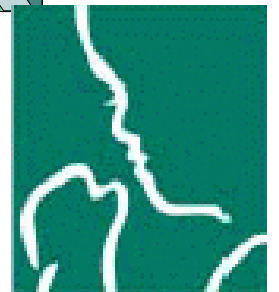


# Resuscitation of the Newborn



Raymond Hernandez



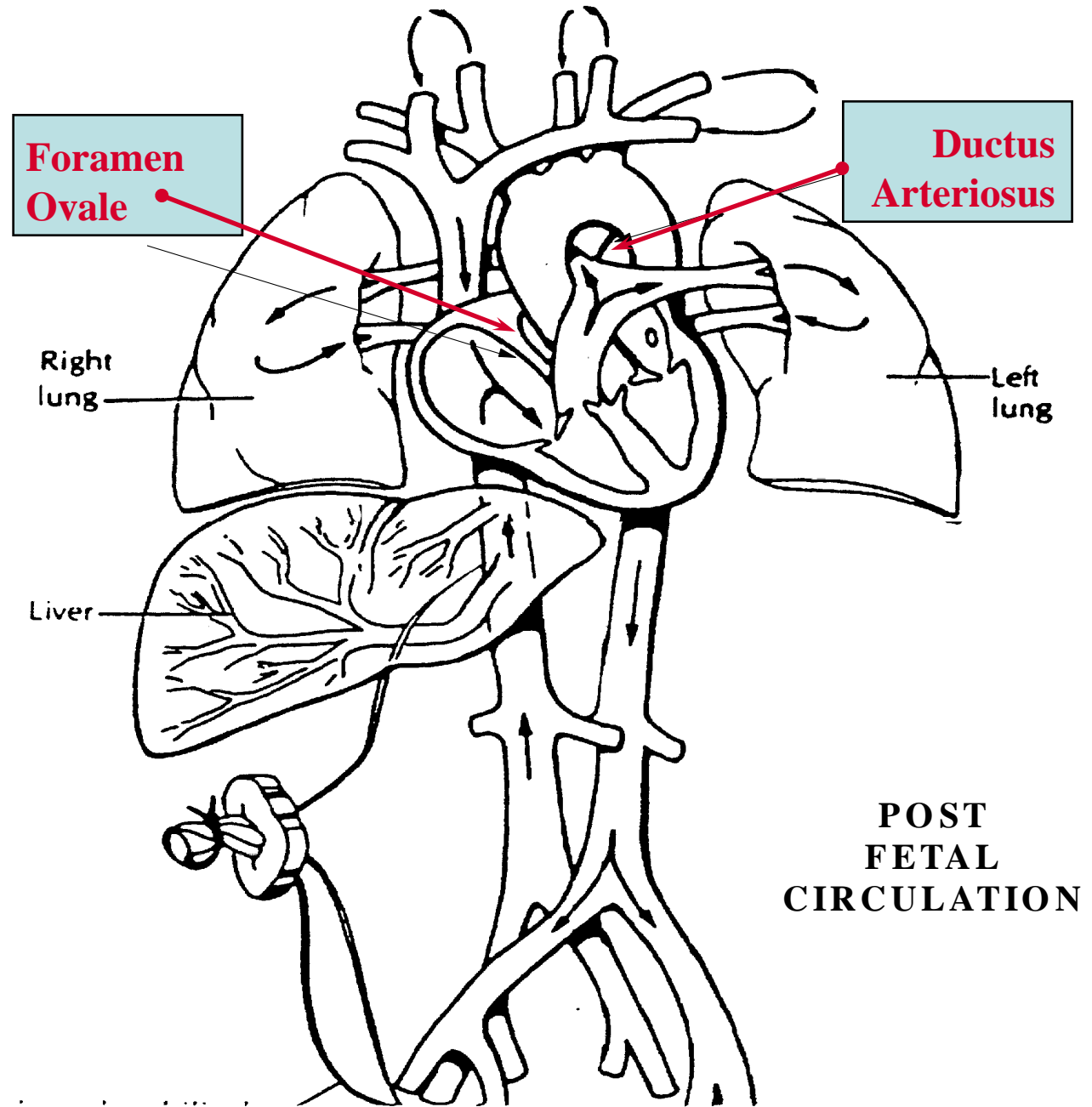
NRP

## Foramen Ovale

- Pressures in the left side of the heart exceed pressure in the right side of the heart.
- One way valve closes

## Ductus Arteriosus

- Increased Oxygen levels vasoconstricts Ductus
- Decreased prostaglandin production (PGE1)
- Production of bradykinins

