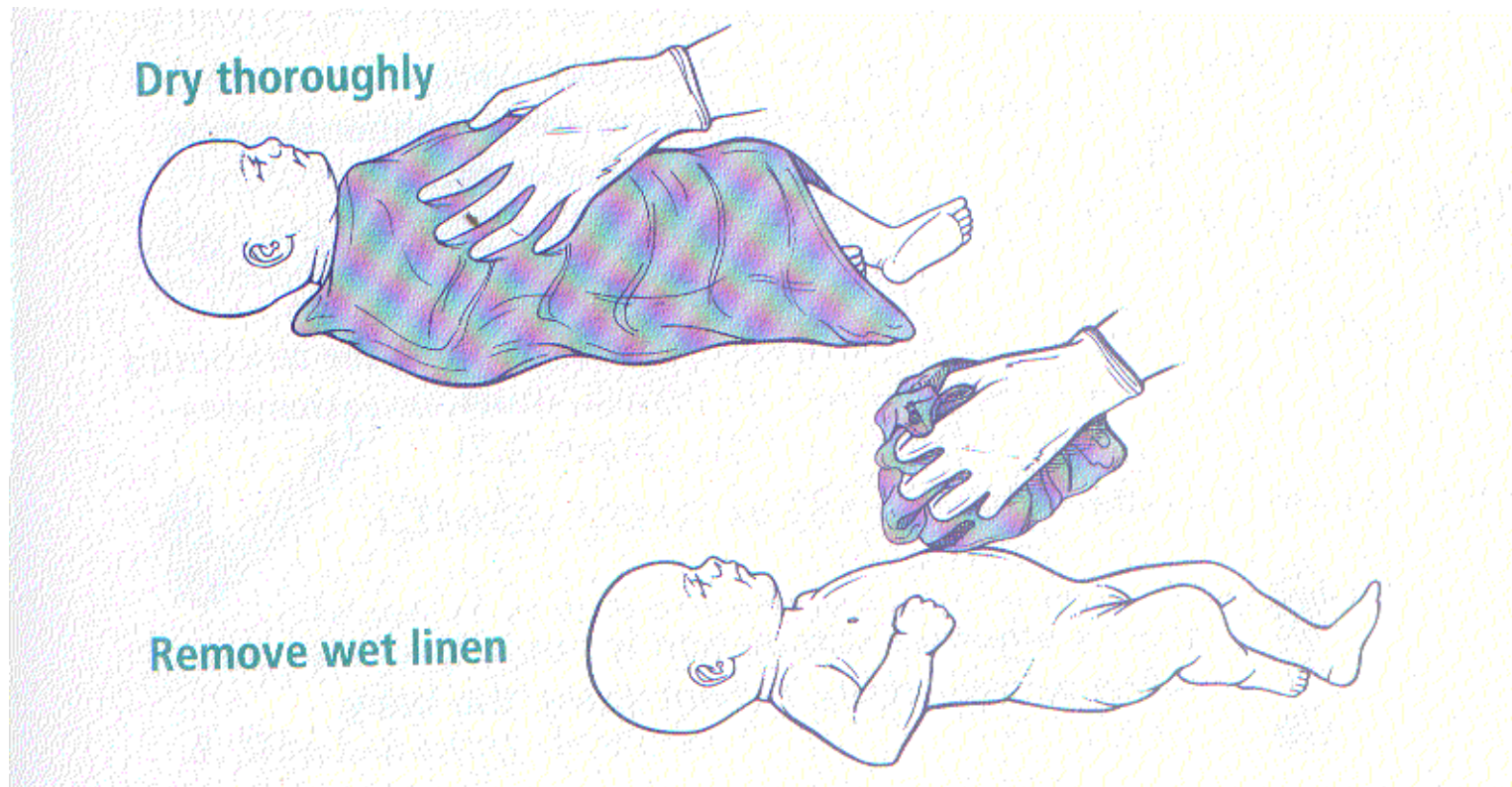
Mouth first...



