

MODULE VII

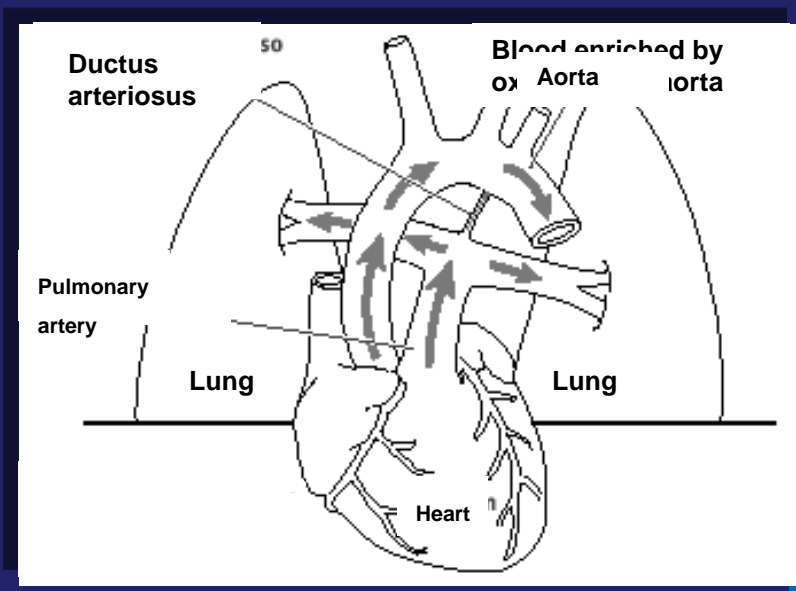
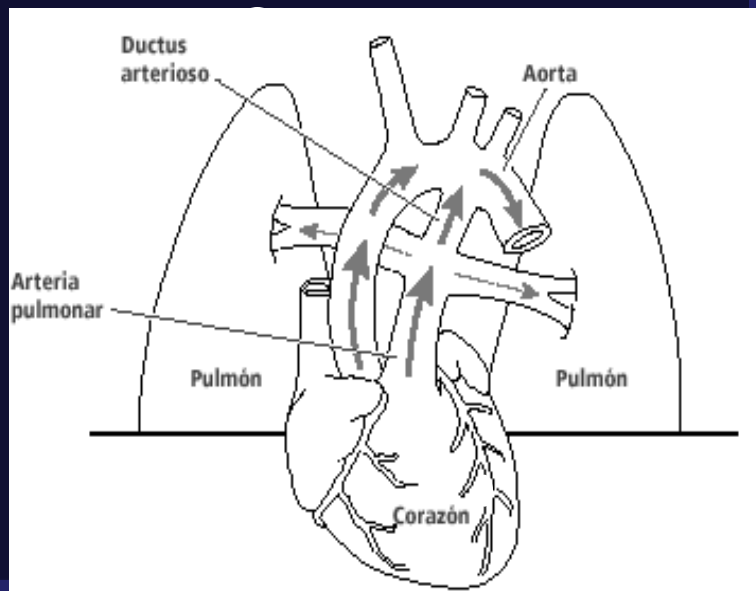
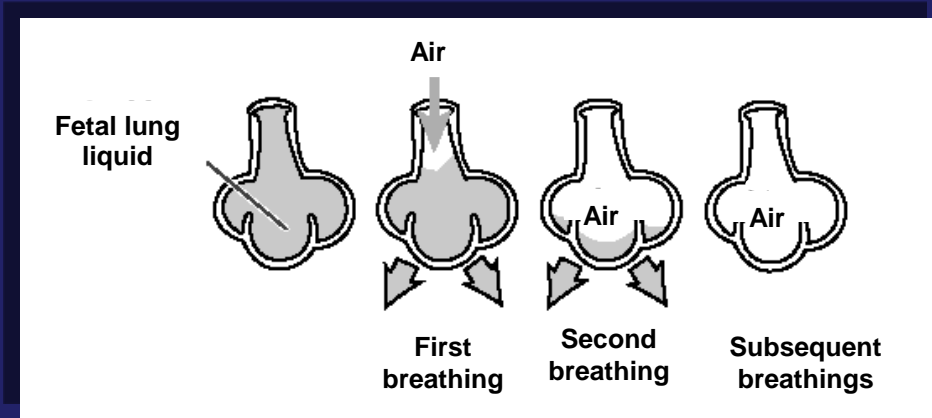
Delivery and Immediate Neonatal Care



