

EXAMINATION OF NEWBORN INFANT

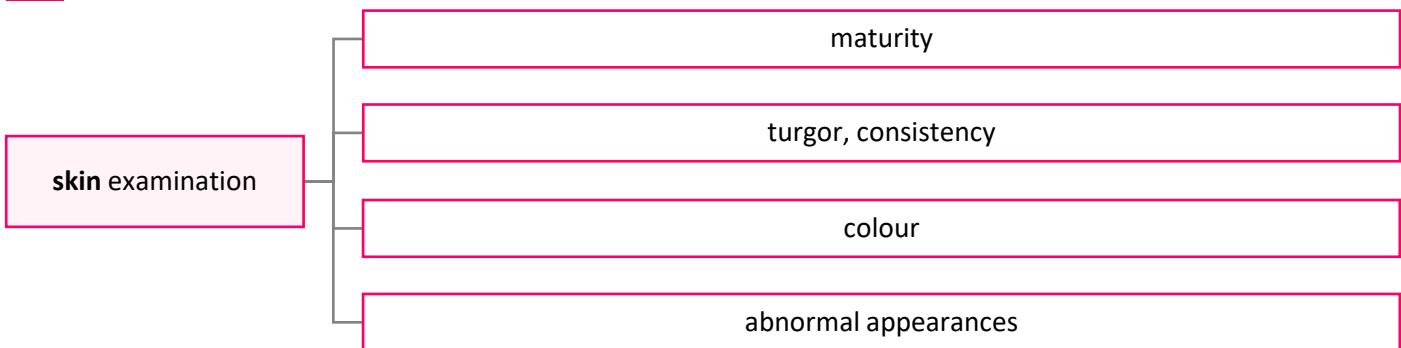
MAIN VITAL SIGNS

respiratory rate	<ul style="list-style-type: none">– a normal respiratory rate is roughly 40-60 breaths per minute– newborns tend to have an irregular breathing pattern– no signs of respiratory disorders
heart rate	<ul style="list-style-type: none">– a normal heart rate is 90-160 beats per minute
body temperature	<ul style="list-style-type: none">– should be taken in the groin– temperature rate is between 36,5 and 37,5°C
pulse	<ul style="list-style-type: none">– pulses represent an approximate determination of cardiac output– at a minimum, the femoral and brachial pulses should be palpated bilaterally<ul style="list-style-type: none">▪ then one femoral and the right brachial should be palpated simultaneously
capillary refill	<ul style="list-style-type: none">– capillary filling time can give valuable information about the infant's cardiac perfusion to the skin and should be determined by pressing a finger against the infant's skin in both a central and a peripheral area– capillary refill should be brisk

GENERAL APPEARANCE

- observation involves:
 - physical maturity
 - well-being of newborn
 - nutritional status
- in term infants there is **appropriate subcutaneous fat**
- in term infants the normal position is with the hips abducted and partially flexed, the knees flexed, and the arms adducted and flexed at the elbow - this position is similar to the **fetal position**
- the quality and quantity of **spontaneous movements** are observed
- a hungry, crying baby cannot be assessed accurately
- crying should be vigorous, but it should be possible to console the infant by cuddling

