

CHARACTERISTICS OF NORMAL NEWBORN





Introduction:

Definition of neonate:

The period from birth to 28 days after birth.

General Appearance

- Well-flexed, full range of motion, spontaneous movement

Common variations:

- Legs extended with frank breech



Vital Signs and General Measurements

Temperature - Range 36.5 to 37.5°C axillary

Common variations:

- Crying may elevate temperature
- Stabilizes in 8 to 10 hours after delivery



Heart rate

- Range 120 to 160 beats per minute

Common variations:

- Heart rate range to 100 when sleeping to 180 when crying
- Color pink with acrocyanosis
- Heart rate may be irregular with crying






Respiration

- **Range 30 to 60 breaths per minute**

Common variations:


- Bilateral bronchial breath sounds
 - Moist breath sounds may be present shortly after birth
- 



Blood Pressure

- **not done routinely**

Factors to consider:

- Varies with change in activity level
 - Appropriate cuff size important for accurate reading
 - Average newborn (1 to 3 days) oscillometry pressure value: 65/41 in both upper and lower extremities
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GENERAL MEASUREMENTS



Head Circumference

- 33 to 35 cm

Expected findings:

- Head should be 2 to 3 cms larger than the chest

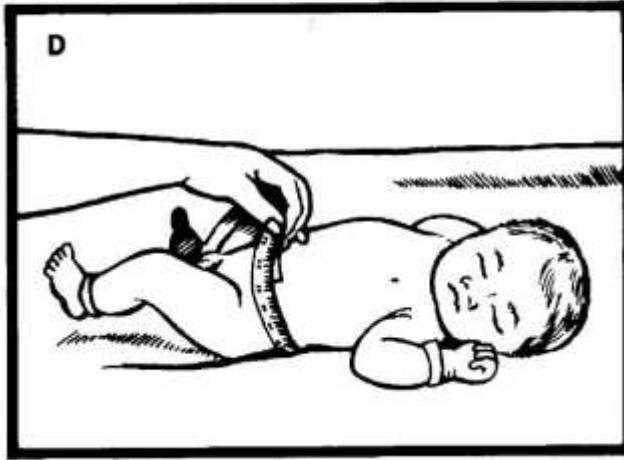
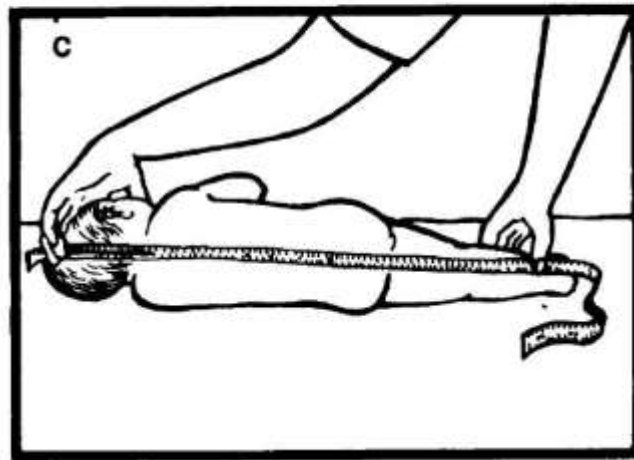
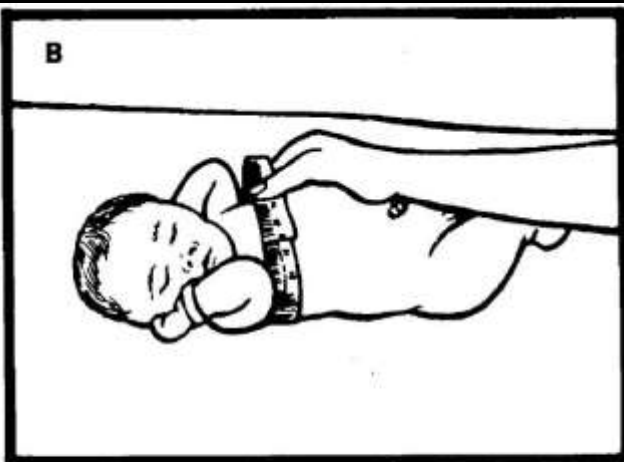
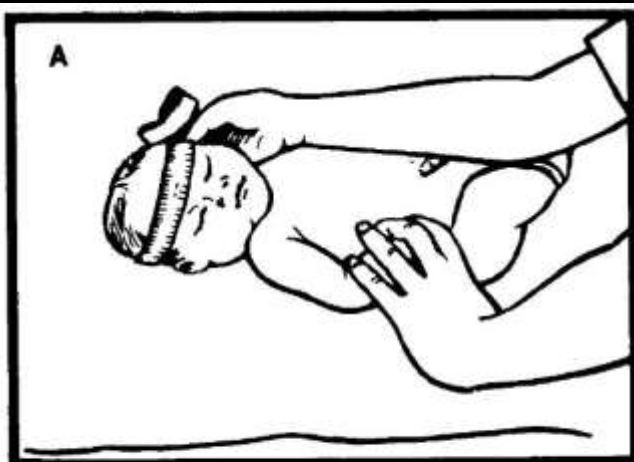


