The Newborn Exam and Congenital Anomalies

MANGO Study Nurse Training Course

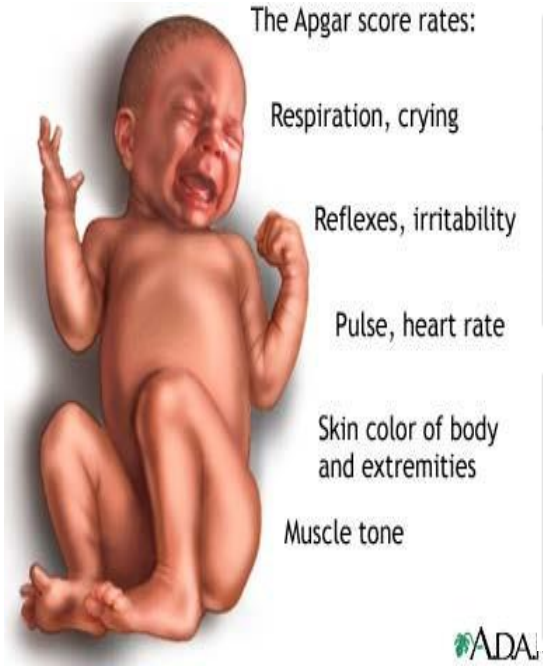
MANGO Study – Congenital Anomalies Training

- Objectives :
  - To improve nurses' skills in conducting complete newborn physical examinations.
  - To improve nurses' knowledge of the types of external newborn congenital anomalies
  - To improve nurses' ability to identify both major and minor external newborn congenital anomalies and reporting/documentation of occurrence of congenital anomalies.

Classification

- **Classification by Gestational Age**
  - **Preterm <37 wks**
  - **Full term 37-40 Postterm >42 Wks**
- **Classification By Birth Weight**
  - **Low Birth Weight < 2500 g**
    Very Low birth weight < 1500 g
  - **Extreme low birth weight < 1000 g**
- Classification By Weight Percentiles
  - AGA 10th-90th percentile for GA
  - SGA < 10th percentile for GA
  - LGA >90th percentile for GA

expanded APGAR SCORE



Apgar Score

Gestational age_____weeks

Sign	0	1	2	1 minute	5 minute	10 minute	15 minute	20 minute
Color	Blue or Pale	Acrocyanotic	Completely Pink					
Heart rate	Absent	<100 minute	>100 minute					
Reflex irritability	No Response	Grimace	Cry or Active Withdrawal					
Muscle tone	Limp	Some Flexion	Active Motion					
Respiration	Absent	Weak Cry; Hypoventilation	Good, Crying					
			Total					

Comments:

Resuscitation

Minutes	1	5	10	15	20
Oxygen					
PPV/NCPAP					
ETT					
Chest Compressions					
Epinephrine					

complete physical exam

- Vital signs
- Measurements
- Physical exam
- Neurological exam
- Estimation of gestational age

- 1st examination in delivery room or as soon as possible after delivery
- 2nd and more detailed examination after 24 h of life
- Discharge examination with 24 h of discharge from hospital

Normal Newborn Exam

- Put baby on flat surface and remove clothes
- Always go head to toe
- Measurements:
  - Head circumference
  - Length
  - Foot length
- If the baby cries, offer a gloved finger
- It is important to examine all babies, even if they are stillbirths
- Document every abnormality however minor

Length

- Crown to heel length should be obtained on admission and weekly
- Acceptable newborn length ranges from 48-52 cm at birth

Head circumference

WHY TAKE HC/ LENGTH/WEIGHT?