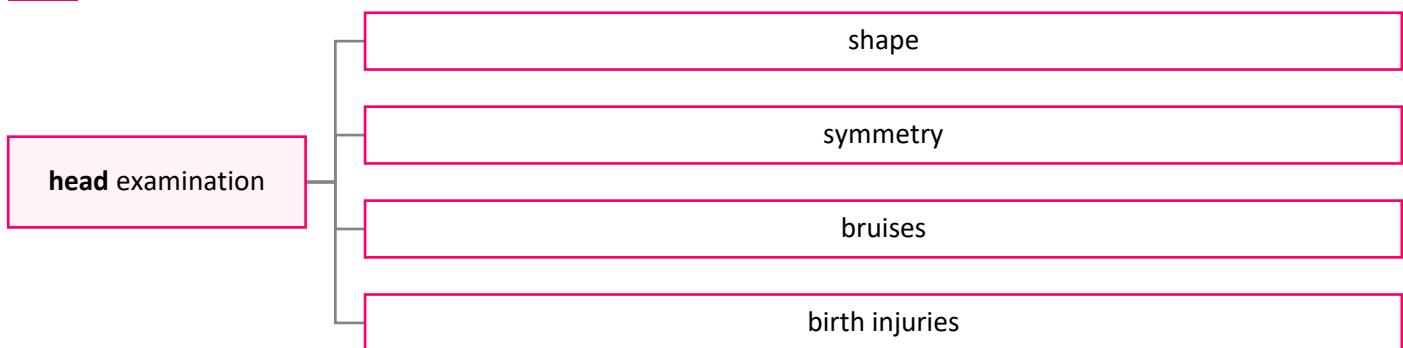
SKIN



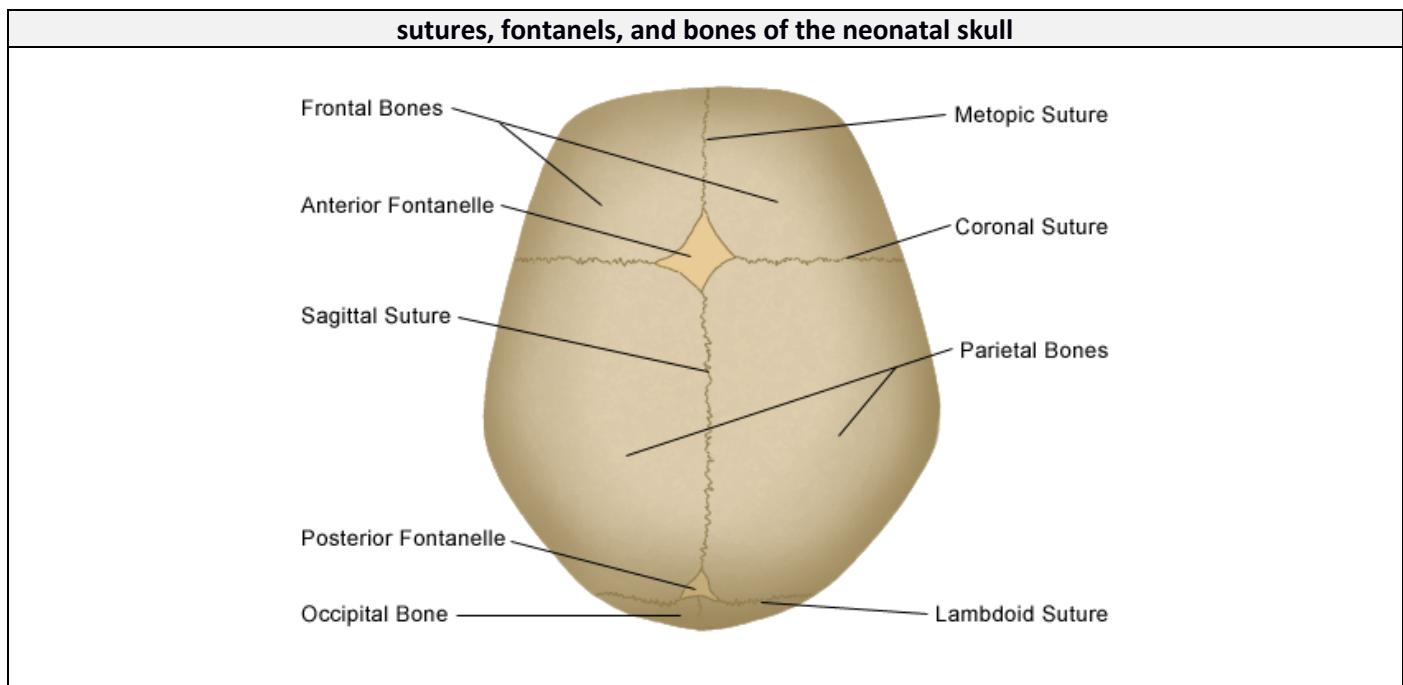
- you should note if any **cutaneous lesions** are present – you should describe its:
 - placement
 - size
 - classifications
- skin of term newborn is pink