Chest circumference

- 30.5 to 33 cm

Common variations:

- Molding* of head may result in a lower head circumference measurement
- Head and chest circumference may be equal for the first 24 to 48 hours of life
- *Molding refers to the process by which the neonates head is shaped during labor as it passes through the birth canal. The head may become elongated due to the overlapping of the cranial bones at the suture lines.



- **Weight range :**
2500 - 4000 gms (5 lbs. 8oz. - 8 lbs. 13 oz.)
- **Length range - 48 to 53 cms (19 - 21 inches)**



Skin

Expected Findings:

- Skin reddish in color, smooth and puffy at birth
- At 24 - 36 hours of age, skin flaky, dry and pink in color
- Edema around eyes, feet, and genitals
- Turgor good with quick recoil
- Cord with one vein and two arteries
- Cord clamp tight and cord drying

General description of the skin



- Hair silky and soft with individual strands
- Nipples present and in expected locations
- Nails to end of fingers and often extend slightly beyond
- **Vernix caseosa** - The white, cheesy substance covering the newborn's body. Often present only in the skin folds.
- **Lanugo** - Fine downy body hair usually distributed over shoulders, sacral area, and back of newborns. Usually disappears before birth or shortly after birth.



Lanugo hair



Common variations:

- **ACROCYANOSIS**

The result of sluggish peripheral circulation.



- **MONGOLIAN SPOTS**

Patch of purple-black or blue-black color distributed over coccygeal and sacral regions of infants of African-American or Asian descent. Not malignant. Resolves in time.



- **MOTTLING**

Generalized red and white discoloration of skin of chilled infants with fair complexion.



4. Desquamation:

- Peeling of the skin over the areas of bony prominence that occurs within 2-4 weeks of life because of pressure and erosion of sheets.

Desquamation





Lanugo



Milia




Mottling





- **PHYSIOLOGICJAUNDICE**

Hyperbilirubinemia not associated with hemolytic disease or other pathology in the newborn. Jaundice that appears in full term newborns 24 hours after birth and peaks at 72 hours. Bilirubin may reach 6 to 10 mg/dl and resolve in 5 to 7 days.



Physiological Jaundice



6. Milia:

- Small white or yellow pinpoint spots.

- Common on the nose, forehead, & chin of the newborn infants due to accumulations of secretions from the sweat & sebaceous glands that have not yet drain normally.

They will disappear within 1-2 weeks, they should not expressed.