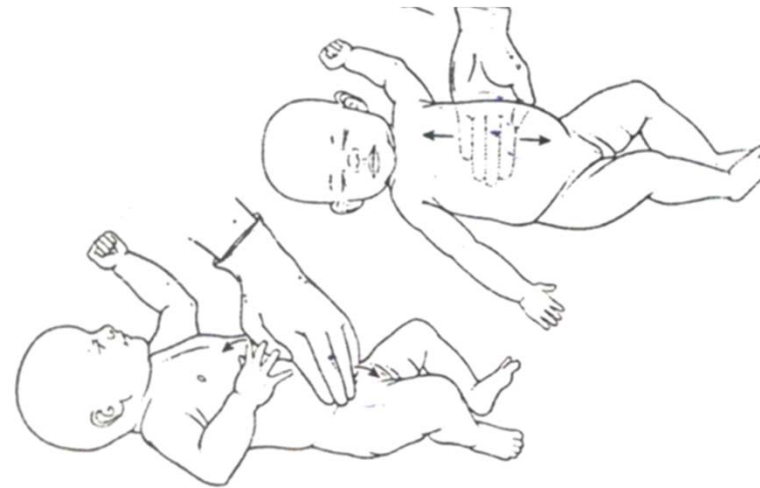
then nose

Figure 2.5. Suctioning the mouth and nose; "M" before "N"

Dry, stimulate



Dry, stimulate



Assessment of oxygen need: Pulse-oximetry

- Goal: Achieve oxygen saturation in the IQR of pre-ductal saturations (both term & pre-term)

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%

Administration of oxygen

- Achieve targets by either initiating resuscitation:
 - With **room air** (preferred in term infants)
 - With **blended O₂** & titrating as necessary (in PT)
- If blended oxygen unavailable, initiate resuscitation with room air
- Increase O₂ to 100% if persistently bradycardic (<60 bpm) after 90 seconds of resuscitation with a lower FiO₂

INDICATIONS OF BAG & MASK VENTILATION

After 30 seconds of Initial steps if (any):

- Baby is not breathing or is gasping
- Heart rate is less than 100 bpm
- Is Cyanotic despite supplemental oxygen

