

Overview of Pediatric Physical Assessment

**Satellite Conference and Live Webcast
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Faculty

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Essentials of Pediatric Physical Assessment

- Thorough history
- Properly interpreted vital signs
- Properly evaluated developmental and growth parameters
- Focused physical assessment

Essentials of Pediatric Physical Assessment

- Anticipatory guidance/preventive health
 - Immunizations
 - Ingestions
 - Injuries
- Problem list and plan

General Points About Taking a History

- Chief complaint
- Onset of problem
- Duration of problem
- Progression of problem
- Aggravating or alleviating factors
- Associated manifestations

General Points Continued

- Functional impairment
 - Changes in eating patterns
 - Playfulness
 - School performance
 - Sleep habits

General Points

- Allergic history
- Medication history
- Immunization history
- Hospitalization and/or accidents
- Birth history
- Developmental milestones
- Family history
- Social history

General Appearance of Infant or Child

- Activity or movement
- Facial features
- Behavior when examiner enters room
 - Developmentally appropriate
- Nutritional status
- Hygiene

Approach to the Pediatric Patient

- Age appropriate interaction
 - Gentle and engaging
 - Nonthreatening
 - Take the path of least resistance
 - Quiet and soothing

Approach to the Pediatric Patient

- Use observation liberally while taking the history
- Always inform the patient of what you are about to do and never lie to the patient
- Minimize the use of the exam table in infants and younger children

Growth and Development Parameters

- Use current growth charts plotting BMI
- Weigh appropriately
 - Dry diaper
- Check height by placing infant on measuring table with head at the end of the board
 - Have older children take off shoes

Growth and Development Parameters

- Measure head circumference up to two years old placing measuring tape above eyebrows and measuring around to occipital prominence

Growth Parameters and Areas of Concern

- Know normal weight gains for age
- Usual expected height velocity for age
- Family information specifically about parental stature
- Consider children born in other countries

Growth Parameters and Areas of Concern

- Be concerned about head circumferences at extremes and height/weight crossing percentiles

Developmental Assessment for Age General Information

- Use standardized developmental screening tools assessing gross motor, fine motor, language, sensory, and social development
- Be “open-ended” with questions
- Use observation during the history to fill-in developmental information

Developmental Assessment for Age General Information

- Ask about hearing concerns even with newborns
- Be alert to normal acquisition of language milestones
- Screen at every well infant and child visit

Measure Vital Signs and Know How to Interpret Age Appropriate Variations

- Temperature
 - Can use tympanic thermometers to avoid invasive techniques such as rectal thermometers past the newborn and early infant ages

Measure Vital Signs and Know How to Interpret Age Appropriate Variations

- Pulse
 - Apical less than 2 years old/count for one minute

Measure Vital Signs and Know How to Interpret Age Appropriate Variations

- **Respiratory Rate**
 - Count for one minute and be aware of periodic and abdominal breathing in infants

A Word About Blood Pressure Measurement

- Select a cuff with a width that covers 2/3 of the upper arm and a length of the bladder that encircles 100% of the arm without overlap
- Know age appropriate normals

Respiratory Rates

- If possible measure in sleeping infants
- Be aware that fever or crying will elevate the rate significantly
 - Premature infants: 40-60
 - Newborns: 30-50
 - Toddlers: 20-30

Respiratory Rates

- School age children: 15-25
- Adolescents: 12-20

Blood Pressure Parameters

- Specific charts are available in reference materials
 - Harriet Lane Handbook of Pediatrics
 - NIH guidelines
 - Other authoritative sources

Blood Pressure Parameters

- General guidelines
 - Newborn: 50-70 mmHg
 - Infant: 70-100 mmHg
 - Toddler to 5 years: 80-100 mmHg
 - Elementary school: 80-120 mmHg
 - Adolescent (13 years and above): 110-120 mmHg

Heart Rate

Age	Range of Rate
Birth	70-190
0-6 months	130
6-12 months	115
1-2 years	110
2-6 years	80-130
6-10 years	75-115
10-14 years	70-110
14 and above	65-100

Focus Points for the Neonatal Examination

- Fontanel
- Skin color
- Facies
- Tone
- Symmetry
 - Movement, respiratory effort, abdomen
- Reflexes