Milia



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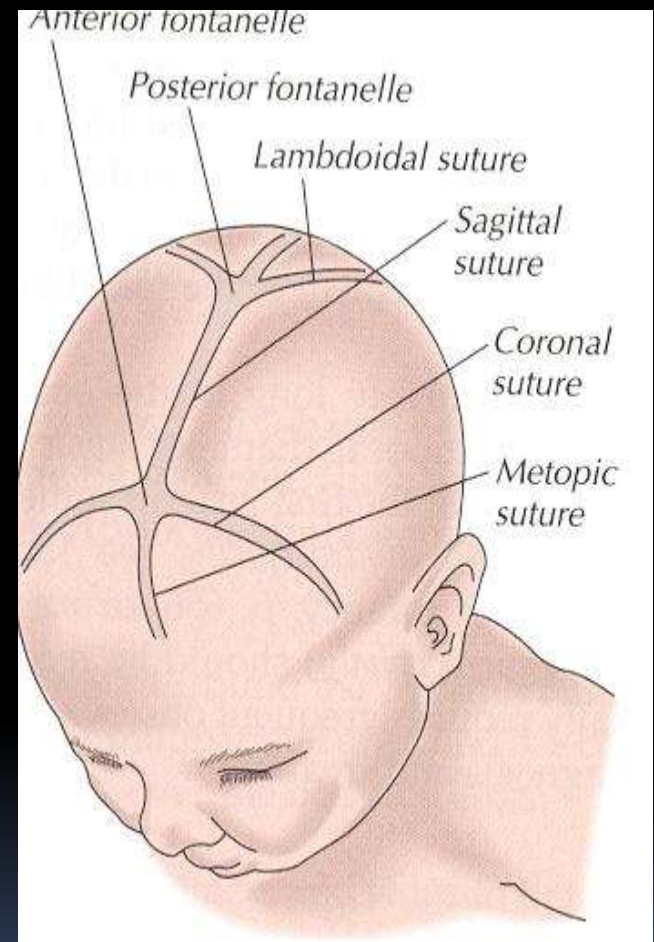
- **Petechiae/ bruises** over presenting part.
Petechiae: Pinpoint, flat hemorrhages often visualized on head, face, and chest. Associated with rapid onset of pressure followed by immediate release of pressure during birthing process.
Bruises/Ecchymoses: Larger than petechia, hemorrhagic areas associated with rapid delivery or breech birth.
- **Skin tags** usually around ears or digits (tied off)
- **Harlequin coloring** - The color of the newborn's body appears to be half red and half pale. This condition is transitory and usually occurs with lusty crying. Harlequin Coloring may be associated with to an immature vasomotor reflex system.



Head

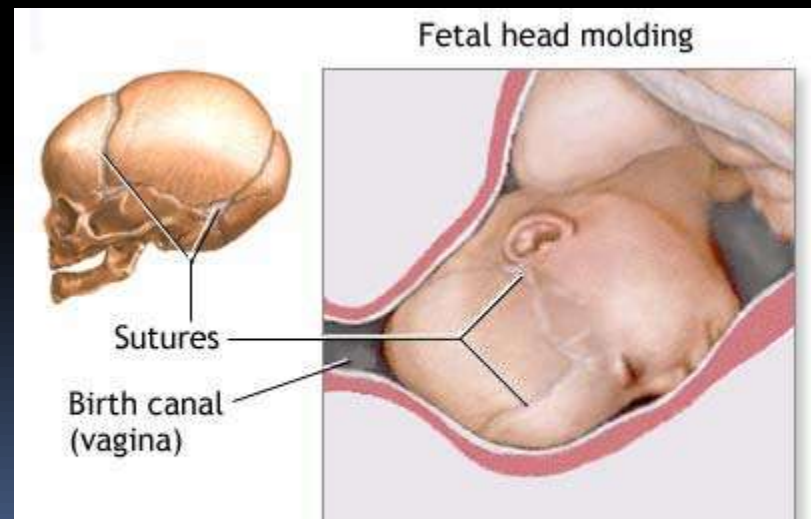
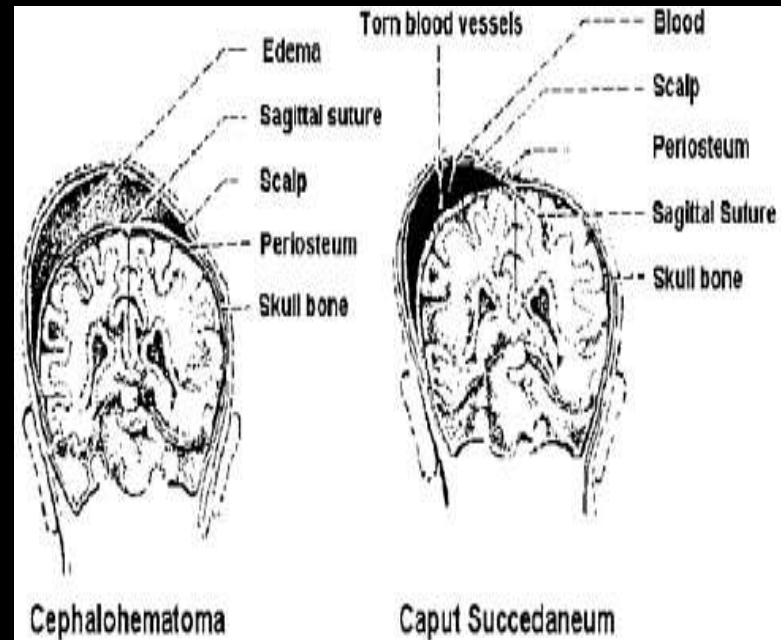
Expected findings:

