EXAMINATION OF NEWBORN
OBJECTIVES

At the end of the session the student will -

• Know the importance & need for examining a neonate
• Know that neonates have to be examined at different times after birth
• Know what to look for during examination and the sequence of examination
• Have an overview of gestation assessment and neurologic examination
PURPOSE OF EXAMINATION

- To assess weight, gestation and classify the neonate
- To look for any evidence of trauma
- To look for congenital malformations/ dysmorphic features
- To look for signs and symptoms of illness
- To check for normal and common problems
- To check if feeding and growth is appropriate
- To identify at risk and sick neonates
WHEN TO EXAMINE

• Immediately after birth
• Within 24 hours of birth
• Daily during hospital stay
• At discharge
• On follow up
• During an episode of illness
EXAMINATION PROCESS

• Room should be warm
• Wash hands before examining neonate
• First observe the baby
• Next examine in supine position
• Then examine in prone position
• Sequence should be minimal handling to more handling

IF MOTHER OR BABY UNCOMFORTABLE, PAUSE, COMFORT BABY AND PROCEED
IMMEDIATELY AFTER BIRTH

After the neonate has been resuscitated and stabilized, immediate examination of the neonate will include examination

- To look for birth trauma
- To look for any obvious malformations
- To check birth weight
BIRTH TRAUMA

- Cuts,
- Bruises,
- Forceps marks,
- Sub galeal bleed,
- Cephalhematoma,
- Sternomastoid hematoma,
- Clavicle fracture,
- Erb’s palsy,
- Fracture humerus / femur
MALFORMATIONS

- Cleft lip, cleft palate, facial asymmetry
- Meningomyelocele
- CTEV
- Other obvious anomalies
- External genitalia – to look for disorders of sexual development
- Anal opening
- Single umbilical artery (associated with malformations)
EXAMINATION WITHIN 24 HOURS

• Anthropometry
• Gestation assessment
• Detailed examination to look for trauma and malformations
• Systemic examination
• Assessment of feeding
ANTHROPOMETRY

- Weight to be checked immediately after birth (after initial stabilization) and on a daily basis till discharge.
- Length should be measured within 24 hours using an infantometer.
- Head circumference should be recorded between 24 to 48 hours. (Reference points are occipital prominence posteriorly and glabella anteriorly.)
VITAL SIGNS

• **Heart rate:** normal range 120 to 160 per minute. All pulses should be checked. Femoral and dorsalis pedis should be checked to rule out coarctation of aorta

• **Respiratory rate:** range 40 to 60 per minute. Should be checked for one full minute

• **Capillary refill time:** CRT > 3 seconds indicates poor perfusion. To be checked over sternum by pressing for 5 seconds

• **Blood pressure** – only in sick neonates using a NIBP monitor

• In a sick neonate checking oxygen saturation and GRBS would become part of routine examination
HEAD

• Size, shape

• Anterior fontanelle – size, bulging or depressed

• Caput, cephalhematoma

• Sutures: overlapping or widely separated

• Head circumference
GENERAL EXAMINATION CONTINUED

• Spine – Meningomyelocele
• Limbs – CTEV
• Anal opening
• Genitalia – maturity & ambiguous genitalia, hypospadias
• DDH
SYSTEMIC EXAMINATION

• Respiratory system
  – RR, pattern of breathing
  – Respiratory distress
  – Breath sounds

• Cardiovascular system
  – Peripheral pulses
  – Cardiac murmurs

• Abdomen
  – Umbilical hernia
  – Organomegaly
GESTATION ASSESSMENT

• New Ballard score

• Physical criteria
  – Skin
  – Lanugo
  – Ear incurvation and recoil
  – Breast nodule
  – Genitalia
  – Sole crease
POSTURE