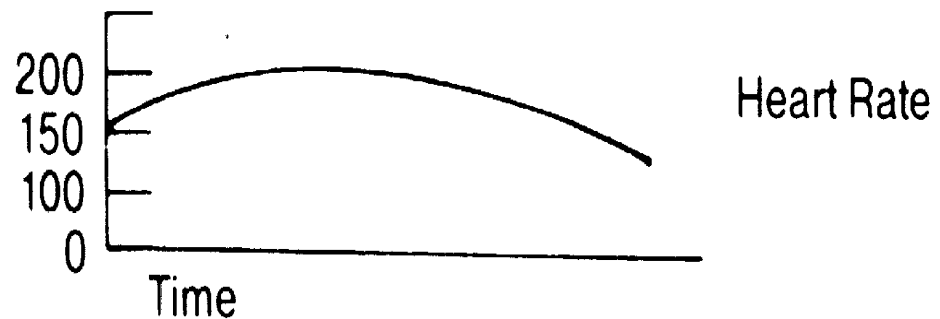
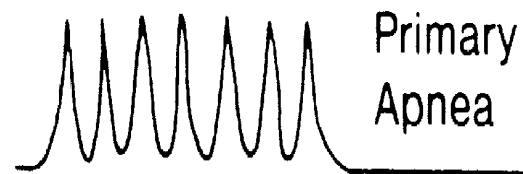


# PRIMARY APNEA

- Deprivation of oxygen
- Period of rapid breathing occurs
- Asphyxia continues
- Respiratory efforts cease
- heart rate begins to fall

**Oxygen and stimulation will usually induce respiration.**

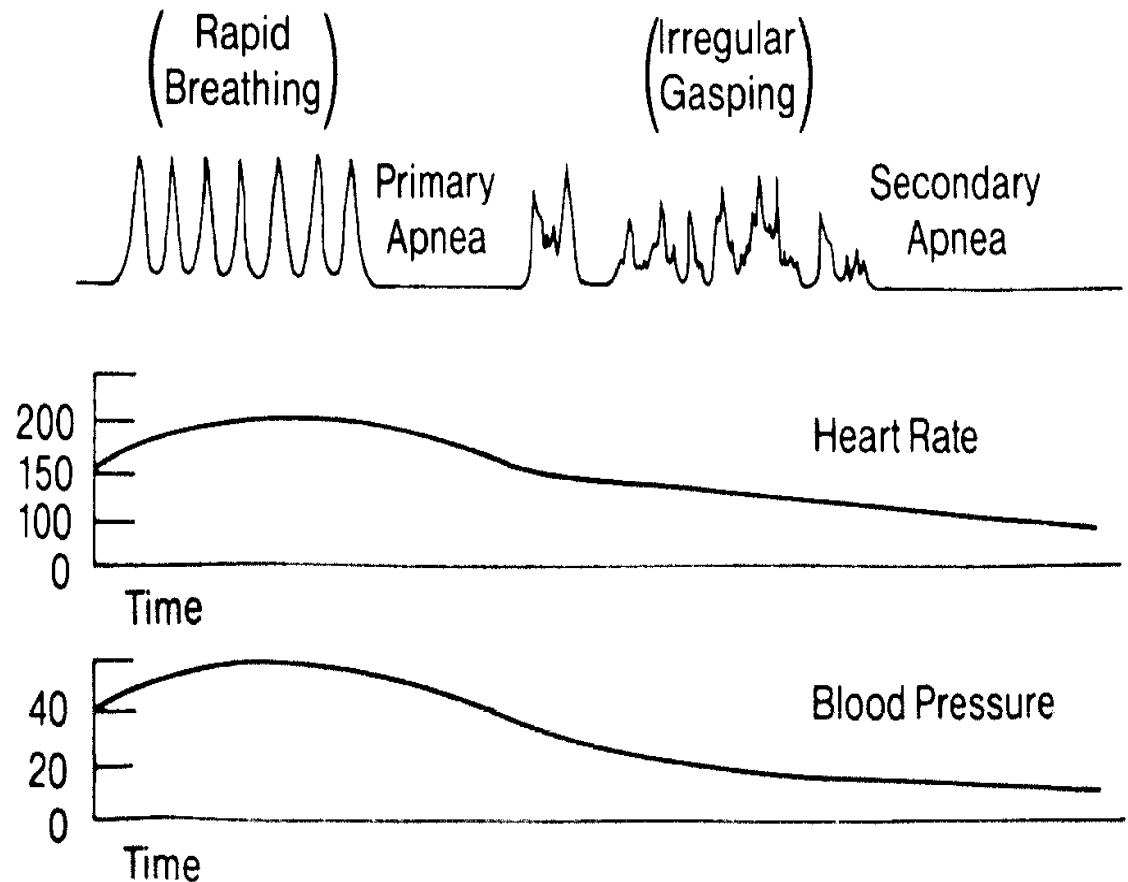
(Rapid Breathing)