NEONATAL ASPHYXIA

- About one million deaths per year
- In Latin America \approx 12% of newborns suffer some degree of asphyxia
- Main cause of perinatal and neonatal death
- Associated with irreversible neurological long-term complications

NORMAL TRANSITION





INITIAL CARE OF THE NEWBORN: OBJECTIVES

1. **Anticipate neonatal resuscitation
(plan, recognize risks, check equipment)**
2. **Identify the newborn making a normal transition
immediately after birth**
3. **Identify the newborn requiring resuscitation**
4. **Describe and give effective neonatal resuscitation
therapy**



SUCCESSFUL RESUSCITATION ANTICIPATION—ORGANIZE PLAN

- Assume that there will be deliveries in every disaster situation (10% of newborns may require resuscitation)
- Identify personnel with skills in neonatal resuscitation-
Potential Resuscitation Team
- Review/test equipment, procedures, and teamwork
- Plan prompt maternal assessment


RISK IDENTIFICATION

- **Before Delivery-** eg. preterm, maternal illness, fetal distress, maternal age
- **During Delivery-** eg. excessive bleeding, meconium, rapid labor, prolonged labor



EQUIPMENT

- **String/cord clamps, razor blade**
- **Hand hygiene products (alcohol, soap)**
- **Clean cloths for drying and wrapping the infant**
- **Self inflating ventilation bag, infant masks**
- **Endotracheal tubes, intravenous administration sets**
- **Sterile gloves**
- **Identification form, bracelet (if available)**




