

NEONATAL EXAMINATION

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OBJECTIVES

1. Learn to examine a neonate in a systematic manner

Definition

- **Neonate – first 28 days of life**

Neonatal history taking and examination

AIMS:

1. To review problems arising from the pregnancy, family history and labour
2. Help pick babies who require screening for specific target conditions
3. Identify the sick baby for urgent treatment
4. Obtain initial baseline measurements

Schema for neonatal examination

- First wash your hands thoroughly to:
 - reduce the risk of cross-infection
 - ensure hands are warm
- examine within the first 24 hours then repeat before the end of the first 1 week: purpose for **general state of health and for congenital malformations.**

THE APGAR SCORE

- The APGAR score is done by a doctor, midwife, or nurse to examine for:
 - Breathing effort
 - Heart rate
 - Muscle tone
 - Reflexes
 - Skin color
- Each category is scored with 0, 1, or 2, depending on the observed condition.

CONT

The Apgar score rates:

Respiration, crying

Reflexes, irritability

Pulse, heart rate

Skin color of body
and extremities

Muscle tone



Cont ...

Apgar Scale (evaluate @ 1 and 5 minutes postpartum)				
Sign		2	1	0
A	Activity (muscle tone)	Active	Arms and legs flexed	Absent
P	Pulse	>100 bpm	<100 bpm	Absent
G	Grimace (reflex irritability)	Sneezes, coughs, pulls away	Grimaces	No response
A	Appearance (skin color)	Normal over entire body	Normal except extremities	Cyanotic or pale all over
R	Respirations	Good, crying	Slow, irregular	Absent

Interpretation of the APGAR SCORE

- A score of 7-10 is normal
- 4-6 indicates moderate CNS depression
- 0-3 indicates severe CNS depression.

VITAL SIGNS

–Heart Rate (beats/min)

- 80-160

–Respiratory Rate (breaths/min)

- 30-60

Listen and observe

- Assess overall appearance - general tone, alertness, sleepiness and rousability.
- Look carefully for evidence of jaundice (preferably in bright, natural light), cyanosis (central and peripheral). Are there any birthmarks, rashes or other skin abnormalities?
- Listen to the baby's cry and note its quality (high pitched, weak or normal cry)
- Auscultate the heart while the baby is sleeping /quiet

Picture

Jaundice



Blue Nevus



Picture

Heat rash- Obstructed sweat ducts



Hemangioma



Perform a systematic 'head-to-toes' examination:

- Neonatal examination is done in regions rather than systems as is done in the older child.
- However your findings are recorded and reported in the usual outline of reporting used in the older child.
- Never record or report in the head to toe manner

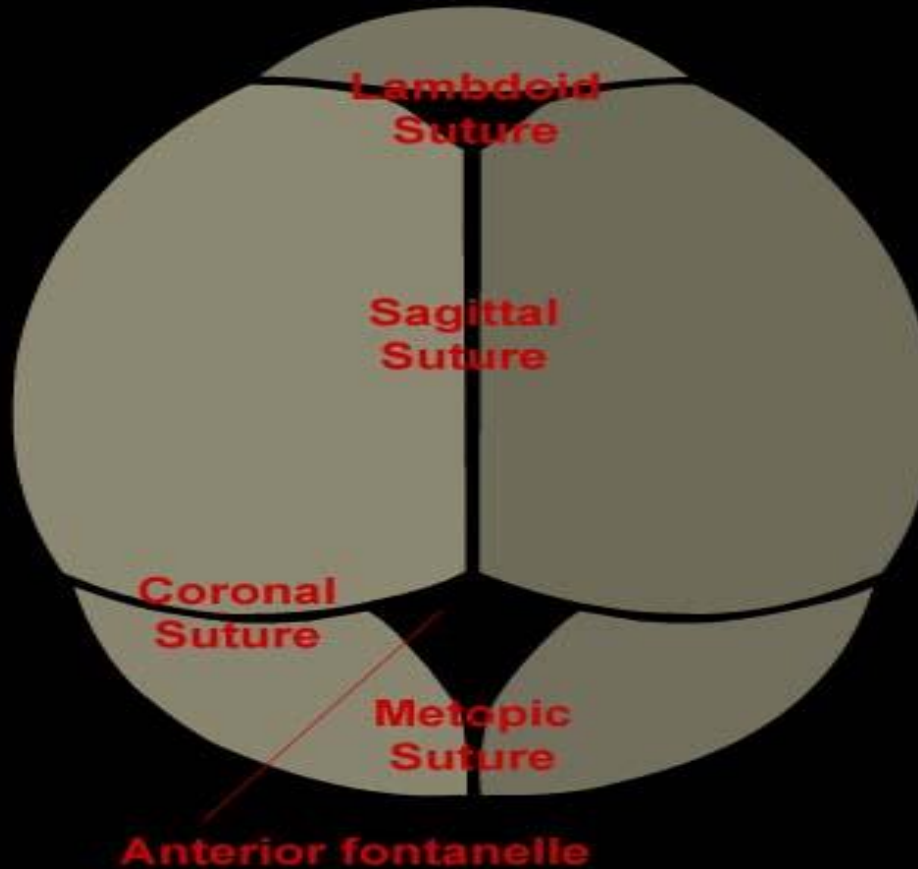
Cont..