# SECONDARY APNEA

- Asphyxia continues
- Deep irregular gasping respirations occur
- Heart rate continues to decrease
- Blood pressure begins to fall
- Respirations become weaker and cease
- Heart rate, blood pressure and PaO<sub>2</sub> continue to decrease

## UNRESPONSIVE TO STIMULATION ARTIFICIAL RESPIRATION WITH OXYGEN IS INITIATED



# CAUSES OF FETAL ASPHYXIA

- **Maternal Hypoxemia**
  - Low environmental oxygen
  - Apnea associated with seizures of eclampsia
  - Acute asthma attack
  - Pneumonia
  - Hypoventilation
  - Carbon monoxide poisoning or anemia

# CAUSES OF FETAL ASPHYXIA

- **Insufficient placental blood flow**
  - Diminished blood flow to the placenta secondary to congestive heart failure
  - Hypotension and shock
  - Vasoconstrictive states secondary to toxemia and essential hypertension
  - Placenta previa
  - Abruptio placentae

# CAUSES OF FETAL ASPHYXIA

- **Blockage of umbilical blood flow**
  - Prolapse of the umbilical cord
  - Occult prolapse of the umbilical cord
  - Nuchal cord (wrapping of the cord around the fetal neck or body)

# CAUSES OF FETAL ASPHYXIA

- **Fetal disorders**

- Hydrops fetalis (fetal cardiac failure in utero)
- Fetal hypotension from hemorrhage or drugs
- Fetal hemolytic anemia

# PREPARATION FOR RESUSCITATION

- **Anticipation of a high-risk delivery requires:**
  - Maternal history
  - History of the pregnancy
  - Continuous monitoring during labor and delivery
- **Equipment**
  - Proper equipment
  - Variety of sizes to suit various gestational ages
  - Checked for proper function each shift

# PREPARATION FOR RESUSCITATION

- **Trained personnel**
  - At least one person trained in all necessary skills
  - Must be present in the hospital to respond to unexpected high-risk deliveries



# NEONATAL RESUSCITATION SUPPLIES AND EQUIPMENT

- **Suction equipment**

- **Bulb syringe**

- **Suction catheters 5, 6, 8, 10 french**

- **8 fr. feeding tube with 20 cc syringe**

# NEONATAL RESUSCITATION SUPPLIES AND EQUIPMENT

- Bag and Mask Equipment
  - Infant resuscitation bag with a pressure-release valve or pressure gauge- the bag must be capable of delivering 90-100% oxygen
  - Face masks (newborn and premature sizes)
  - Oral airways-newborn and premature sizes

# NEONATAL RESUSCITATION SUPPLIES AND EQUIPMENT

## ■ Intubation Equipment

- ◆ Laryngoscope with straight blades- No. 0 (premature) and No. 1 (newborn)
- ◆ Extra bulb and batteries for laryngoscope
- ◆ Endotracheal tubes - sizes 2.5, 3.0, 3.5, 4.0
- ◆ Stylet
- ◆ Scissors
- ◆ Gloves

# NEONATAL RESUSCITATION SUPPLIES AND EQUIPMENT

## ■ Medications

- ◆ Epinephrine 1:10,000
- ◆ Naloxone hydrochloride (neonatal NARCAN)
- ◆ Volume expanders (Albumin %5, Normal saline, Ringers lactate)
- ◆ Sodium Bicarbonate 4.2%
- ◆ Dextrose 10%
- ◆ Sterile water
- ◆ Normal saline