IDENTIFY THE NEED FOR RESUSCITATION

Three primary questions when assessing any newborn

1. Is this a full-term gestation?

2. Is the baby breathing or crying? **KEY QUESTION!**

3. Is muscle tone appropriate?



NEONATAL RESUSCITATION SEQUENCE

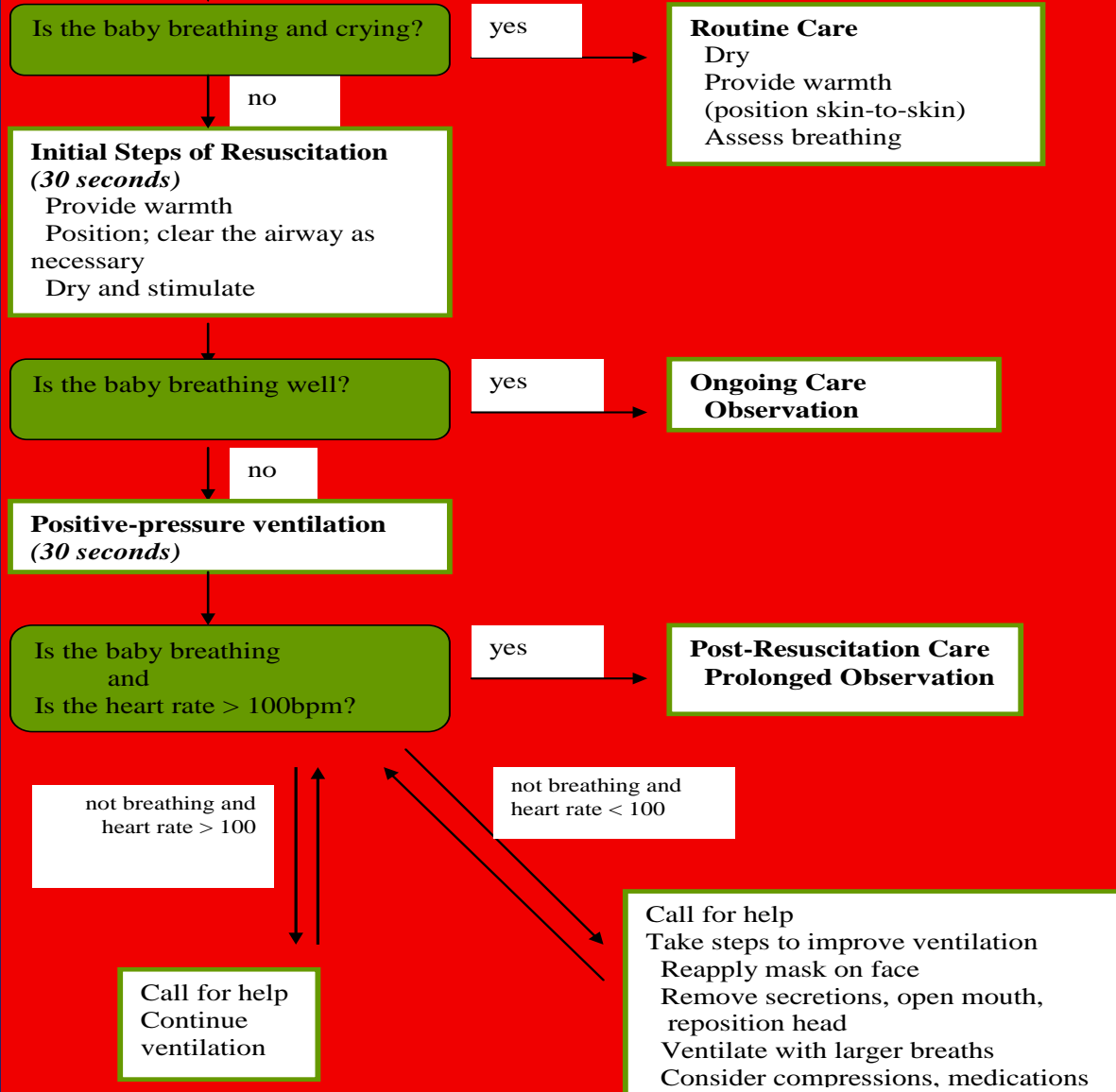
A (Airway)

B (Breathing)

C (Circulation)

D (Drugs, medications)

BIRTH





INITIAL NEONATAL RESUSCITATION SEQUENCE

1. Thermal protection- for all
2. Positioning: avoid airway angulation- for all
3. Airway clearing- as required
4. Stimulation- as required

Always maintain good hand hygiene and avoid contamination



ADDING INITIAL STEPS

- **If preterm, not crying or breathing well or poor muscle tone**
 - **Proceed with the “modified” initial steps**
 - **Thermal control**
 - Place the baby directly on the mother’s chest
 - Dry and cover
 - **Clear airway (as necessary)**
 - Wipe mouth and nose with a clean cloth/suction
 - **Airway positioning**
 - **Stimulate**



THERMAL PROTECTION

- Dry rapidly
- Skin to skin with mother
- Radiant heating- if necessary
- Avoid direct contact with heating elements