Head

- Shape
- **fontanelle** and whether normal, sunken or bulging- anterior, posterior
- Measure and record head circumference, weight, length on growth chart
- *Caput succedaneum VS Cephalohaematoma
- sutures
- Assess facial appearance and note obvious anomalies

Revision on sutures

Normal Sutures of the Newborn Skull



Cont...

- **Neck** : masses and cysts
 - Short webbed neck: turners syndrome
- **Eyes:**
 - Normal shape and appearance?
 - Look for obvious cataracts
 - signs of **infection: discharge**
 - Sub conjunctival haemorrhage

Purulent discharge



Cont..

- **Ears:**
 - Shape and size
 - Are they set at the normal level or 'low set'?
 - Check patency of external auditory meatus
 - Preauricular tags
- **Mouth:**
 - Colour of mucous membrane, observe the palate
 - Check suckling reflex and macroglossia
 - Cleft lip and palate

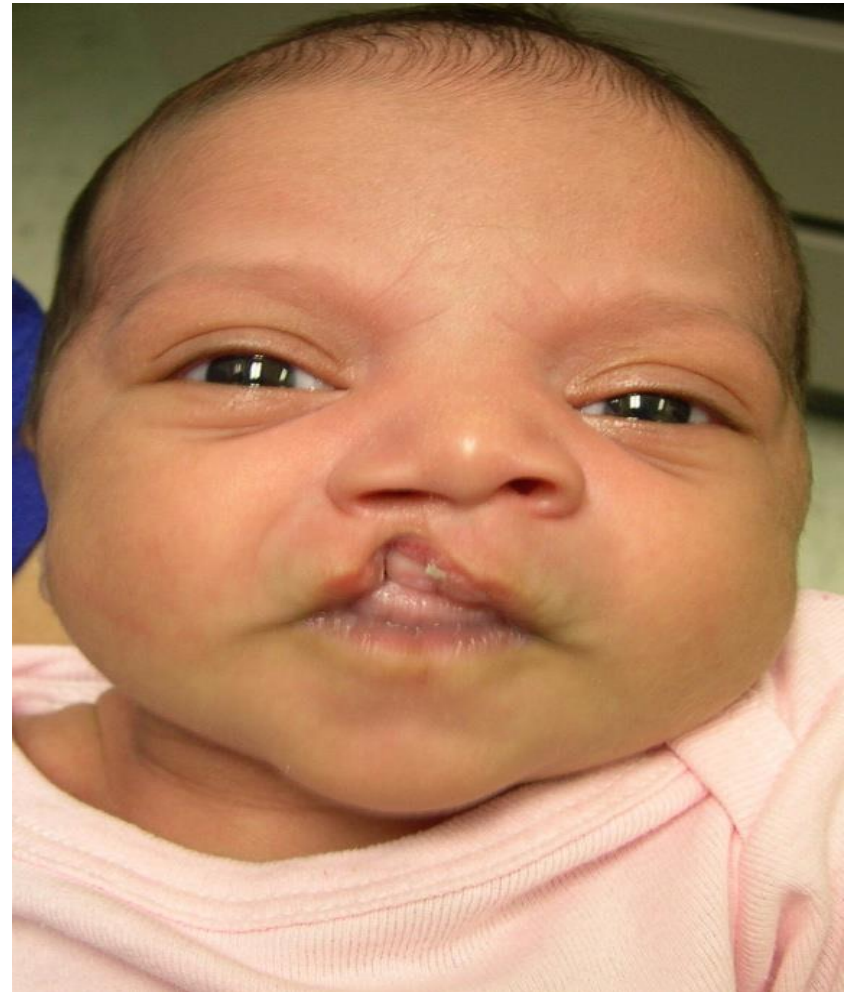
Picture



Normally developed outer ear (pinna)



Abnormal size, shape, rotation and/or location of pinna



Cont...

- **Arms and hands:**
 - Are they of normal shape and moving normally?
 - Look for evidence of traction birth injury (e.g. **Erb's palsy**) by checking neck, shoulders and clavicles
 - Count fingers and observe their shape
- Check palmar creases – are they multiple or single? A single palmar transverse crease may be normal, but can be a sign of **Down's syndrome**