- Anterior fontanel diamond shaped 2-3 - 3-4 cms
- Posterior fontanel triangular 0.5 - 1 cm
- Fontanel soft, firm and flat
- Sutures palpable with small separation between each



Common variations:

- **CAPUT SUCCEDANEUM**
Swelling of the soft tissue of the scalp caused by pressure of the fetal head on a cervix that is not fully dilated. Swelling crosses suture line and decreases rapidly in a few days after birth.
- **Molding** of fontanel and suture spaces



Caput succedaneum



Caput succedaneum





Cephalhematoma:

Cephalhematoma is a subperiosteal collection of blood secondary to rupture of blood vessels between the skull and the periosteum, in which bleeding is limited by suture lines (never cross the suture lines).

Cephalhematoma





Eyes

Expected findings:

- Slate gray or blue eye color
- No tears
- Fixation at times - with ability to follow objects to midline
- Red reflex
- Blink reflex
- Distinct eyebrows
- Cornea bright and shiny
- Pupils equal and reactive to light

Common variations:

- Edematous Eyelids

Normal Eye



Eyelid Edema



Subconjunctival Hemorrhage



Congenital Glaucoma



Congenital Cataracts





Ears

Expected findings:

- Loud noise elicits Startle Reflex
- Flexible pinna with cartilage present
- Pinna top on horizontal line with outer canthus of eye



Common variations:

- Skin tags on or around ears

Normal Ears



Ear Tag





Nose:

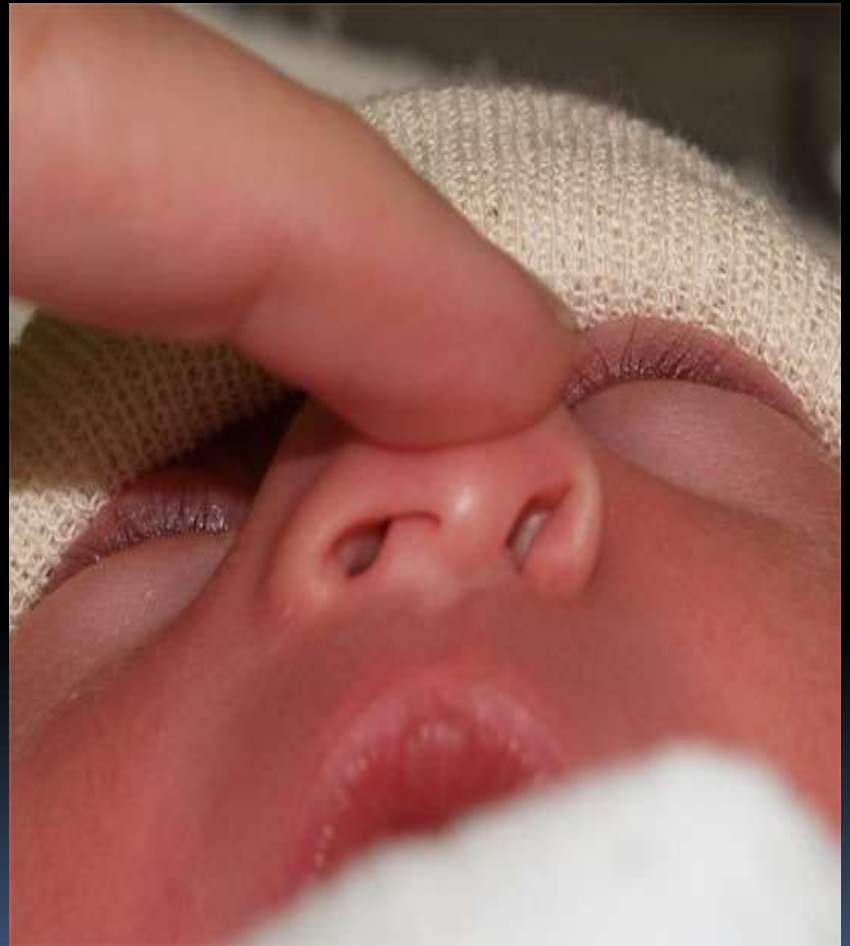
Nasal Patency (stethoscope).