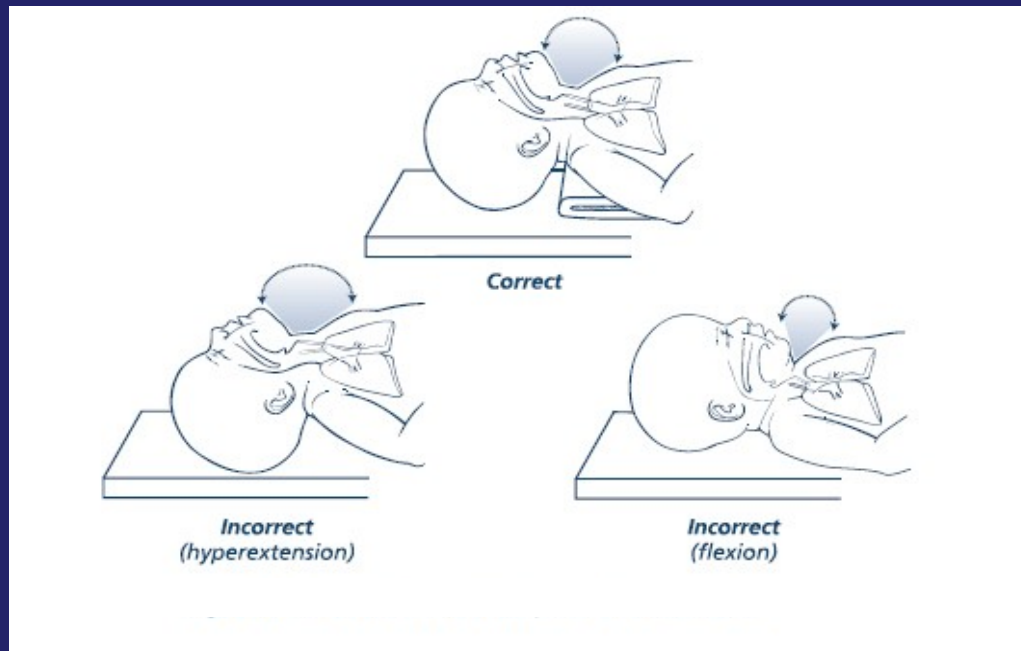


PRETERM: PROVIDE A WARM ENVIRONMENT

- If possible, increase delivery environment temperature
- Skin to skin with mother
- Place a thermal mattress below the towels or sheets
- In newborns <28 weeks, wrap from the neck down in plastic film or plastic bag

POSITION

- Position the child on the back or side with neck extension as indicated; place a small roll of cloth under shoulders
- Avoid flexion or hyperextension of the neck

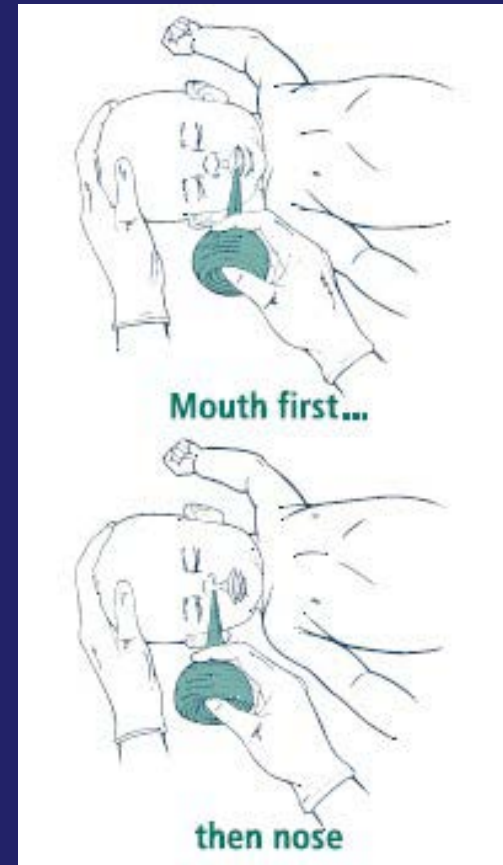


CLEARING AIRWAY

NOT ALWAYS NECESSARY

Amniotic fluid without meconium:

- Gently suction or wipe secretions in mouth and nose
- Suction device
- Aspirator (100 mm Hg)
- Avoid causing apnea or bradycardia





STIMULATION

-
- Drying and suction might be sufficient stimuli
 - Rub the back or flick the soles
 - Avoid vigorous stimulation



INAPPROPRIATE STIMULATION

PROCEDURE	CONSEQUENCE
Slapping on the back or buttocks	Contusions
Squeezing the rib cage	Fractures, pneumothorax, severe difficult breathing, death
Pressing the lower extremities over the abdomen	Liver or spleen rupture
Dilating anal sphincter	Sphincter lesion
Cold or hot compresses or bathing the newborn	Hyperthermia, hypothermia, burns
Shaking the newborn	Hemorrhages or brain damage



ASSESSING RESUSCITATION

Once the initial steps are completed

(Thermal control, positioning, patent airway, stimulation)