- fetal skin is covered in utero with **vernix caseosa**, a greasy white or yellow material composed of sebaceous gland secretions, proteins, and exfoliated skin cells
 - vernix becomes thicker during the third trimester, it gradually decreases as the fetus approaches 40 weeks gestation
 - vernix is present more often in the axillae, the groin and on the back
- **lanugo** - the fetus is also covered with a fine, soft, and downy type of hair called lanugo while in utero.
 - lanugo first appears at approximately 20 weeks gestation and covers most of the body
 - most of it disappears between the 7th and 8th month of pregnancy
 - sometimes may be present in term newborns – then it disappears within a couple of next days or weeks after the birth

HEAD



- term newborn infants born by vaginal delivery often present elongated skull shape with overlapping skull bones
- the average **occipital-frontal circumference** at 40 weeks gestational age is **34-35 cm** (should be plotted on a standard growth chart and the gestation-specific percentile in which the measurement falls noted)



palpation

areas of soft or thinning bone

shape, placement and size of fontanels

shape, placement of sutures

evidence of birth trauma and other abnormalities

anterior fontanel	<ul style="list-style-type: none">– is diamond shaped– is normally described as flat and soft– a tense or bulging fontanel may be a sign of increased intracranial pressure or may occur when the infant is crying
posterior fontanel	<ul style="list-style-type: none">– triangular in form– often difficult to palpate directly after the birth

FACE, NECK AND CLAVICLES

face and neck examination

shape

symmetry

bruises

other abnormalities

- examine **reflexes: suck and rooting**
- palpate the entire length of the **clavicles** - suspect fracture if crepitus, swelling, or tenderness is present.