Neonatal Reflexes and When They Disappear

- Stepping: 2 months
- Moro: 3 months
- Rooting: 3-4 months
- Palmar grasp: 3-4 months

Neonatal Reflexes and When They Disappear

- Tonic neck: 4-6 months
- Plantar grasp: 8-10
- Sucking: 10-12 months
- Babinski: 2 years

Some Information on Weight

- Newborns may lose up to 10% of their birth weight in the first 3-4 days
- Newborns gain $\frac{1}{2}$ to 1 ounce per day after that time
- Excessive or poor weight gain needs to be addressed

Some Information on Weight

- Infants generally double their birth weight by 5 months and triple it by one year

Be Alert for Congenital Anomalies



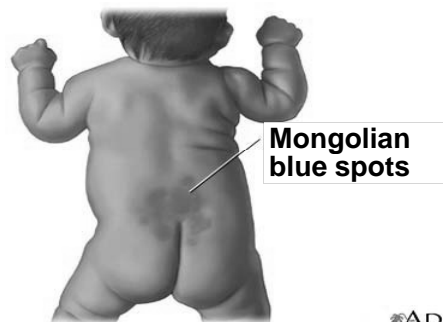
Some Specifics in Neonates

- Anterior and posterior fontanels
 - Anterior closes between 12 - 18 months
 - Posterior closes by 2-5 months
- Red reflex
- Sacral dimples
- Mongolian spots

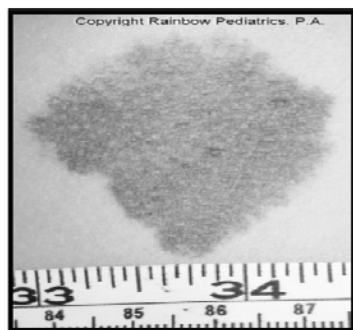
Sacral Dimple



Mongolian Spot



Congenital Nevus



System by System Physical Examination

- Integument
- HEENT
- Neck
- Cardiovascular
- Pulmonary

System by System Physical Examination

- **Gastrointestinal**
- **Genitourinary**
- **Musculoskeletal**
- **Neurologic**

Integumentary

- **Inflammatory**
- **Viral**
- **Bacterial**
- **Congenital**
- **Allergic**
- **Other**

General Principles of Examination of the Skin

- **Color**
 - **Pallor**
 - **Jaundice**
 - **Normal after 24 hours in newborn up to 7-10 days but abnormal afterwards**
 - **Variations in skin pigmentation**

General Principles of Examination of the Skin

- **Texture, turgor**
- **Rashes**
- **Lesions**
- **Hair and nails**

Some Descriptive Terms of Rashes

- **Macular**
- **Papular**
- **Blanch with pressure**
- **Excoriated**
- **Hemorrhagic**