Then Assess:

- Respiration-Cry/Vigorous breathing
- Heart rate
- Colour



EVALUATION

Breathing

- Observe chest movements, depth of breaths, and respiratory rate

Heart rate

- Normal heart rate >100 bpm
- Pulse can be felt at the base of the umbilical cord, or heart beats heard with a stethoscope over the left side of the chest

Color

- The baby should have pink color in the trunk and mucous membranes after 5 minutes
- If cyanosis persists, the child is hypoxemic



VENTILATION

- Apnea, gasping, poor respiratory effort and heart rate <100 bpm \rightarrow initiate positive pressure ventilation
- Not breathing: initiate positive pressure ventilation



EVIDENCE OF EFFECTIVE VENTILATION

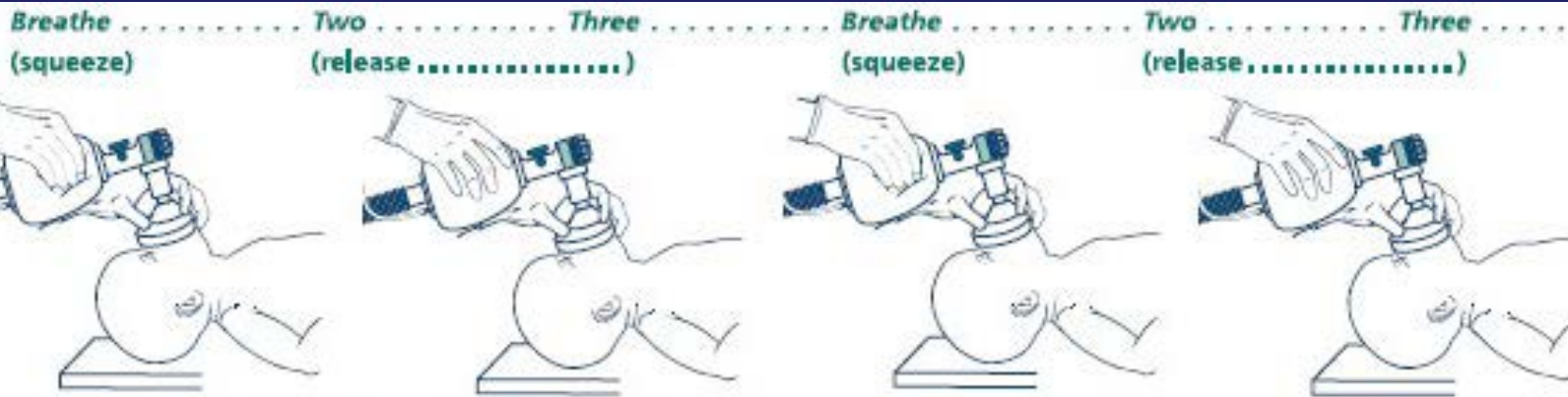
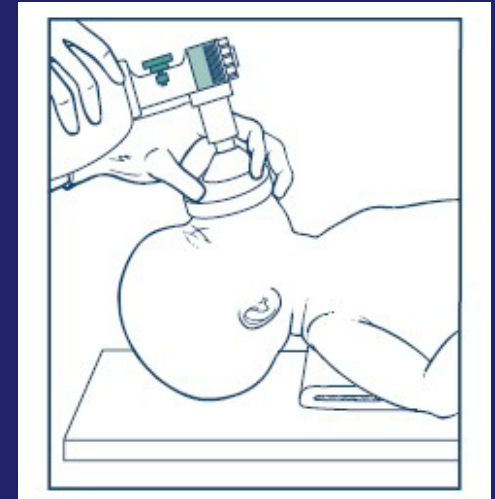
- **Rapid improvement in HR**
- **Improvement in skin color and muscle tone**
- **Breath sounds heard by auscultation over the chest**
- **Slight rise and fall in the chest (less noticeable)**

THREE KEYS TO NEONATAL RESUSCITATION

- VENTILATION!
- VENTILATION!
- VENTILATION!