IUGR /SGA

Asymmetric

- Weight <10 percentile, HC and length normal
- 55% of SGA infants

Symmetric

- HC, length, weight all <10 percentile
- 33% of SGA infants

Combined

- –
- Symmetric or asymmetric
- 12% of SGA infants

General

- **Pallor**: associated with low hemoglobin or Shock
- **Cyanosis**: associated with hypoxemia
- **Plethora**: associated with polycythemia
- **Jaundice:** elevated bilirubin
- Skin

Acrocyanosis

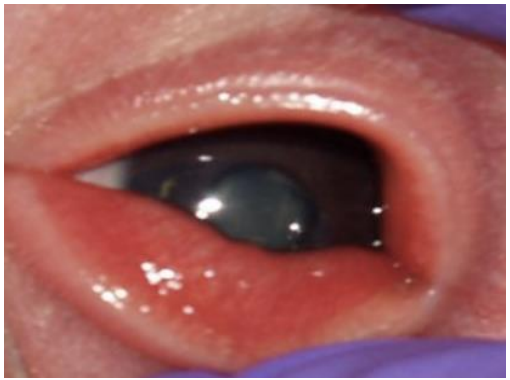
Head

Skull

- Macrocephaly and microcephaly
- Caput succedaneum cephalhematoma, subgaleal hemorrhage
- Fontanelle

Eye

- Pupils: equality, reactivity to light.
- Squint
- Cornea
- Conjunctiva
- Iris



Common Anomalies

Absent orbits

Abnormal pupils

EAR

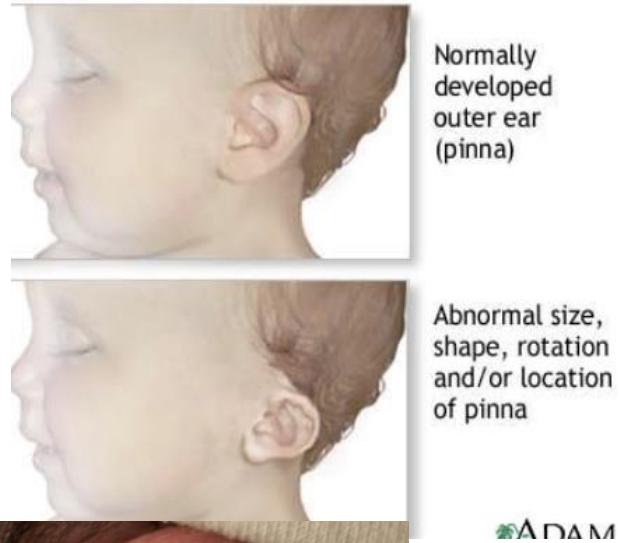
Assess for asymmetry or irregular shape

- Note presence of auricular or pre-auricular pits, fleshy appendages, lipomas, or skin tags.
- Associated with genitourinary anomalies

Low set ears

- Below lateral canthus of eye
  - Can be associated with Downs or Turners Syndromes

Malformed ears



Nose

- Patency of each nostril: exclude choanal atresia
- Abnormalities
- Flaring of nostrils

Common Anomalies

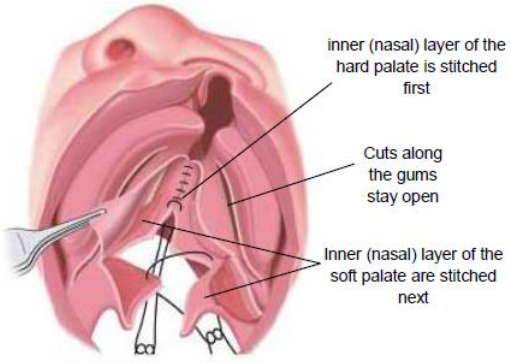
Cleft lip and palate

Isolated
cleft palate

Cleft lip +
palate

Common Anomalies

Cleft lip and palate surgery



Picture 4 Inner (nasal) layer of tissue is closed.