EARS

ear examination

shape

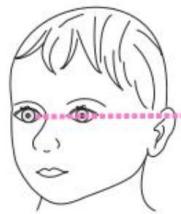
formation

position

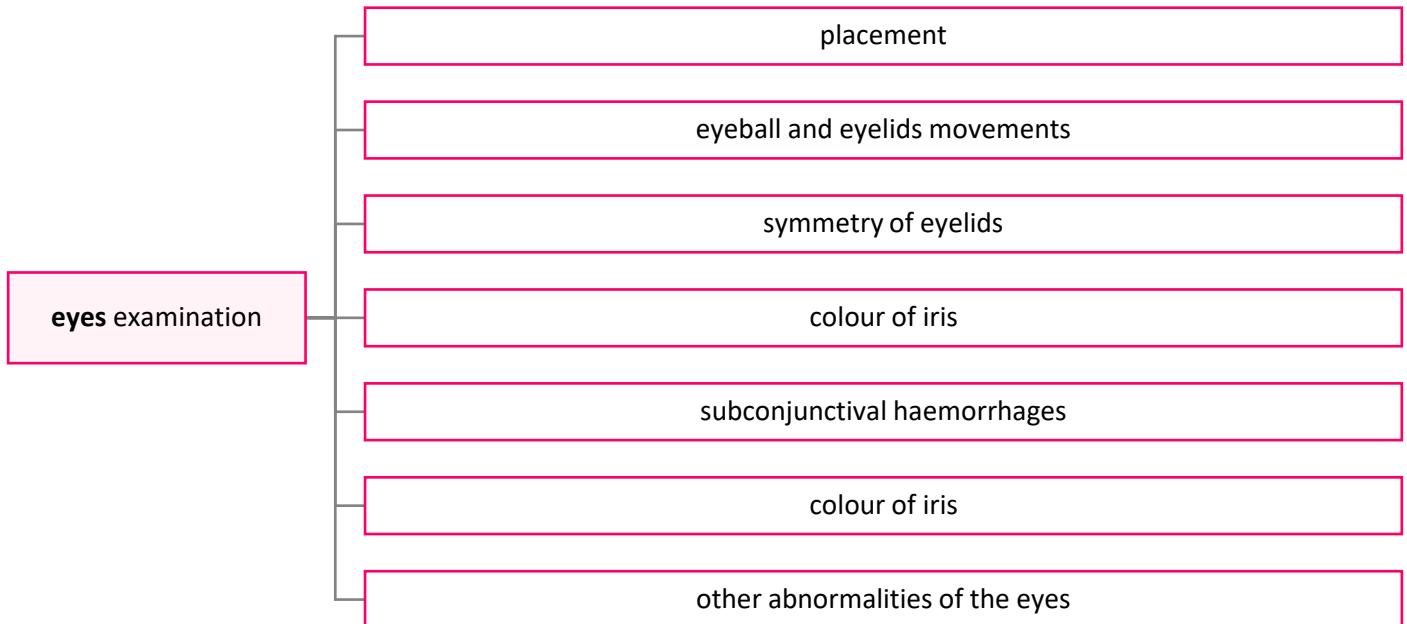
malformations of the ear

birth injuries

- the ear should be inspected visually to assess the presence and patency of the **auditory canal**
- the top of the pinna should be at or above a horizontal line from the inner and outer canthi of the eye

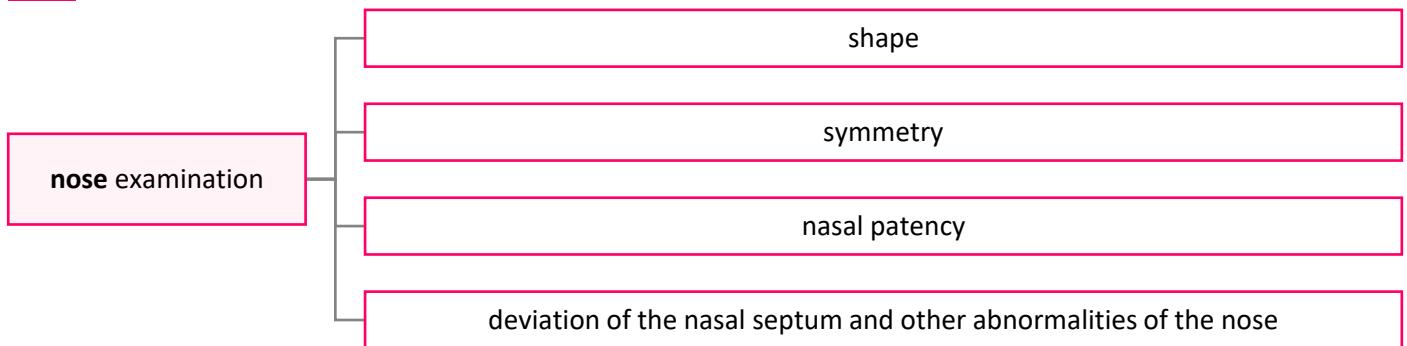


EYES



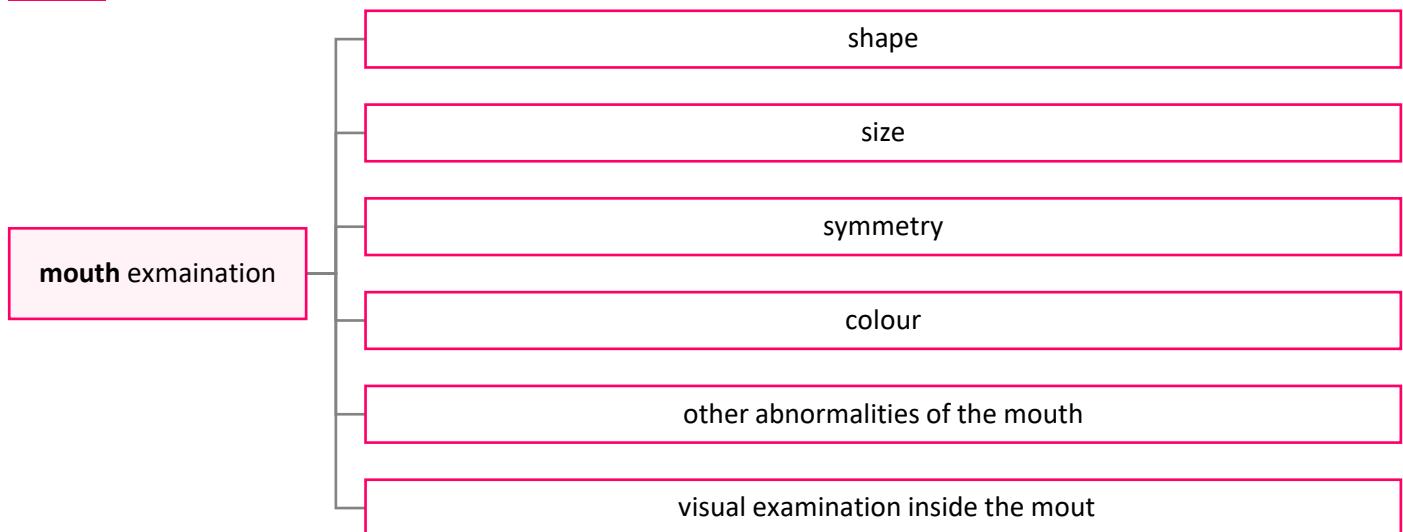
- the iris of a newborn infant is generally dark gray, blue, or brown at birth and will acquire final pigment color at about 6 months of age
- **mild lid oedema** may be present (especially following a long labour) – it can last up to 2 days after the birth