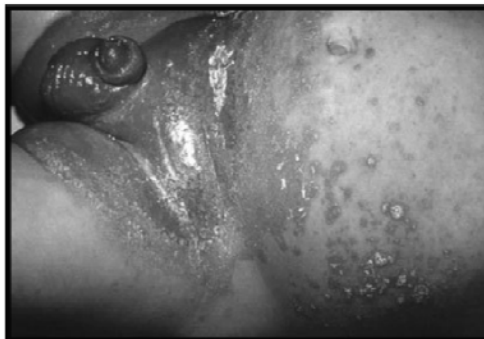
Some Descriptive Terms of Lesions

- **Blistering**
- **Cystic**
- **Hives or wheals**
- **Scaling**

Some Descriptive Terms of Lesions

- Crusting/scab forming
- Scars
- Other
 - Congenital, neoplastic

Candidiasis



Chicken Pox



Herpes Simplex



Eczema



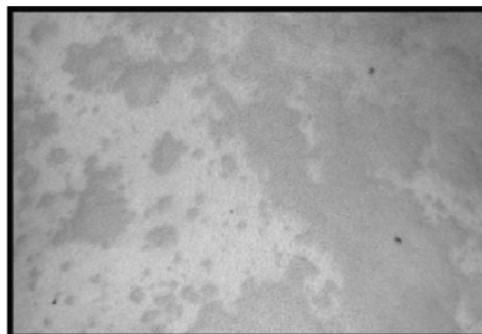
Hemangioma



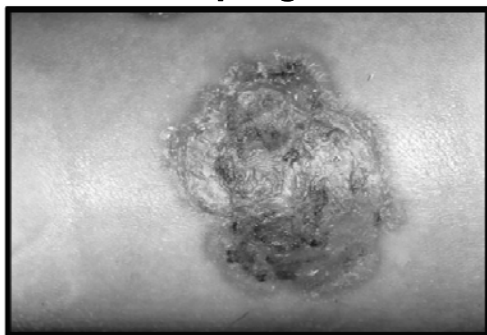
Milia



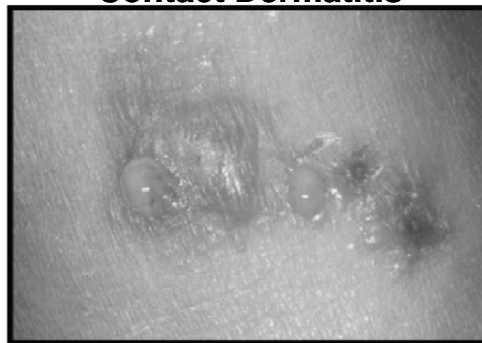
Urticaria



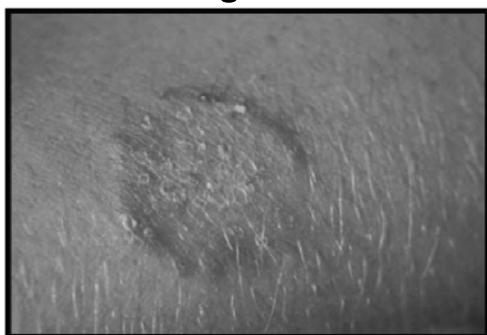
Impetigo



Contact Dermatitis



Ringworm



Scabies



Seborrhea



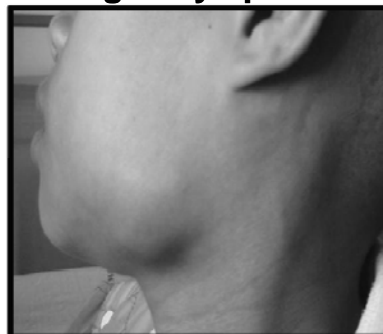
Café au Lait



Lymph Nodes

- Small, nontender, English pea size, soft, and freely moveable lymph nodes are common primarily in the cervical region
- Check cervical, axillary, inguinal region for lymph nodes

Enlarged Lymph Node



Head and Neck

- Check for symmetry, head control in infants, posture to one side (an indicator of torticollis), range of motion
- Feel the anterior and posterior fontanel

Head and Neck

- Older infant
 - Flexion, extension, rigidity
 - Thyroid enlargement, branchial cleft cysts

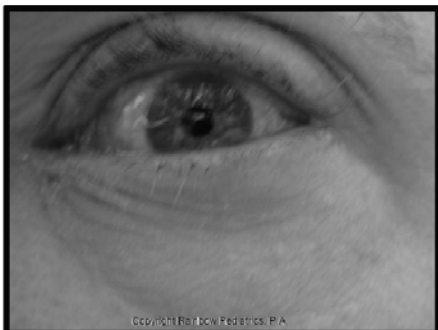
Eyes

- Check for shape and symmetry
- Note the color of the conjunctiva
- Evaluate extra ocular movements
- Check pupillary reflexes
- Fundiscopic for red reflex
- Appropriate vision testing in the clinical setting

Strabismus



Conjunctivitis



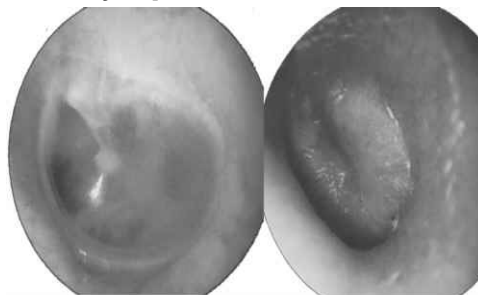
Reflex Pathology



Ears

- Evaluate shape, position
- View internal structures
- Newborn hearing screening and ongoing assessment of hearing including language development