Single palmar transverse crease



Cont...

- **Peripheral pulses:**
 - Check brachial, radial and femoral pulses for rate, rhythm and volume
 - A hyperdynamic (high volume) pulse may suggest **PDA**
 - A weak pulse may occur with a congenital cardiac anomaly (impairing cardiac output)
 - Check for radio-femoral delay (**Coarctation of the aortic**)

Heart:

- Check cardiac position by palpation and feel for any thrill (palpable murmur) or heave
- Listen to the **heart sounds** carefully and for any added sounds or **murmurs**
- Suspected abnormalities require further examination (and often more expert opinion and investigations)

Lungs:

- Watch respiratory pattern, rate and depth for a few seconds
- Shape and symmetry
- Breasts: location, swelling, milky fluid
- Look for any evidence of **intercostal recession**
- Listen for **stridor: upper airway obstruction**
- Auscultate lung fields for breath sounds and added sounds

Abdomen:

- Observe shape
- Measure abdominal girth(circumference)
- Carefully check the umbilical stump for infection or surrounding **hernia**, count the vessels: **2 Arteries and 1 vein**
- Palpate gently for organs, masses or herniae
- It is common to be able to feel the liver and/or spleen in healthy newborns
- Inspect the anus (has meconium been passed?)- imperforate anus