NOSE



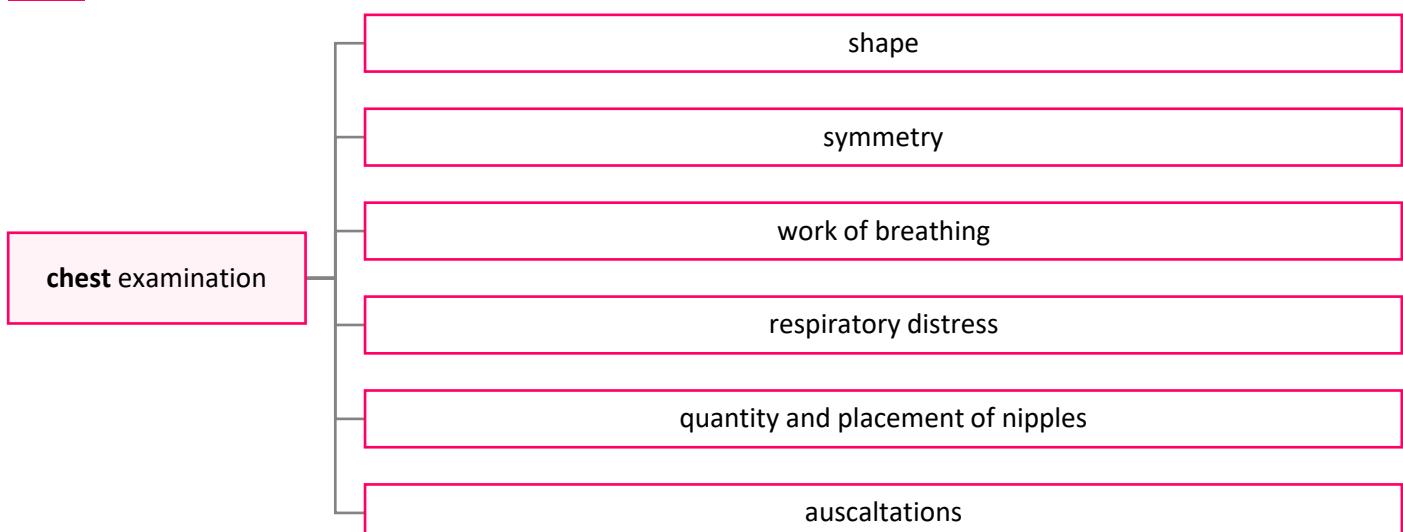
- deviation of the nasal septum to one side may be a deformation from position in utero, or can appear during labour – it may last up for a couple of days