DIFFERENT TYPES OF RESUSCITATION DEVICES

Flow inflating bags

Fills only when oxygen from a compressed source flows in to it

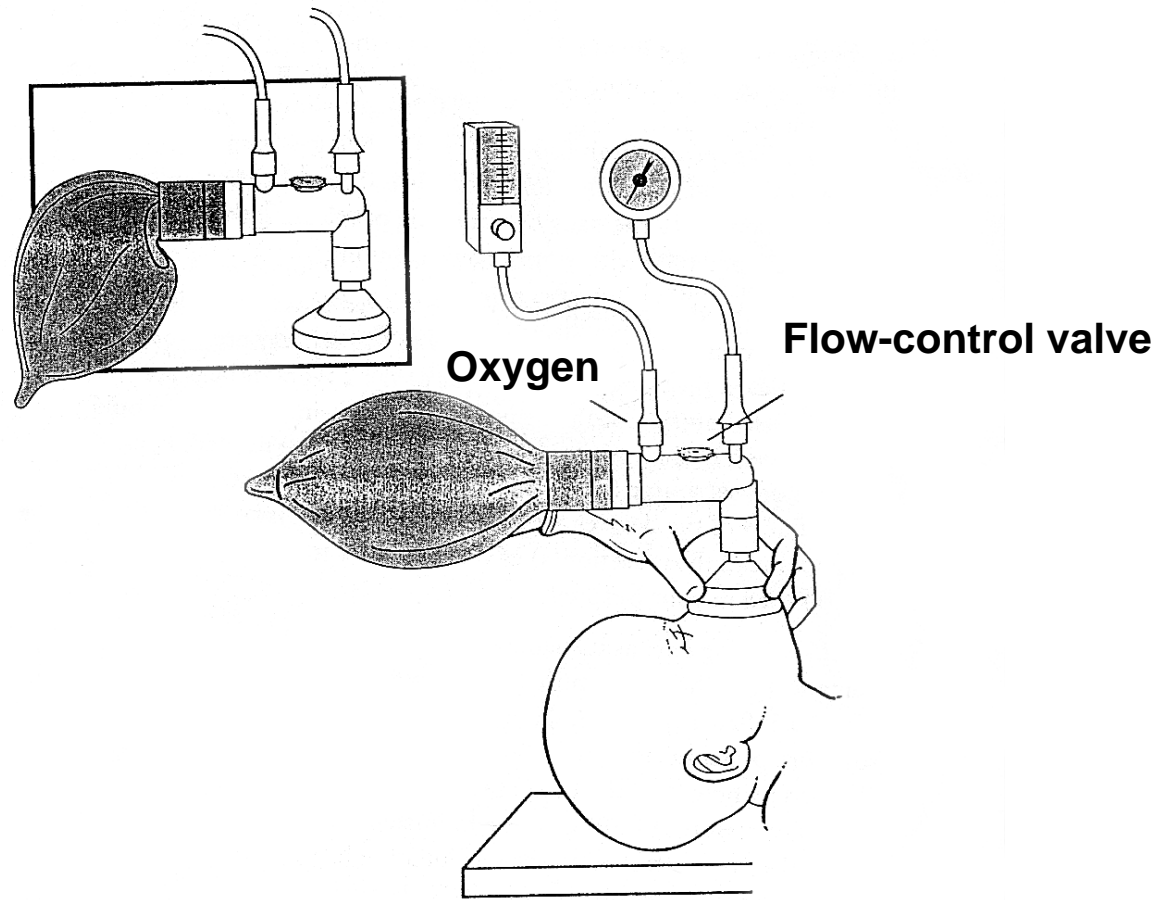
Self inflating bags

Fills spontaneously after it is