EFFECTIVE USE OF MASK

- Recommended rate is 40-60 breaths per minute
- Check good seal of the mask to the face
- Monitor secretions
- Verify chest movements



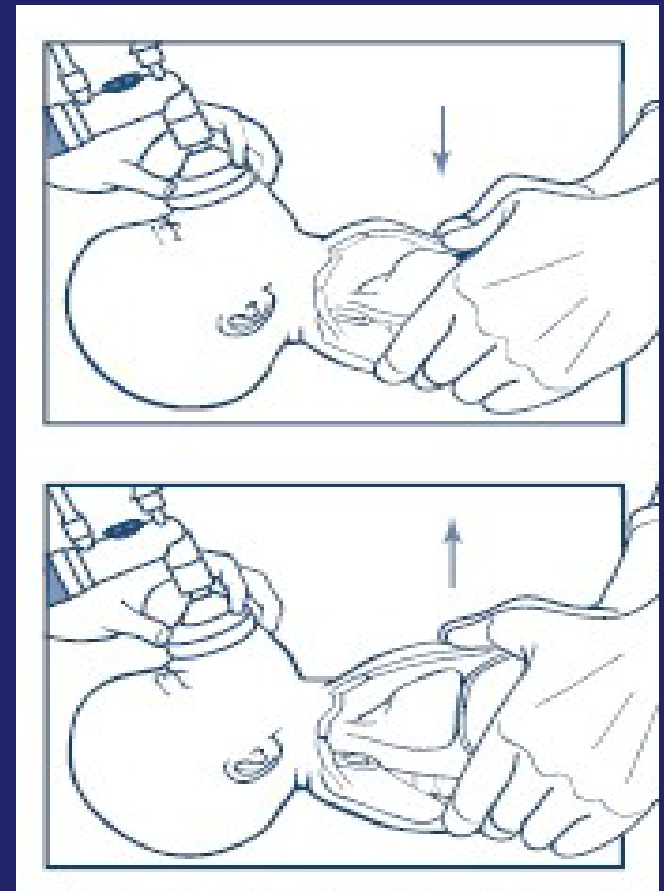


OXYGEN USE IF AVAILABLE

- Resuscitation can be started with $O_2 < 100\%$ or room air
- Use O_2 if persistently cyanotic with room air
- If O_2 not available, continue ventilation with room air
- Use O_2 , spontaneous respiration but persistently cyanotic
- Use of O_2 mixer and pulse oxymetry are encouraged for resuscitations of newborns < 32 weeks

CHEST COMPRESSIONS

- Initiate if HR persists below 60 bpm after 30 sec of effective PPV
- How to perform chest compressions
 - Encircle the chest with both hands, thumbs on the lower third of the sternum
 - Quickly compress to one-third of the chest depth to generate a palpable pulse





RESUSCITATION

- **Continuous ventilation / 3 compressions per ventilation (1,2,3, breathe; 1, 2, 3, breathe and so on)**
- **Assess outcome with HR and breathing**
- **If HR<60 bpm, continue compressions and consider tracheal intubation and medication**
- **Consider stopping maneuvers after 10 minutes with HR zero**

Consider not initiating resuscitation in case of extreme prematurity or severe congenital malformation



INTENSIVE CARE

- **Birth weight < 1500 g**
- **Difficult breathing**
- **Unstable temperature**
- **Persistent cyanosis**
- **Recurrent apnea**
- **Pallor**
- **Seizures**



JAUNDICE

- **Very common in neonates**
- **Physiologic jaundice (most frequent): immaturity of bilirubin metabolism in the liver plus certain features in intestine function**
- **Sign of hematologic, obstructive, and infectious conditions leading to high morbidity and mortality if not promptly treated.**
- **Prematurity=Vulnerability**



JAUNDICE

ASK / DETERMINE

- Age / Gestational age
- Birth weight / Current weight
- Timing of onset and duration
- Color of the stools
- Urine color
- Pregnancy history