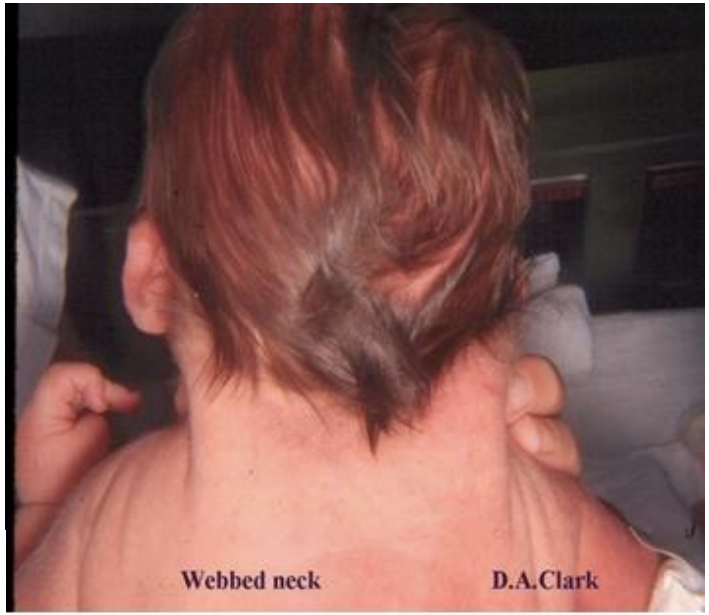
Picture 5 Outer (oral) layer is closed (Step 6). "Z" shaped closure of repaired cleft palate (Step 7)

Mouth

- Cleft lip and palate
- Tongue tie
- Natal teeth
- Tongue size

Neck

- ***Cysts:*** Thyroglossal cyst Cystic hygroma
- ***Masses:*** Sternomastoid tumor Thyroid
- ***Webbing***



CHEST

Inspection

- Supernumerary breast or nipple is common (10%)
- Breast enlargement secondary to maternal hormones
- Unilateral absence or hypoplasia of pectoralis major
    - Poland's Syndrome (Poland's Sequence)
- Widely spaced nipples -Turner's Syndrome, Noonan Syndrome

Chest Deformity

- **Pectus Carinatum**
  – Much less common than Pectus Excavatum
  – More common in males by ratio of 4:1
  – Narrow thorax with increased anteroposterior diameter
- **Pectus Excavatum**
  – Gender predominance: Boys (3:1 ratio) – Mild: Oval pit near infrasternal notch
  – Severe: Sinking of entire lower sternum

Chest

Observe

- – Respiratory pattern
- • Brief periods apnea are normal in transition, called “periodic breathing”
- – Chest movement • Symmetry
- • Retractions and Tracheal tugging

Auscultation

– Audible stridor, grunting – Wheeze, rales.

- Tachypnea, tachycardia
- increased pericordial activity
- Auscultation of heart sounds, murmurs or Irregular heart rhythm
- Perfusion: Capillary refill time
- Palpate femoral pulsation: absent in coarctation of the aorta
- Bounding pulses often indicated PDA

Abdomen

- Organomegaly: liver may be palpable 1-2 cm below the costal margin .spleen is at the costal margin
- Masses
- Distension , scaphoid abdomen
- Umbilical stump: bleeding , meconium straining, granuloma, discharge, inflammation
- Omphalocele and Gastroschisis

GENITALIA

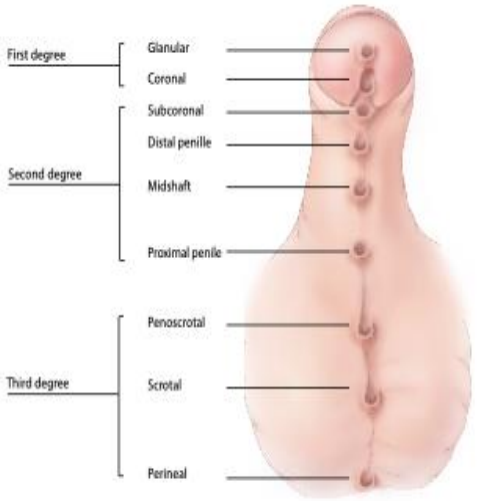
Male genitalia

- In full term,
  - scrotum is well developped,with deep rugae.
  - Both testes are in the scrotum
- In preterm,
  - scrotum is small with few rugae.testes are absent or high in the scrotum
- abnormalities: undescended testis hydrocele,inguinal hernia hypospadius

- **Female genitalia**
  - In full term, labia majora completely cover labia minora

- **DSD- Disorder of sexual diffentiation**

HYPOSPADIAS



Subtypes:

Q54 Hypospadias (avoid using this general code if more specific information is available)

Q54.0 Hypospadias, balanic coronal glanular

Q54.1 Hypospadias, penile (subcoronal hypospadias)