squeezed, pulling oxygen or air in to the bag

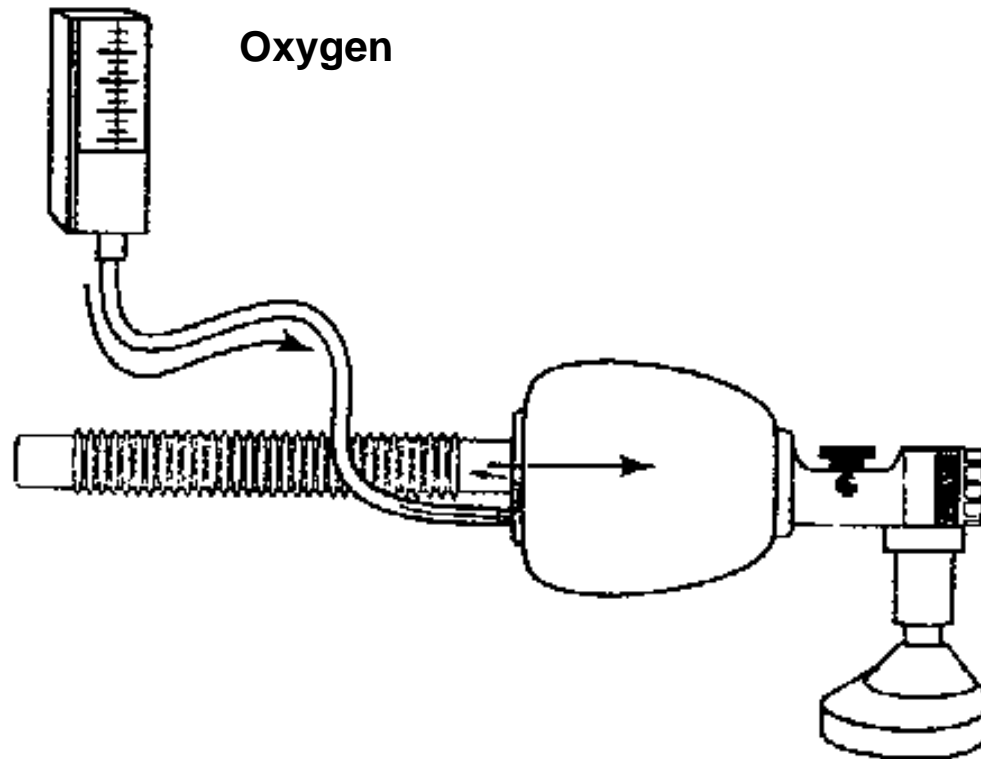
T-piece resuscitator

Also works when gas from compressed source flows into it. The gas is directed into the baby by occluding the opening on T-piece