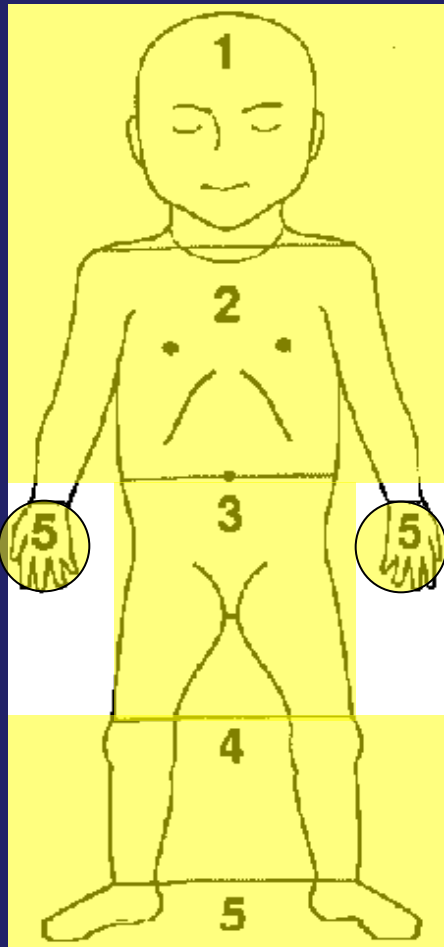
JAUNDICE

INVESTIGATE SEVERITY SIGNS

- Lethargy, irritability
- Poor general condition
- Seizures
- Difficult breathing, apnea, grunting
- Cyanosis
- Intense pallor
- Poor capillary refill

DEGREE OF JAUNDICE

BILIRUBIN ESTIMATES



- Only in the face (zone 1) = 6 mg %
- Down to the navel (zone 2) = 9-12 mg %
- To the knees (zone 3) = 12-15 mg %
- To the ankles (zone 4) ≥ 15 mg %
- Palms / Soles (zone 5) ≥ 18 mg %




CLASSIFY JAUNDICE (IMCI)

SEVERE JAUNDICE (RED)

Jaundice and any of the following signs:


- **Jaundice starting before 24 hours after birth**
- **No passing of stool**
- **Jaundice reaching ankles or palms and soles**
- **Lethargy or irritability**
- **Pathologic perinatal history**
- **More than 10 days of jaundice of any degree**

Severe jaundice (red)



TREATMENT (RED)

- **Continue breast-feeding the infant**
- **Counsel the mother to keep the newborn warm during the trip to hospital**
- **Refer URGENTLY to hospital, observing the guidelines for stabilization and transportation**




MILD JAUNDICE (YELLOW)

- Jaundice only of the face or to the navel (zones 1 and 2)
- No signs of severe jaundice

TREATMENT

- Continue breast-feeding
- Keep the infant warm
- Teach signs of alarm
- Reassess within 48 hours



MODERATE JAUNDICE (YELLOW)

- Jaundice to the knees (zone 3)
- No signs of severe jaundice

TREATMENT

- Continue breast-feeding
- Keep the infant warm
- Teach signs of alarm
- Reassess within 24 hours



NO JAUNDICE (GREEN)

- Continue breast-feeding the infant
- Check immunizations
- Review care of infant at home
- Specify signs of danger
- Schedule follow up visit

INFECTIONS

ASK

Can he/she be breast fed or drink?
Has he/she vomited?
Difficult breathing?
Has the baby had fever?
Seizures?



OBSERVE

Lethargy, unconsciousness or flaccidity or “not looking good”
Vomiting
Lower chest wall indrawing
Apnea
Nasal Flutter
Whine, stridor or wheezing
Cyanosis, pallor or jaundice
Petechiae, pustules or vesicle lesions
Pus discharge from the umbilicus or eyes
Abdominal distension
Seizures



ASSESS

Weight
Respiratory rate, HR
Axillary temperature
White plates in oral mucous membranes
Other problems (congenital disorders)

CLASSIFY OR COLOR CODE AS
SEVERE NEONATAL DISEASE, POSSIBLE BACTERIAL INFECTION
LOCAL BACTERIAL INFECTION OR NO BACTERIAL INFECTION

THANK YOU !