Term neonate

Preterm neonate
GESTATION ASSESSMENT

Areola well seen – term neonate

Barely visible nipple and areola - preterm
GENITALIA
SOLE CREASES

Term neonate with sole creases

Preterm neonate- absent sole creases
NEUROLOGIC CRITERIA

– Posture

– Square window

– Arm recoil

– Popliteal angle

– Scarf sign

– Heel to ear

– Scores are given for each of these and gestation age calculated based on total scores
<table>
<thead>
<tr>
<th>Ballard's score (physical and neurologic)</th>
<th>Gestation in weeks</th>
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<tbody>
<tr>
<td>-10</td>
<td>20</td>
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<tr>
<td>-5</td>
<td>22</td>
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<tr>
<td>0</td>
<td>24</td>
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<td>5</td>
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<td>10</td>
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<td>50</td>
<td>44 (22)</td>
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</table>
NEUROLOGIC EXAMINATION

- Neurologic examination is particularly important in neonates who have been asphyxiated and those who are sick
- A neurologic examination is also needed while assessing gestation
- It should be done by an experienced person
- The state of the baby has to be taken into account
- Start by observation, supine, prone and prone suspension
STATES OF A NEONATE

- State 1: deep sleep
- State 2: REM sleep
- State 3: quite awake
- State 4: active awake
- State 5: crying

Neurologic examination is best done when neonate is in state 3 to 4
NEUROLOGIC EXAMINATION

• Cranial nerves
• Motor system
• Neonatal reflexes
  – Glabellar tap
  – Rooting reflex
  – Sucking reflex
  – Palmar grasp
  – Plantar grasp
  – ATNR
  – Moro reflex
## NEONATAL REFLEXES

<table>
<thead>
<tr>
<th>Neonatal Reflex</th>
<th>Appearance (weeks)</th>
<th>Disappearance (months)</th>
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<tbody>
<tr>
<td>Moro’s reflex</td>
<td>28 – 32</td>
<td>3-4</td>
</tr>
<tr>
<td>Palmar grasp</td>
<td>28</td>
<td>3-4</td>
</tr>
<tr>
<td>Plantar grasp</td>
<td>32</td>
<td>6-8</td>
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<tr>
<td>Rooting</td>
<td>32</td>
<td>4</td>
</tr>
<tr>
<td>Tonic neck reflex</td>
<td>35</td>
<td>6</td>
</tr>
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</table>
DAILY EXAMINATION

- Weight
- Assessment of feeding
- Look for common neonatal problems
- Look for any danger signs
ASSESSMENT OF FEEDING

• It is important to ask and observe the feeding of a neonate
• Position and attachment should be checked
• Components of proper attachment include
  – Moth wide open
  – Areola more visible above than below
  – Chin touching the breast
  – Lips everted
COMMON NEONATAL PROBLEMS

- Conjunctivitis
- Erythema toxicum
- Skin pustules
- Umbilical discharge, infection
- Vaginal bleeding in girl babies
- Jaundice
- Check for initial and daily passage of urine and stools
ERYTHEMA TOXICUM
ASSESSMENT OF JAUNDICE

• Neonate should be examined in the daylight near a window
• Blanch and release to assess skin color
• Face : 5 mg/dl
• Chest : 8-10 mg/dl
• Abdomen : 10-15 mg/dl
• Legs : 17 mg/dl
• Palms and soles : 20 mg/dl
AT DISCHARGE

• Weight at discharge

• Detailed examination

• Discharge advice
AT DISCHARGE

• Check feeding
• Check weight
• Re look for any malformations
• Advice mother regarding
  – Follow up
  – Immunization
  – Danger signs
CRITERIA FOR DISCHARGE

• Should be gaining weight
• Should be feeding well
• Should be able to maintain temperature
• Should not be having any problems
• Mother should be confident about taking care of baby
DANGER SIGNS

• Lethargy, poor feeding
• Hypothermia, hyperthermia
• Seizures
• Abdominal distension
• Respiratory distress
• Cyanosis
• Apnea
• Worsening jaundice
• Petichae, skin bleeds
• Persistent vomiting
• Diarrhea
Thank You