Q54.2 Hypospadias, penoscrotal

Q54.3 Hypospadias, perineal

Q54.8 Other hypospadias, excludes: female hypospadias (**Q52.81**)

Q54.9 Hypospadias, unspecified

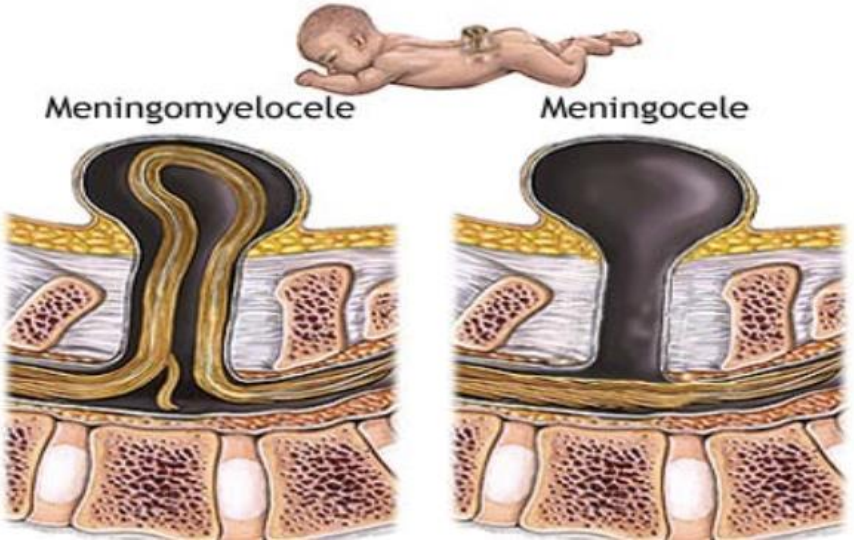
Anal opening

- The anus is inspected for its location and patency
  .
- An imperforate anus is not always immediately apparent.

- Thus, patency often is checked by careful insertion of a rectal thermometer to measure the baby's first temperature