Normal and Abnormal Tympanic Membrane



Nose

- **Structure, position**
- **Evidence of grunting or flaring**
- **Color of any drainage, foul odor, color of mucosa, location of septum**

Throat

- **Color of lips, presence of fissures**
- **Teeth**
 - **Number and condition**
- **Gums**
 - **Color and condition**
- **Tongue**
 - **Midline, color, graphic patterns**

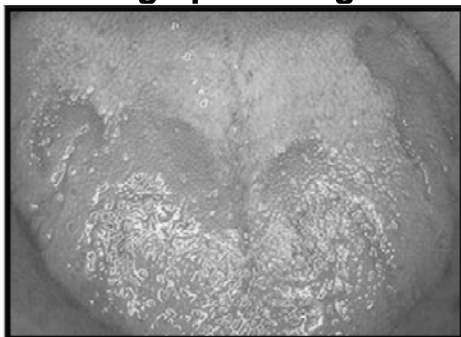
Throat

- **Integrity of palate and location of uvula**
- **Tonsillar size**

Enlarged Tonsils

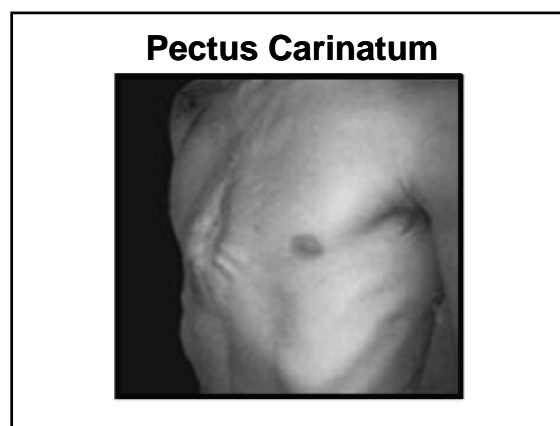
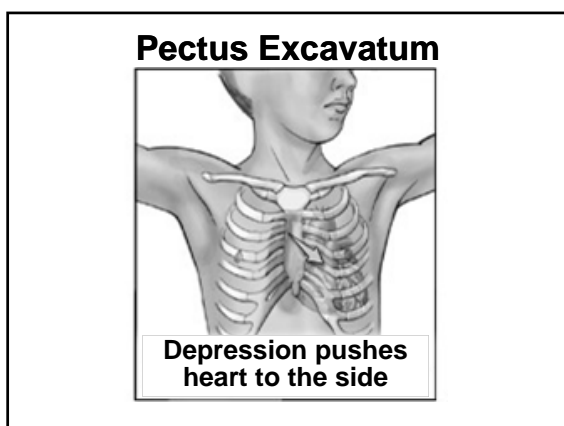
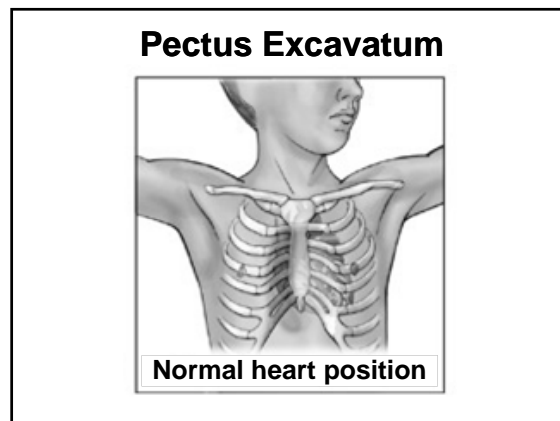
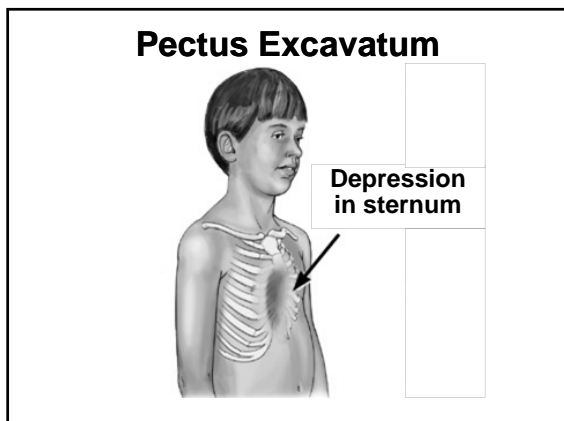