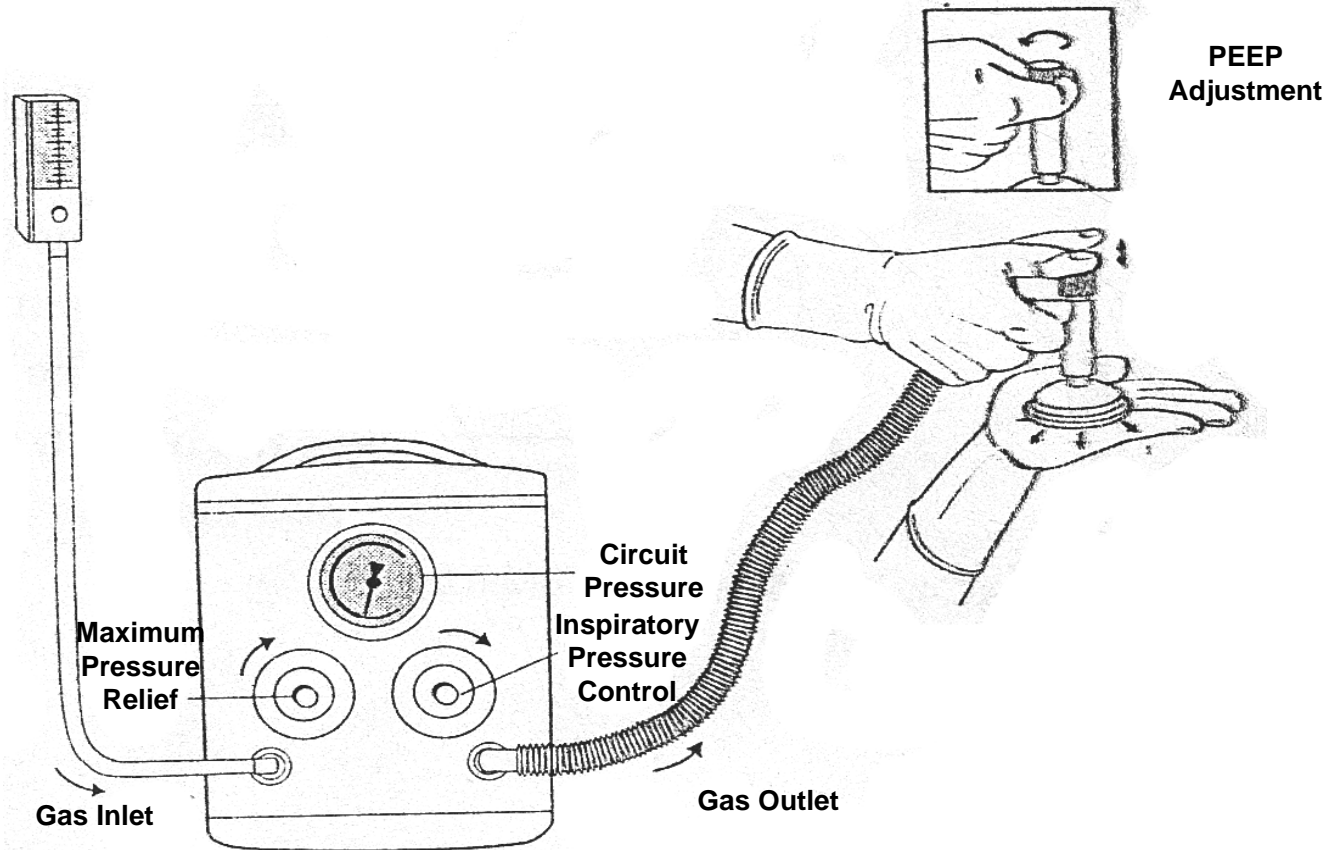
FLOW INFLATING BAGS



SELF INFLATING BAGS



T-PIECE RESUSCITATOR



FREQUENCY OF BM VENTILATION

40 – 60 breaths per day

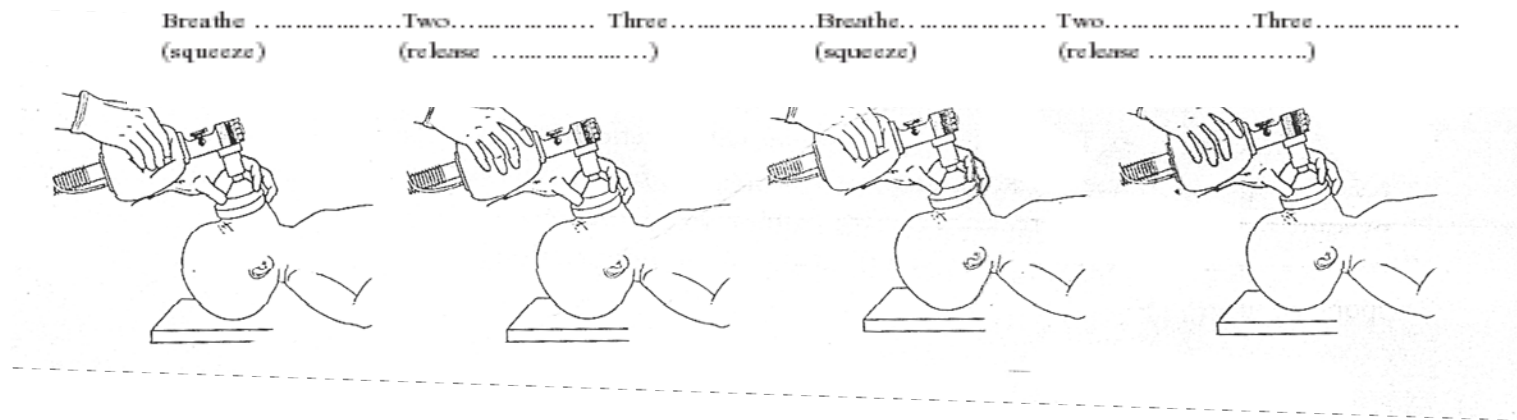
Breath ----- two -----three ----- Breath