MOUTH



- examine the **mucous membranes**:
 - colour
 - wilgotność
 - the quantity and quality of oral secretions
- examine **palate**
 - **a submucosal cleft palate** can only be diagnosed by inserting a clean finger into the mouth to feel for a mucous membrane-covered bony cleft.
 - **Epstein's pearls** (small inclusion cysts in the midline of the hard palate) are normal and eventually disappear.
- **the frenulum (frenulum linguae)** attaches the underside of the tongue to the floor of the mouth, usually midway between the tongue's ventral surface and tip
 - if the frenulum limits movement of the tongue or pulls the tongue to a "V" at the tip, it is abnormal and may limit suck effectiveness primarily for breastfeeding

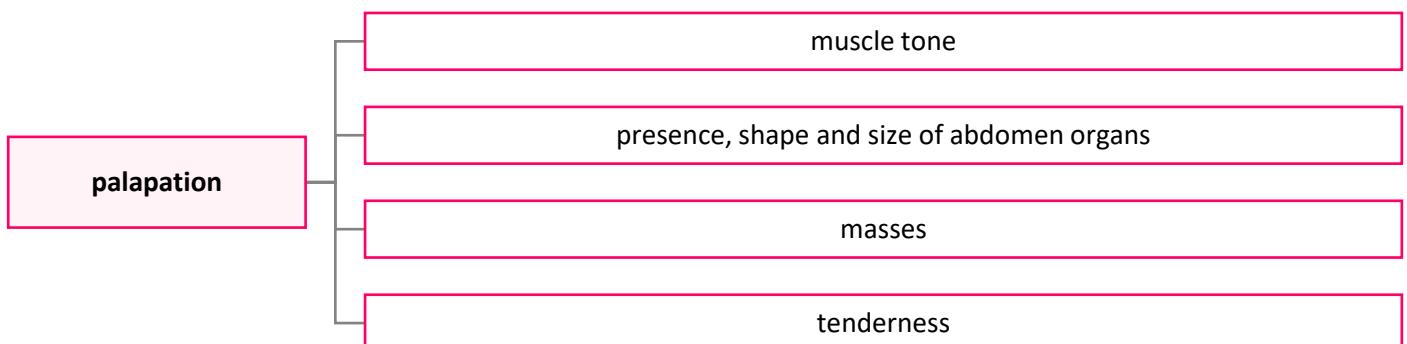
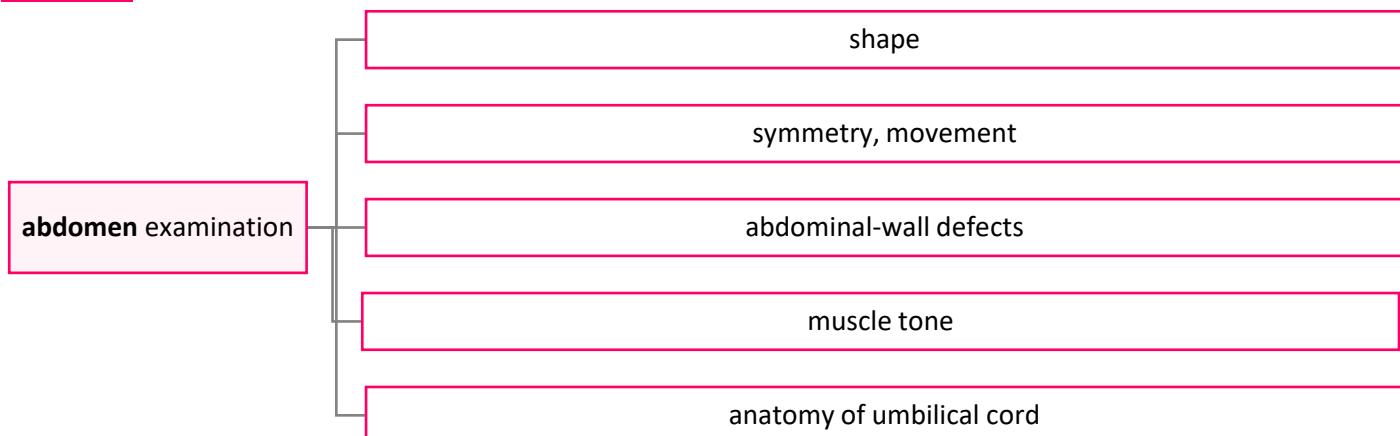
CHEST