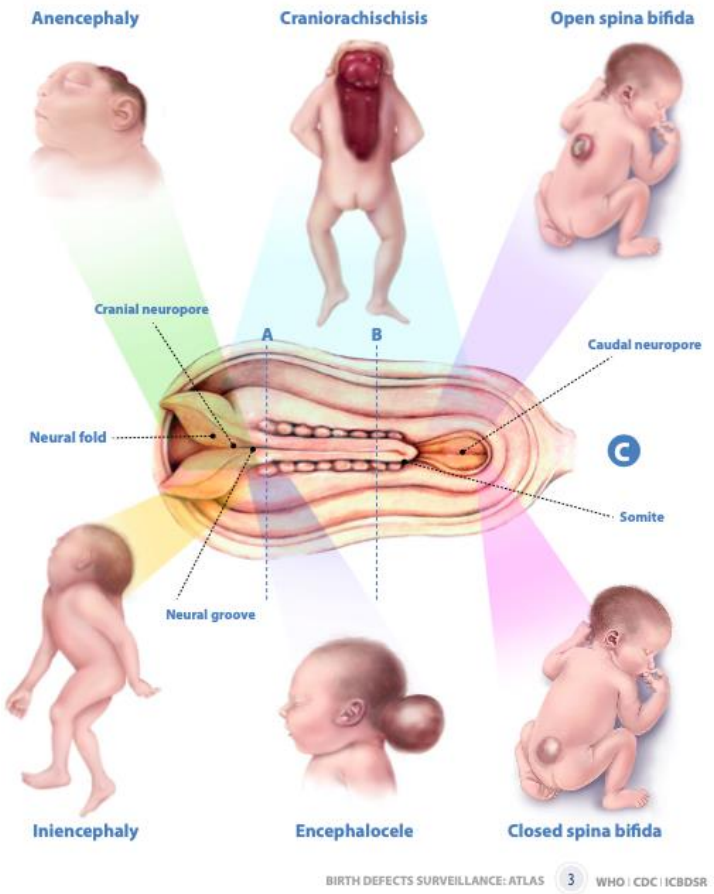
Meningiomyelocele

Meningiomyelocele & meningeocele



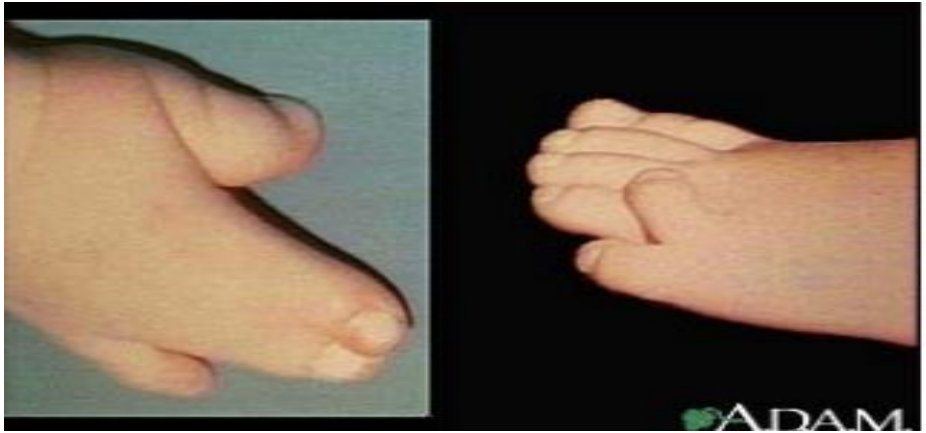
Neural Tube

Photographs source: courtesy of CDC-Beijing Medical University collaborative project.



Musculoskeletal

- Fractures
- Dislocations
- Polydactyly
- Syndactyly
- Deformities



Common Anomalies

Musculoskeletal system

Photograph source: CDC-Beijing

Photograph source: courtesy of Dr Jaime Frías (EE.UU.).

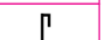
Photographs source: CDC-Beijing Medical University collaborative project.

NEUROLOGIC EXAM

- TONE
- REFLEXES
- POSITION

PRETERM -Ballard score

Neuromuscular Maturity

Score	–1	0	1	2	3	4	5
Posture							
Square window (wrist)	 >90°	 90°	 60°	 45°	 30°	 0°	
Arm recoil		 180°	 140–180°	 110–140°	 90–110°	 <90°	
Popliteal angle	 180°	 160°	 140°	 120°	 100°	 90°	 <90°
Scarf sign							
Heel to ear							

Score	–1	0	1	2	3	4	5

Physical Maturity

Skin	Sticky, friable, transparent	Gelatinous, red, translucent	Smooth, pink; visible veins	Superficial peeling and/or rash; few veins	Cracking, pale areas; rare veins	Parchment, deep cracking; no vessels	Leathery, cracked, wrinkled
Lanugo	None	Sparse	Abundant	Thinning	Bald areas	Mostly bald	
Plantar surface	Heel-toe 40–50 mm: –1 <40 mm: –2	>50 mm, no crease	Faint red marks	Anterior transverse crease only	Creases anterior 2/3	Creases over entire sole	
Breast	Imperceptible	Barely perceptible	Flat areola, no bud	Stippled areola, 1–2 mm bud	Raised areola, 3–4 mm bud	Full areola, 5–10 mm bud	
Eye/Ear	Lids fused loosely: –1 tightly: –2	Lids open; pinna flat; stays folded	Slightly curved pinna; soft; slow recoil	Well curved pinna; soft but ready recoil	Formed and firm, instant recoil	Thick cartilage, ear stiff	
Genitals (male)	Scrotum flat, smooth	Scrotum empty, faint rugae	Testes in upper canal, rare rugae	Testes descending, few rugae	Testes down, good rugae	Testes pendulous, deep rugae	
Genitals (female)	Clitoris prominent, labia flat	Clitoris prominent, small labia minora	Clitoris prominent, enlarging minora	Majora and minora equally prominent	Majora large, minora small	Majora cover clitoris and minora	

Maturity Rating

Score	Weeks
–10	20
–5	22
0	24
5	26
10	28
15	30
20	32
25	34
30	36
35	38
40	40
45	42
50	44