Geographic Tongue



Chest and Back

- **Inspect size, shape, symmetry along with movement**
- **Note any distress including use of accessory muscles**
- **Note symmetry of nipples and any breast development**
- **Check for spinal curvature**



- Heart**
- Palpate over the valvular areas
 - Determine the PMI
 - Rate
 - Higher than adults
 - Rhythm noting that infants and children will have variation with respiration

- Heart**
- Murmurs
 - Systolic murmurs can be normal
 - Diastolic murmurs are always abnormal
 - S1 and S2

Murmurs

- **Classic description**
 - Grade I-VI
 - Descriptive terms
 - Crescendo, decrescendo, harsh, blowing, soft

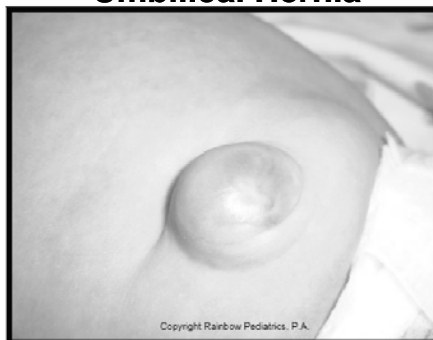
Lungs

- **Auscultation**
 - Do not confuse upper airway sounds with lung sounds
 - Equal breath sounds
 - Rales, ronchi, wheezing

Abdomen

- **Inspect the shape**
- **Auscult for bowel sounds**
 - Normal should be heard every 10 - 30 seconds
- **Palpate for masses, tenderness**

Umbilical Hernia

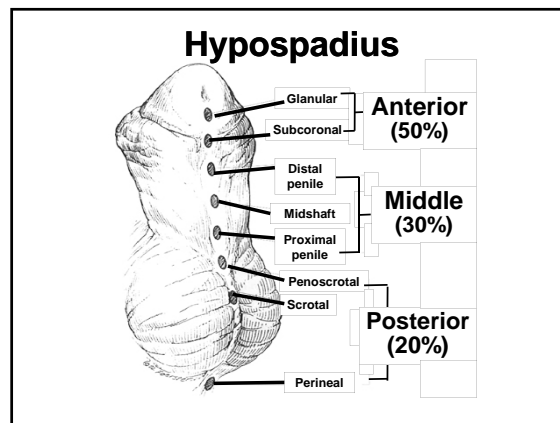
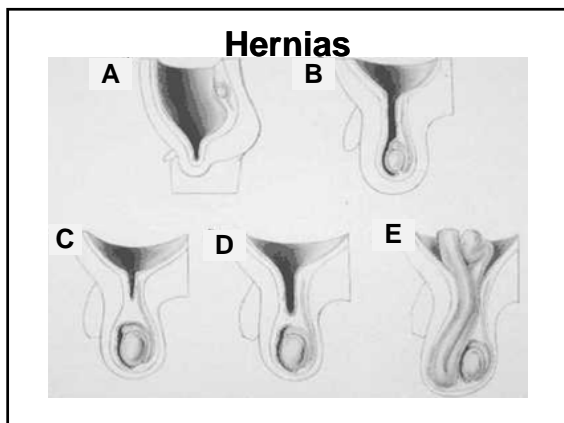


Genitalia

- **Males**
 - Presence or absence of circumcision
 - Penis
 - Testes
 - Descended, undescended, or retractile