- in term infants, the average **chest circumference** is approximately 1-2 cm smaller than the head circumference

- **work of breathing**
 - during normal respiratory efforts in the neonate, the lower thorax pulls in, and the abdomen bulges with each respiration
- **breast tissue**
 - as indicated in the discussion of inspection, the **breast buds** should be gently palpated to determine the presence of hypertrophy, fissures, secretions, or masses
 - **breast engorgement** occurs commonly in both sexes and is due to maternal oestrogen effect
- **auscultations**
 - normal breath sounds, adventitious sounds
 - heart rate, cardiac rhythm and regularity, heart sounds, murmurs

ABDOMEN



bowel sounds	<ul style="list-style-type: none"> – bowel sounds will be audible beginning about 15 minutes after birth – they are relatively quiet until feedings have begun – premature infants may have hypoactive bowel sounds
umbilical cord	<ul style="list-style-type: none"> – count the vessels - it contains two arteries and one vein – Redness encircling the cord and extending onto the abdomen can be a sign of omphalitis (infection of the umbilical cord) – any unusual bulging or herniation in the cord requires further investigation and could indicate the presence of a small omphalocele
liver	<ul style="list-style-type: none"> – normally palpable up to 1-2 cm below the costal margin
spleen	<ul style="list-style-type: none"> – the tip can be palpated in about a quarter of normal infants

GENITOURINARY ASSESSMENT

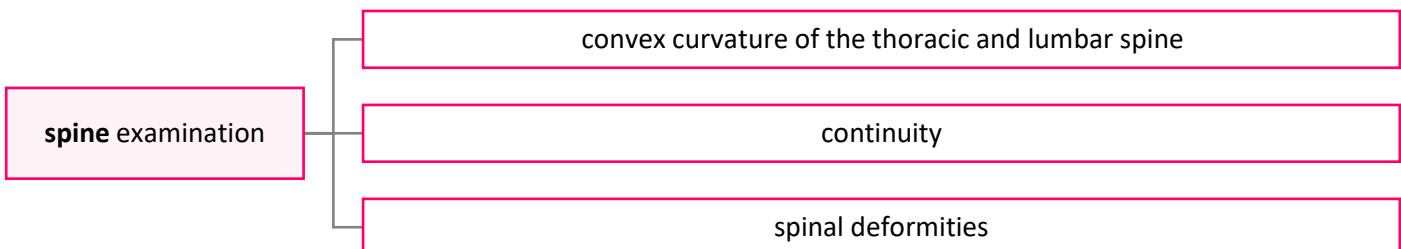
- gestational age has a great impact on the appearance of external genitalia

male genitalia	<ul style="list-style-type: none"> the average stretched length of the penis in a term newborn is 2.5-3.5 cm the urethral meatus normally opens at the tip of the glans penis physiologic phimosis, the inability to retract the foreskin, is normal in newborns testes <ul style="list-style-type: none"> should be well situated in the scrotum. <p>when palpated, normal testes are firm and smooth and comparatively equal in size</p> <ul style="list-style-type: none"> they are ovoid in shape, usually mobile, and measure, on average, 1.4 to 1.6 cm in the term newborn <ul style="list-style-type: none"> at 28 to 30 weeks, they begin to descend into the inguinal canal scrotum <ul style="list-style-type: none"> rugae (wrinkles or creases) begin to form on the ventral surface of the scrotum at approximately 36 weeks gestation at term, the scrotum is fully rugated and more deeply pigmented than surrounding skin
female genitalia	<ul style="list-style-type: none"> directly below the clitoris and above the vaginal opening is the urethral meatus maternal hormone exposure can stimulate a white, mucoid vaginal discharge and/or bleeding (pseudomenstruation) <ul style="list-style-type: none"> these findings may persist for up to 10 days