Squeeze

Release -----

Squeeze

FREQUENCY OF PPV



SIGNS OF EFFECTIVE POSITIVE-PRESSURE VENTILATION

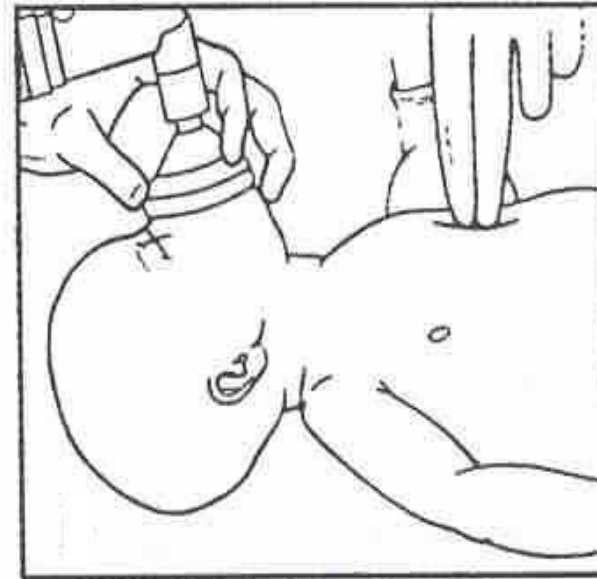
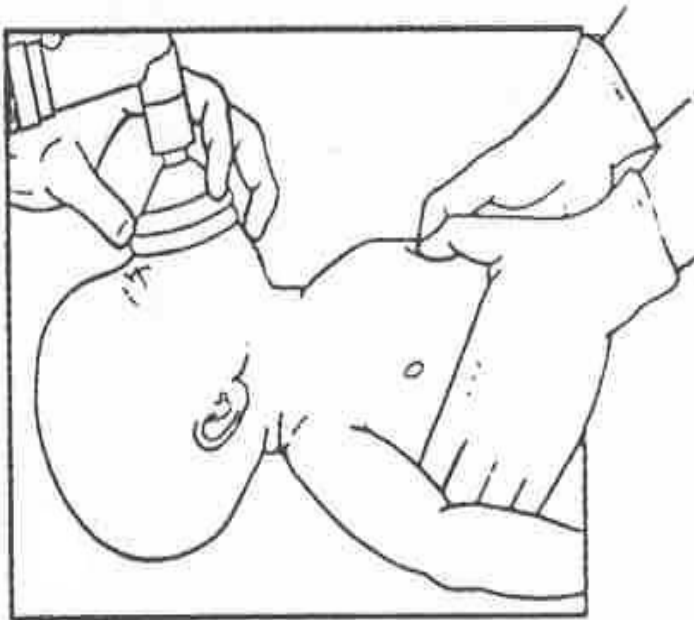
- **Rapid rise in heart rate**
- Improvement in oxygenation
- Improving muscle tone
- Audible breath sound
- Chest movement

IMPROVING EFFICACY OF PPV

	Actions
M	Adjust Mask to assure good seal on the face
R	Reposition airway by adjusting head to “sniffing position”
S	Suction mouth and nose of secretions, if present
O	Open mouth slightly and move jaw forward
P	Increase Pressure to achieve chest rise
A	Consider Airway alternative (endotracheal intubation or laryngeal mask airway)

CHEST COMPRESSIONS

- Heart rate less than 60 BPM despite 30 sec of effective positive-pressure ventilation



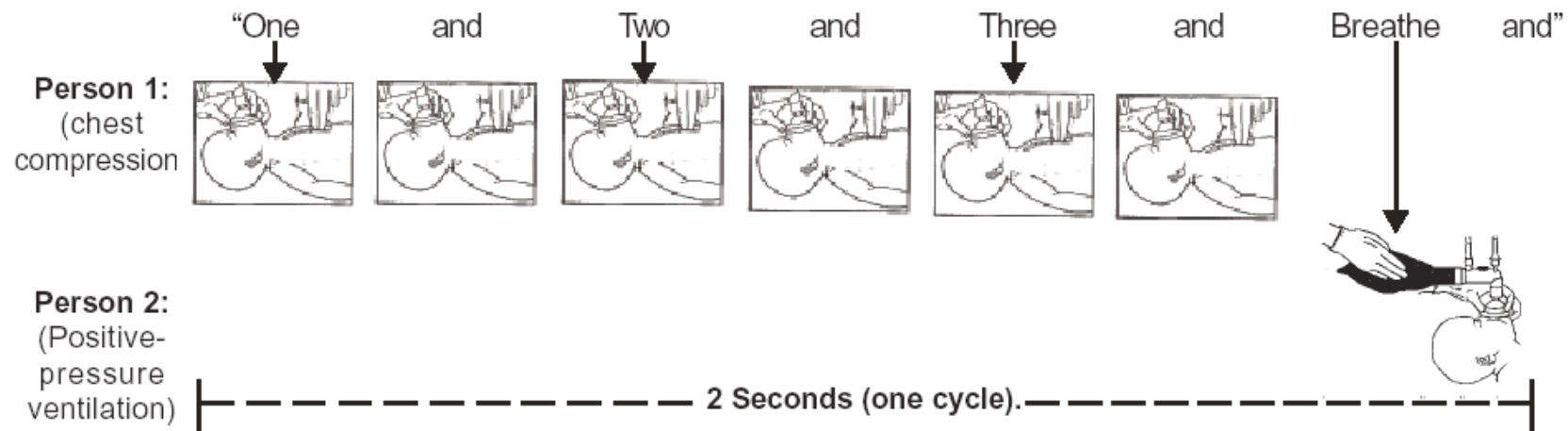


WHEN TO USE MEDICATIONS

- Despite Administration of effective chest compressions and effective positive-pressure ventilation with 100% oxygen:
- Heart Rate is below 60 bpm

RHYTHM OF CHEST COMPRESSION ?