Nasal discharge - thin white mucous

Normal Nose



Dislocated Nasal Septum



Mouth & Throat:

- Intact, high arched palate.**
- Sucking reflex – strong and coordinated**
- Rooting reflex**
- Gag reflex**
- Minimal salivation**



Neck:

Short, thick, usually surrounded by skin folds.

Neck



❖ System assessment of the neonates:

1. Gastrointestinal System:

Mouth should be examined for abnormalities such as cleft lip and/or cleft palate.

Epstein pearls are brittle, white, shine spots near the center of the hard palate.

They mark the fusion of the 2 hollows of the palate. If any; it will disappear in time.

Cleft Palate



Cleft Lip





Cheeks:

Have a chubby appearance due to development of fatty sucking pads that help to create negative pressure inside the mouth which facilitates sucking.

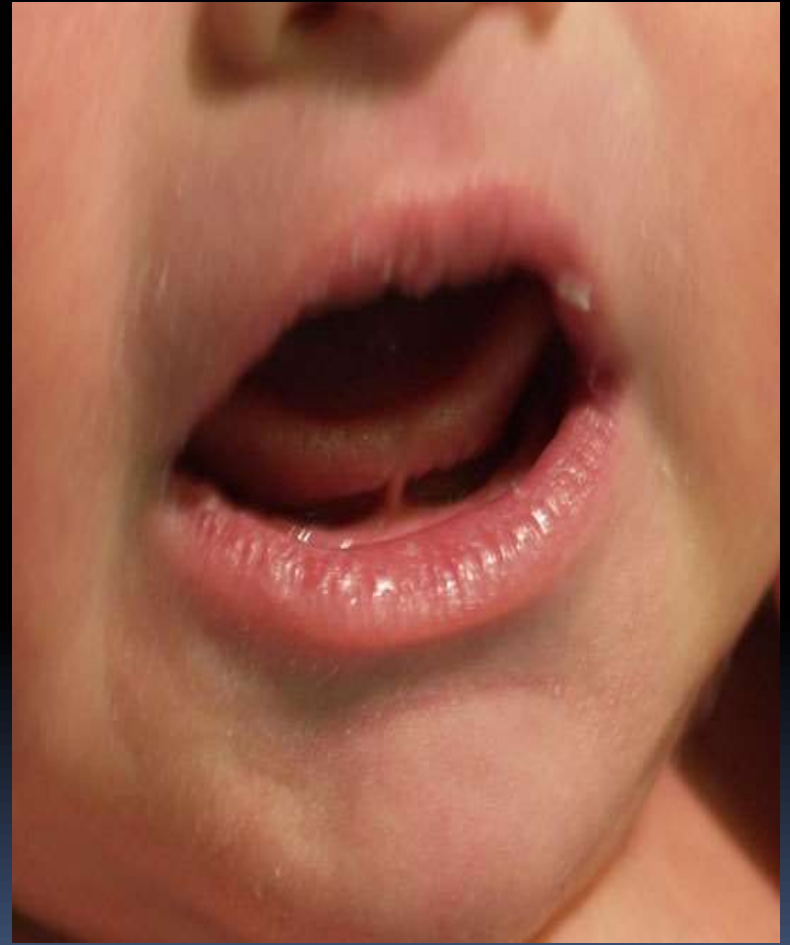
Epstein Pearls & cheeks



Normal Tongue



Ankyloglossia



Ankyloglossia





Gum:

May appear with a quite irregular edge.