Genitalia

- Location of urethral meatus
- Tanner staging
- Anal structure

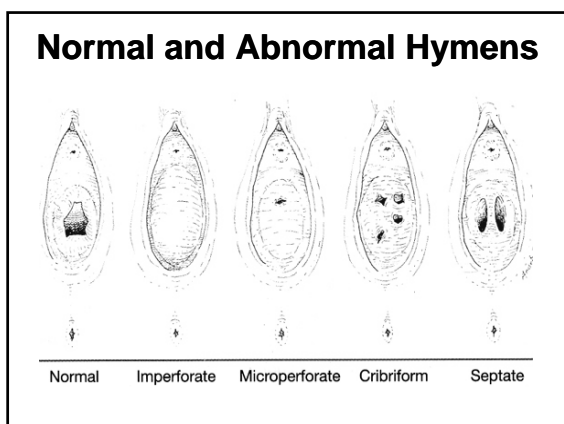


Genitalia

- **Females**
 - Labia majora and minora noting any labial fusion in young infants or young girls
 - Urethral orifice

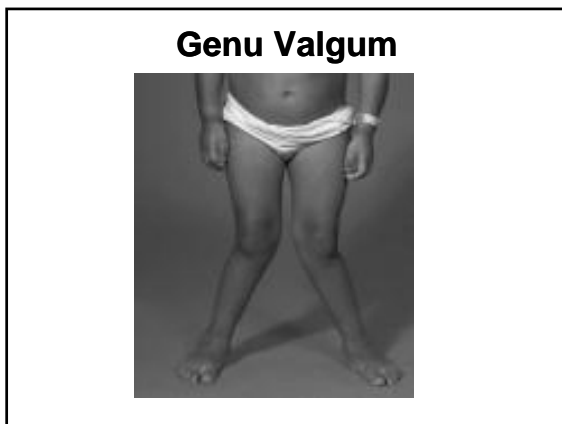
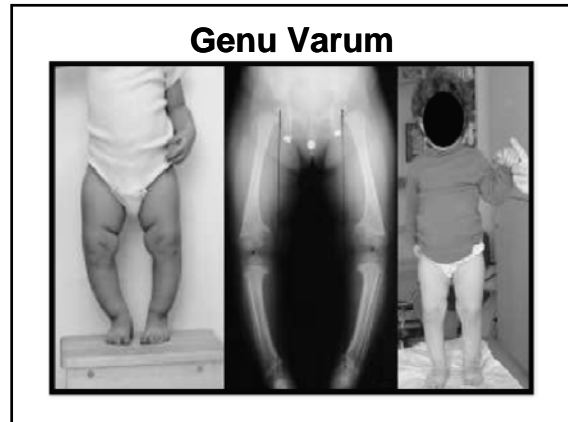
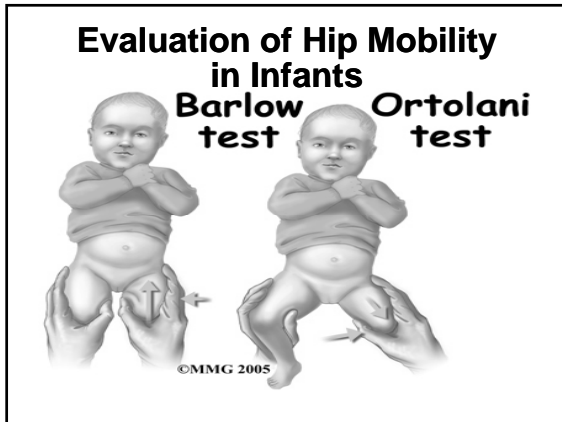
Genitalia

- Vaginal orifice along with any evidence of imperforate hymen or other abnormalities
- Tanner stage
- Anus



Extremities

- Range of motion with specific concerns for hip movement in infants
- Femoral pulses
- Joint warmth, stability, swelling, tenderness, clubbing of fingers
- Gait
- Genu valgum or varum



Neurologic Assessment for Age

- Considerable information can be gained by watching the child during the history gathering portion of the exam
- Reflexes-biceps, triceps, patellar, achilles

Neurologic Assessment for Age

- Assess cranial nerves
- For older infants and children, cerebellar function

Sources for Photographs and Images

- Photographic images obtained for this presentation are used with permission and solely for medical educational purposes

Sources for Photographs and Images

- **Sources**
 - www.rainbowpediatrics.net
 - www.slideworld.org
 - Kinsburg, K., M.D.