Discussing Anomalies with Parents

Diagnoses should be discussed only by healthcare providers

Tell parents about diagnosis as soon as possible, even if not confirmed

Someone with sufficient knowledge of the diagnosis and prognosis should tell parents *in private*

Use non-medical terms that are easy to understand

Consider writing down information about the diagnosis to help parents remember

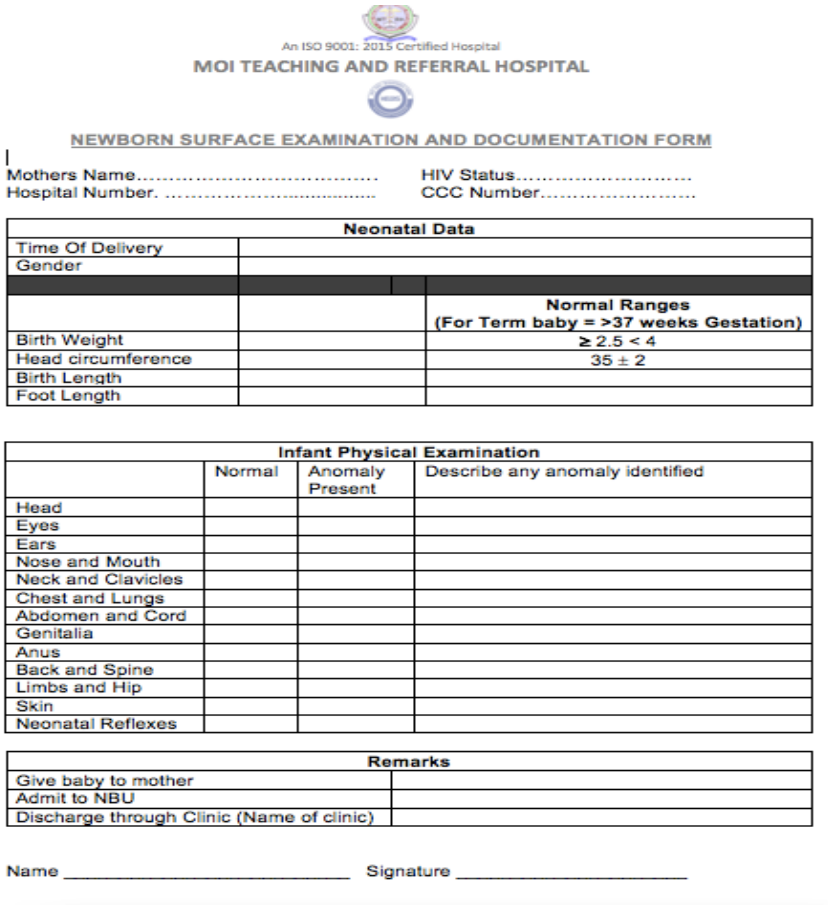
Discussing Anomalies with Parents

Use sensitive words and avoid using negative phrases like “I’m sorry” or “Unfortunately”

Check to see if parents understood information, especially of etiology since parents often feel guilt about congenital anomalies

Provide resources for next steps

MTRH documentation



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MOI TEACHING AND REFERRAL HOSPITAL

NEWBORN SURFACE EXAMINATION AND DOCUMENTATION FORM

Mothers Name..... HIV Status.....
Hospital Number. ..... CCC Number.....

Neonatal Data		
Time Of Delivery		
Gender		
		Normal Ranges (For Term baby = >37 weeks Gestation)
Birth Weight		≥ 2.5 < 4
Head circumference		35 ± 2
Birth Length		
Foot Length		

Infant Physical Examination			
	Normal	Anomaly Present	Describe any anomaly identified
Head			
Eyes			
Ears			
Nose and Mouth			
Neck and Clavicles			
Chest and Lungs			
Abdomen and Cord			
Genitalia			
Anus			
Back and Spine			
Limbs and Hip			
Skin			
Neonatal Reflexes			

Remarks	
Give baby to mother	
Admit to NBU	
Discharge through Clinic (Name of clinic)	

Name _____ Signature _____

Questions?