Sometimes the back of gums contain whitish deciduous teeth that are semi-formed, but not erupted

Irregular edges with Natal Teeth



Natal Tooth



Abdomen

Expected findings:

- Dome-shaped abdomen
- Abdominal respirations
- Soft to palpation
- Well formed umbilical cord
- Three vessels in cord
- Cord dry at base
- Liver palpable 2 - 3 cms below right costal margin
- Bilaterally equal femoral pulses
- Bowel sounds auscultated within two hours of birth
- Voiding within 24 hours of birth
- Meconium within 24 - 48 hours of birth

Common variations:

- Small umbilical hernia

Abdomen

- Cylindrical in Shape



Normal Umbilical Cord

- **Bluish white at birth with 2 arteries & one vein.**



Meconium Stained Umbilical Cord



passage of meconium



Chest

Expected findings:

- Evident xiphoid process
- Equal anteroposterior and lateral diameter
- Bilateral synchronous chest movement
- Symmetrical nipples

Common variations:

- "Witch's milk"
- Enlarged breasts
- **Accessory nipples**

Circulatory system:

Heart:

Apex- lies between 4th & 5th
intercostal space, lateral to left sternal
border.

Respiratory system:

- Slight substernal retraction evident during inspiration



Respiratory system Cont.:

- Xiphesternal process evident



Respiratory system Cont. :

Respiratory is chiefly abdominal

Cough reflex is absent at birth, present by 1-2 days postnatal.

Possible signs of RDS are:

- Cyanosis other than hands & feet.**
- Flaring of nostrils.**
- Expiratory grunt-heard with or without stethoscope.**



Urinary System:

Normally, the newborn has urine in the bladder and voids at birth or some hours later.

Female Genitalia

Expected findings:

- Edematous labia and clitoris
- Labia majora are larger and surrounding labia minora
- Vernix between labia

Common variations:

- Hymenal tag
- Pseudomenstruation
- Smegma
- Increased pigmentation
- Ecchymosis and edema after breech birth
- "Red brick" pink-stained urine due to uric acid crystals

Female genitalia



Female genitalia Cont.

- Labia & Clitoris are usually edematous.
- Urethral meatus is located behind the clitoris.
- Vernix caseosa is present between labia



Male Genitalia

Expected findings:

- Urinary meatus at tip of glans penis
- Palpable testes in scrotum
- Large, edematous, pendulous scrotum, with rugae
- Smegma beneath prepuce
- Stream adequate on voiding

Common variations:

- Prepuce covering urinary meatus
- Erections
- Increased pigmentation
- Edema and ecchymosis after breech delivery

Normal Male genitalia

- Urethral opening is at tip of glans penis.
- Testes are palpable in each scrotum.
- Scrotum is usually pigmented, pendulous & covered with rugae.



Endocrine system:

Swollen breasts:

Appears on 3rd day in both sex, & lasts for 2-3 weeks and gradually disappears without treatment.

N.B: The breasts should not be expressed as this may result in infection or tissue damage.

Maternal hormonal withdrawal

- Female genitalia, normal with vaginal discharge




Infantile menstruation





Back and Rectum

Expected findings:

- Intact spine without masses or openings
 - Trunk incurvature reflex
 - Patent anal opening
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Extremities


Expected findings:

- Maintains posture of flexion
- Equal and bilateral movement and tone
- Full range of motion all joints
- Ten fingers and ten toes
- Negative hip click
- Grasp reflex present
- Legs appear bowed
- **Feet appear flat**
- **Palmar creases present**
- **Sole creases present**



Neuromuscular System

Expected findings:

- Maintains position of flexion
 - When prone, turns head side to side
 - Holds head and back in horizontal plane when held prone
 - Ability to hold head momentarily erect
- 



The Central Nervous system:

Reflexes:

Successful use of reflex mechanism is a strong evidence of normal functioning CNS.