- pink nappies**
 - occasionally, urates may react with the urine in the newborn period, leaving a pinkish-red stain on the napkin that may be confused with haematuria
 - this is self-limiting and only occurs in the first few weeks of life
- the genitalia may be edematous and ecchymotic for several days after delivery
 - can be caused by breech position or of the influence of maternal estrogen

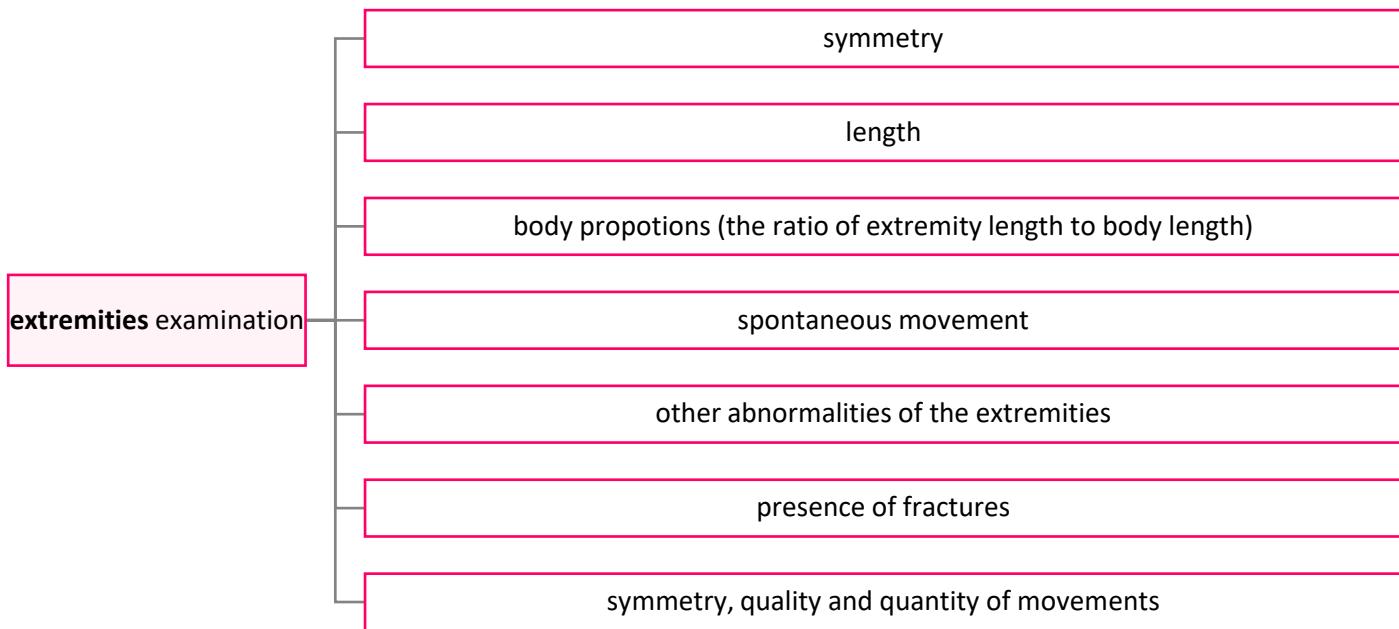
perianal area	<p>should be inspected for:</p> <ul style="list-style-type: none"> presence and placement of an anus for anal sphincter tone for abnormalities such as fistulas
anus	<ul style="list-style-type: none"> check for normal position and patency always visualize the anus directly! <ul style="list-style-type: none"> the meconium may have passed via the urethra or vagina due to the presence of a fistula

BACK, EXTREMITIES, HIP



- run your finger all the way down the **spine**, looking and feeling for any defects
- infant should lie in a symmetric position
- inspect the spine** from the base of the skull to the coccyx

- noting any abnormalities (ex. skin disruption, tufts of hair, soft or cystic masses, hemangiomas, a pilonidal dimple, cysts, or sinus tracts)



- examination of the hip should start with observations for signs of established dislocation, such as:
 - unequal leg length
 - asymmetry of the thigh creases
- the hand should be examined for shape, size, and posture while the fingers are examined for number, shape, and length.
- the nails are usually smooth and soft and extend to the fingertips