Overview of Pediatric Physical Assessment

Satellite Conference and Live Webcast
Wednesday, April 13, 2011
1:00 - 4:00 p.m. Central Time

Produced by the Alabama Department of Public Health
Video Communications and Distance Learning Division

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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

Blood Pressure Parameters

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

- 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**

<table>
<thead>
<tr>
<th>Age</th>
<th>Range of Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>70-190</td>
</tr>
<tr>
<td>0-6 months</td>
<td>130</td>
</tr>
<tr>
<td>6-12 months</td>
<td>115</td>
</tr>
<tr>
<td>1-2 years</td>
<td>110</td>
</tr>
<tr>
<td>2-6 years</td>
<td>80-130</td>
</tr>
<tr>
<td>6-10 years</td>
<td>75-115</td>
</tr>
<tr>
<td>10-14 years</td>
<td>70-110</td>
</tr>
<tr>
<td>14 and above</td>
<td>65-100</td>
</tr>
</tbody>
</table>

**Focus Points for the Neonatal Examination**

- Fontanels
- 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 ½ 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

- 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
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 fontanels

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
- Funduscopic for red reflex
- Appropriate vision testing in the clinical setting

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

**Conjunctivitis**

**Reflex Pathology**

**Strabismus**

**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
**Pectus Excavatum**
- Depression in sternum

**Pectus Carinatum**
- Heart

**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

Normal and Abnormal Hymens

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
Evaluation of Hip Mobility in Infants

Genu Varum

Genu Valgum

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

Sources for Photographs and Images

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• Sources
  – www.rainbowpediatrics.net
  – www.slideworld.org
  – Kinsburg, K., M.D.