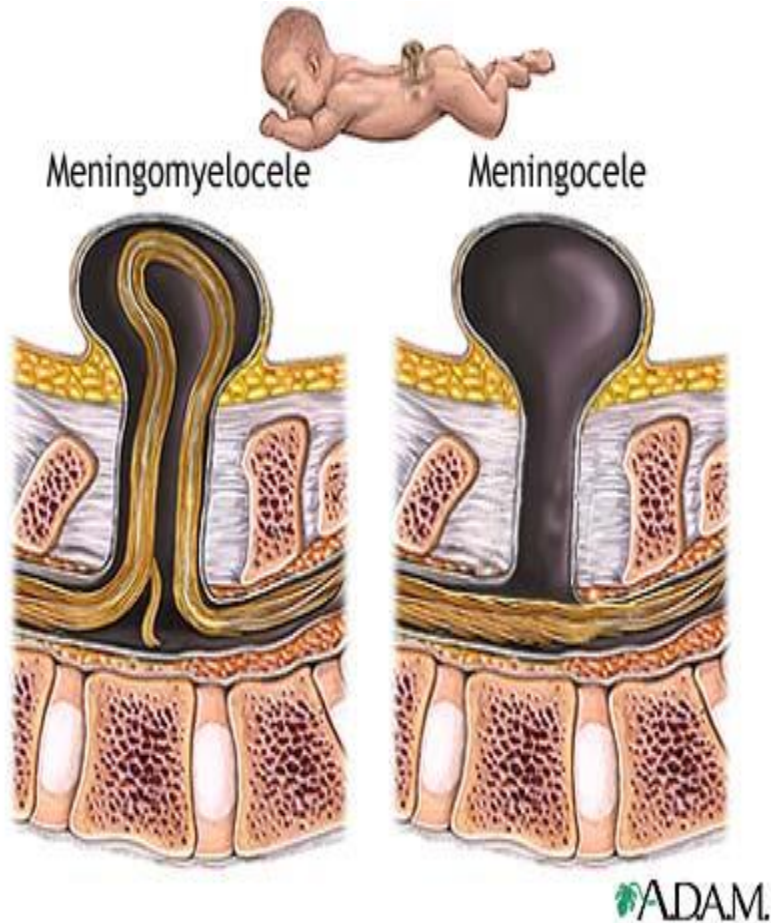
Umbilical Hernia



Cont...

- GUS
 - Check the external genitalia carefully (**Ambiguous Genitalia**)
 - Palpate for testicles in boys
 - Hydrocoeles: fluid around the testes
 - Hypospadias/ epispadias
- **Back:**
 - Look carefully at skin over back and at spinal curvature/symmetry
 - Is there any evidence of **spina bifida occulta** or **sinus** hidden by flesh creases or dimples?
 - Palpate the spine gently

Spina Bifida



Cont..

- **Legs:**

- Watch movements at each joint
- Check for any evidence of **talipes equinovarus**
- Count toes and check shape

Hips:

- Test for Dislocation of the hips

Cont...

- **CNS:**

- Observe tone, behaviour, movements and posture, quality of cry(weak, normal or high pitched)
- Obvious cranial nerve palsies
- Elicit newborn reflexes:- **rooting,sucking, palmar, plantar grasp,moro** – done last
- **Assess gestation: charts**
- Tone: ventral suspension

Facial nerve palsy



Normal neonate



Neonatal reflexes



Cont..

Tonic neck reflex



Grasp reflex



The Moro reflex



ADAM





Common abnormalities detected in the newborn examination

- Capillary or macular haemangioma:
 - Also known as **stork mark/bites**, or **salmon patch**; found around eyes and nape of neck in 30–50% babies
 - Those around eyes normally disappear in first year, commonly persist if on nape of neck

Cont..

- Blue-black pigmented area:
 - They normally disappear over first year
- Urticaria of the newborn: Urticaria neonatorum
- Heat rash (miliaria)
- Breast enlargement
- White pimples on the nose
 - Also known as **milia**; due to blocked sebaceous glands

Cont...

- Oral cysts
- Accessory skin tags
- Vestigial extra digits
- Sacral dimples
 - Examine carefully to detect underlying sinus or evidence of spina bifida occulta
- Deformity of the shape of the head in the immediate post-natal period and following days is common- moulding, cephalohematomas

Abnormalities that may indicate a significant underlying cause

- Any wide separation of the fontanelles, large or small head
- A third fontanelle, found between the normal anterior and posterior fontanelles may indicate Down's syndrome.
- Abnormally shaped or placed ears may indicate **fetal alcohol syndrome**, craniofacial abnormalities due to abnormal branchial arch development or conditions such as **Edward's syndrome** (trisomy 18) or **congenital renal anomalies**.

Cont..

- Single palmar crease can indicate Down's syndrome but may be a normal variant.
- Abnormalities of the face, jaw and ears are often associated with hearing dysfunction; **hearing tests** should be performed and ENT assessment requested.

Summary

- Be friendly and confident
- Be systematic in your approach
- Record your findings
- Communicate to parents
- Refer as is necessary