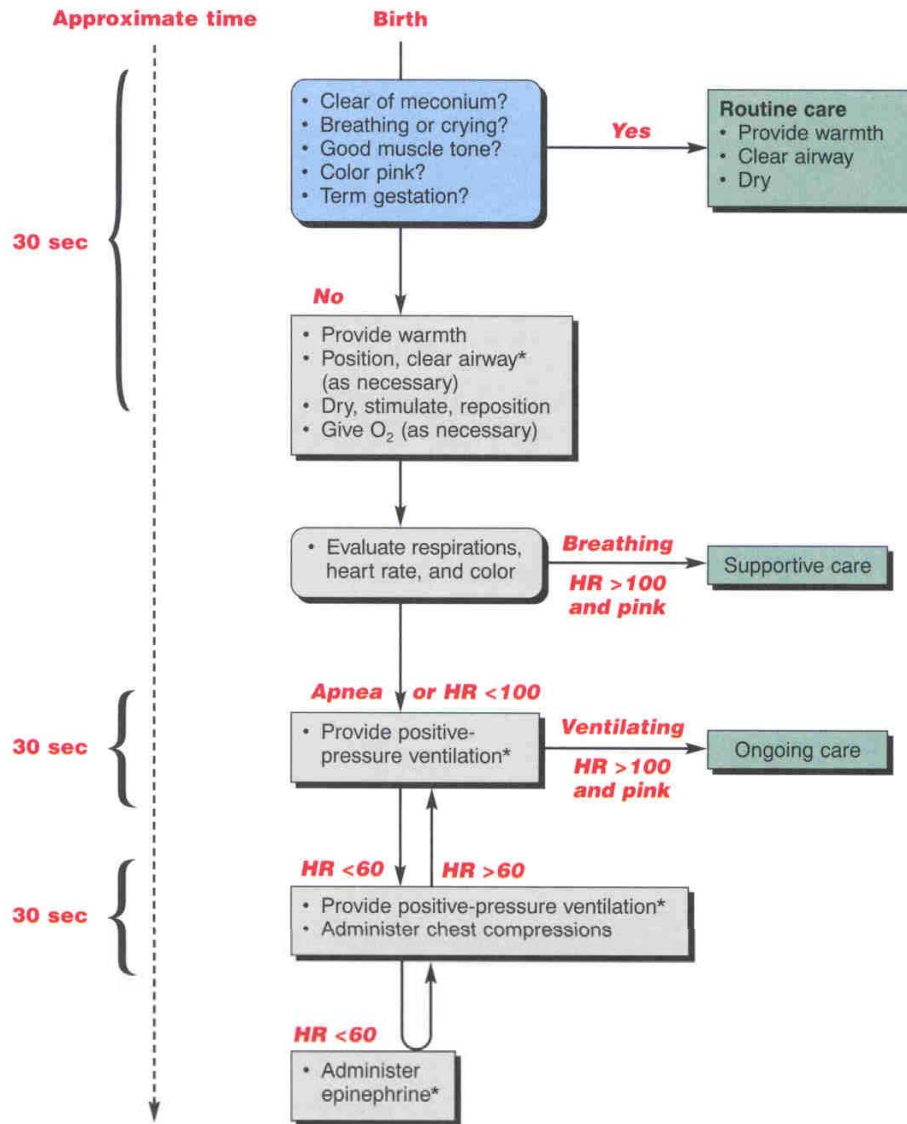
# Neonatal Resuscitation Meds

Medication	Concentration to Administer	Preparation	Dosage & Route	Rate & Precautions
Epinephrine	1:10,000 (0.1 mg/l)	1 ml	0.1-0.3 ml/kg IV or IT	Give rapidly, may repeat every 5-10 minutes.
Volume Expanders	Whole Blood, 5% Albumin, Normal Saline, Ringer's Lactate	Varies	10 ml/kg IV	Give over 5-10 minutes. Repeat as needed.
Sodium Bicarbonate	0.5 meq/ml (4.2% solution)	20 ml or two 10 ml prefilled syringes	2 meq/kg (4 ml/kg) IV	Give slowly, over at least 2 minutes, may repeat every 10 minutes. Ventilate infant.
Narcan (Naloxone)	0.4 mg/ml	1 ml	0.1 mg/kg (0.25 ml/kg) IV, IM, SQ, IT	Give rapidly.
Calcium Gluconate	100 mg/ml (10% solution, 0.465 mEq/ml)	10 ml	100 mg/kg (1 ml/kg) IV	Give over 3-5 minutes, may repeat every 15 minutes. Do not mix with sodium bicarbonate in line.

# NEONATAL RESUSCITATION SUPPLIES AND EQUIPMENT

## ■ Miscellaneous

- ◆ Radiant warmer
- ◆ Stethoscope
- ◆ Tape, syringes, needles, alcohol swabs
- ◆ Umbilical artery catheter
- ◆ 3 way stop cock
- ◆ 5 fr feeding tube



\*Tracheal intubation may be considered at several steps.

# MECONIUM RESUSCITATION

- Identification of Meconium:
  - Thin discolored without particulate
  - Thick particulate (pea-soup)
  - Staining of fingernails and umbilical cord



# NEONATAL RESUSCITATION SUPPLIES AND EQUIPMENT

**Suction at perineum**

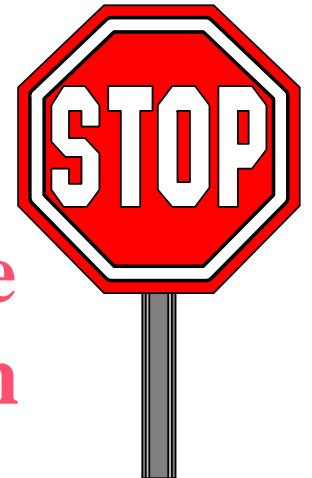
**DO NOT STIMULATE BABY!!!!!!!!!!!!!!!!!!!!**

**Intubate with meconium aspirator tube**

**Suction**

**Repeat till clear**

**If the baby is decompensating, the resuscitator may stop suctioning even though meconium is still present in the airway and continue with resuscitation**



# Meconium Aspirator