- Coordinate with IPPR
- One ventilation interposed after every 3rd compression
- Total of 120 events (30 breaths + 90 compressions)

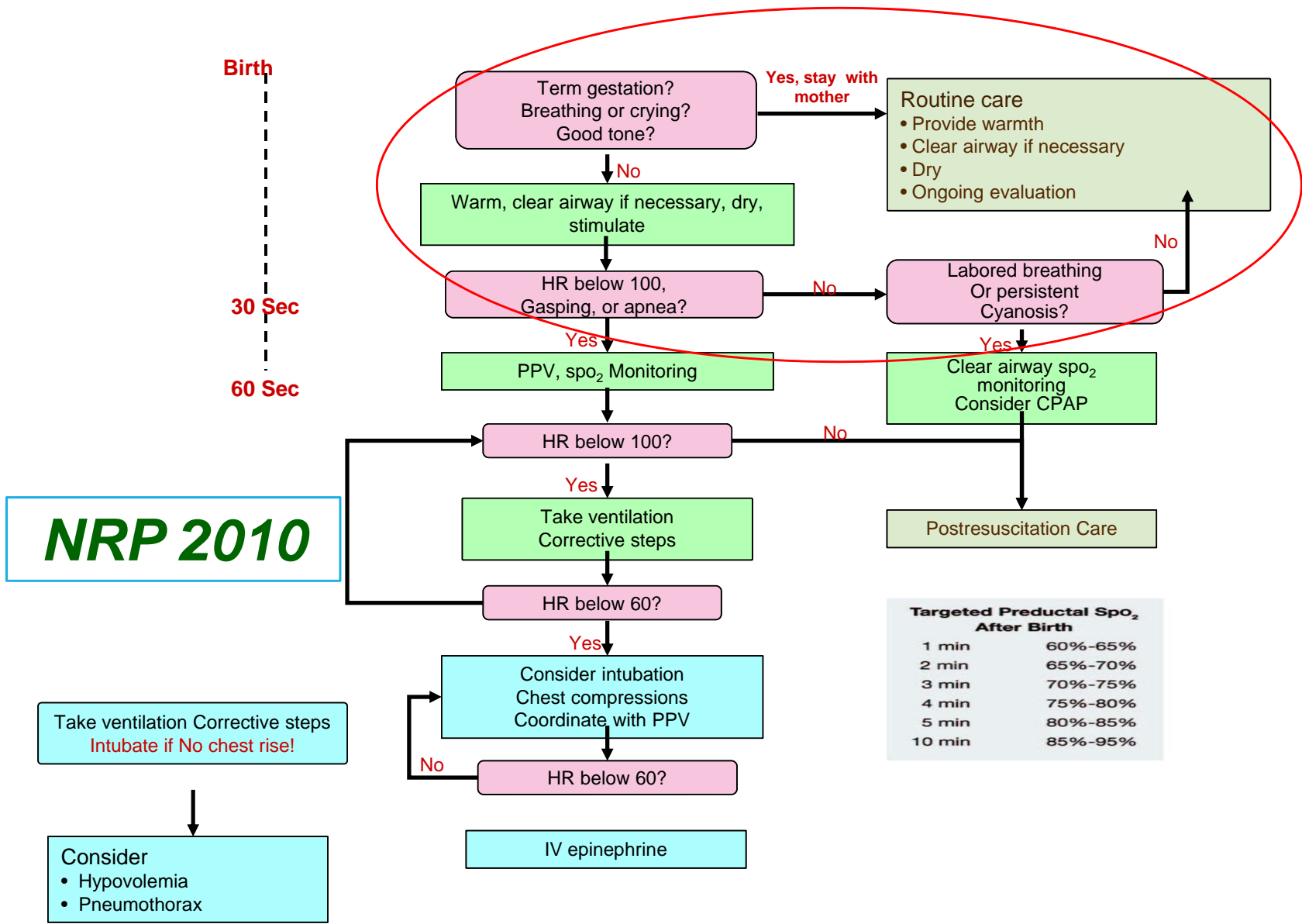


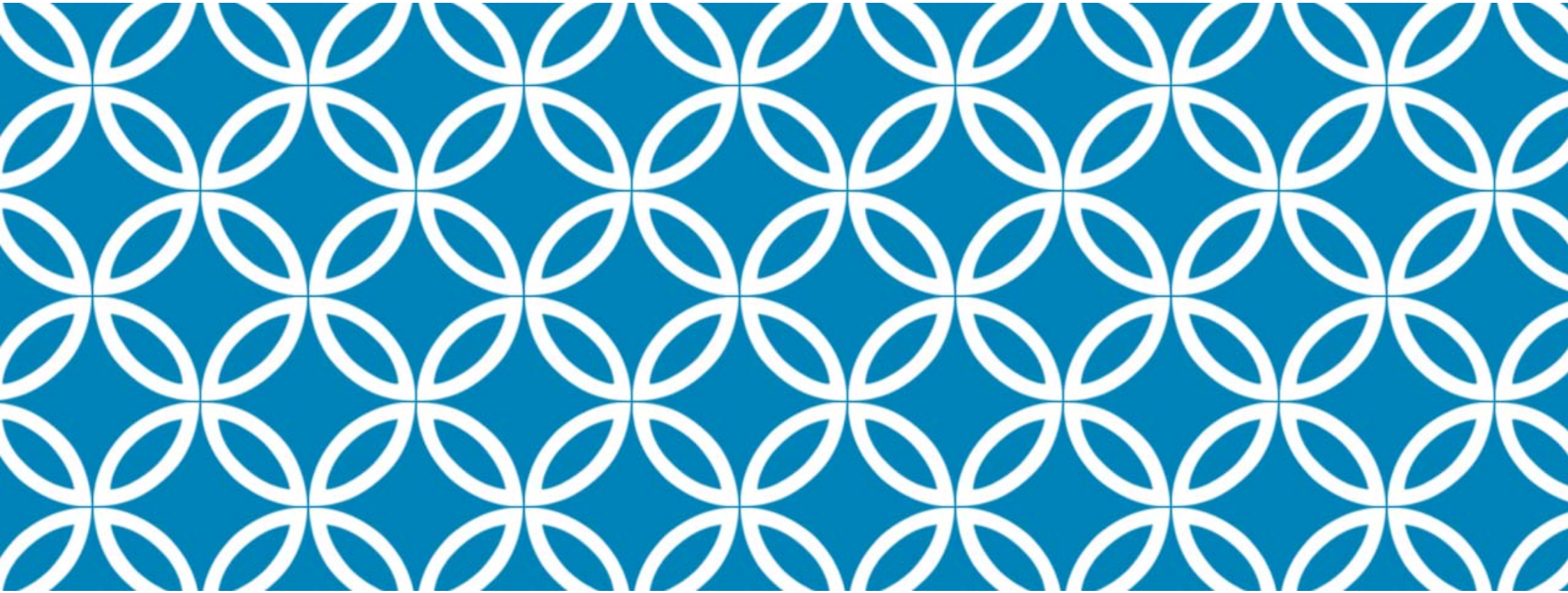
EPINEPHRINE HYDROCHLORIDE

- Cardiac stimulant
 - Increases strength & rate of cardiac contractions
 - Causes peripheral vasoconstriction
- It is indicated when HR remains < 60 after 30 sec of effective PPV and another 30 sec of coordinated chest compressions and ventilation

VOLUME EXPANDER

- Poor response to resuscitation
- Evidence of blood loss
- Pale
- Poor pulses
- CFT





THANKS |