# Pediatric Physical Assessment

Dr. Gary Mumaugh – Physical Assessment

# Health Assessment

- Collecting Data
  - By observation
  - Interviewing the parent
  - Interviewing the child
  - Physical examination

# Bio-graphic Demographic

- Name, age, health care provider
- Parents name age /siblings age
- Ethnicity / cultural practices
- Religion / religious practices
- Parent occupation
- Child occupation: adolescent

# Past Medical History

- Allergies
- Childhood illness
- Trauma / hospitalizations
- Birth history
- Did baby go home with mom / special care nursery
- Genetics: anything in the family

# Current Health Status

- Immunizations
- Any underlying illness / genetic condition
- What concerns do you have today?

# Review of Systems

- Ask questions about each system
- Measuring data: growth chart, head circumference, BMI
- Nutrition: breast fed, formula, eating habits
- Growth and development: How does parent think child is doing? Six questions

# Vital Signs Throughout Development

- Height & weight – every visit
  - Calculate BMI at every visit
- Head circumference – birth to 36 months
- Blood pressure – start measuring at 2
- Pulse – higher in infancy, slows down with aging
- Temperature
  - < 2 months – rectal
  - > 2 months - tympanic

# Physical Assessment

- General appearance & behavior
  - Facial expression
  - Posture / movement
  - Hygiene
  - Behavior
  - Development: grossly fits guidelines for age

# Physical Assessment

- Skin, hair nails
- Head, neck, lymph nodes: fontanelles
- Eyes, nose, throat…look at palate and teeth
- Chest: auscultate for breath sounds and adventitious sounds
- Breasts: tanner scale
- Heart: PMI, murmurs

# Physical Assessment

- Abdomen
- Genitalia: tanner scale, discharge, testicles
- Anus: inspect for cracks or fissures
- Musculoskeletal: Ortaloni maneuver / Barlows
- Feet / legs / back / gait

# Neurological

- Glasgow coma scale
- Observe their natural state: Play games with them, especially children under 5 year
- CNS grossly intact: II – XII

# Newborn Reflexes

- Rooting: disappears at 3-4 months
- Sucking: disappears at 10 to 12 months
- Palmar grasp: disappears at 3 to 4 months
- Plantar grasp: disappears at 8 to 10 months
- Tonic neck: disappears by 4 to 6 months
- Moro (startle): disappears by 3 months
- Babinski: disappears by 2 years
- Stepping reflex: disappears by 2 months

# Infant Exam

- Examine on parent lap
- Leave diaper on
- Comfort measures such as pacifier or bottle.
- Talk softly
- Start with heart and lung sounds
- Ear and throat exam last

# Toddler Exam

- Examine on parent lap if uncooperative
- Use play therapy
- Distract with stories
- Let toddler play with equipment / BP
- Call by name
- Praise frequently
- Quickly do exam

# Preschool Exam

- Allow parent to be within eye contact
- Explain what you are doing
- Let them feel the equipment

# School-age Child

- Allow the older child the choice of whether to have a parent present
- Teaching about nutrition and safety
- Ask if the child has any concerns or questions
- How are they doing in school?
- Do they have a group of friends they hand out with?
- What do they like to do in their free time?

# School-age Exam

- Allow choice of having parent present
- Privacy and modesty.
- Explain procedures and equipment.
- Interact with child during exam.
- Be matter of fact about examining genital area.

# Adolescent

- Ask about parent in the room
- Should have some private interview time: time to ask  the difficult questions
- HEADSS: home life, education, alcohol, drugs, sexual activity / suicide
- Privacy issues

# Vital Signs

- Choose your words carefully when explaining vital sign measurements to a young child. Avoid saying, for example, “I’m going to take your pulse now.” The child may think that are going to actually remove something from his or her body. A better phrase would be “I’m going to count how fast your heart beats.”

# Temperature

Position for taking axillary temperature.

# Temperature

- Use of tympanic membrane is controversial.
- Oral temperature for children over 5 to 6 years.
- Rectal temperatures are contraindicated if the child has had anal surgery, diarrhea, or rectal irritation.

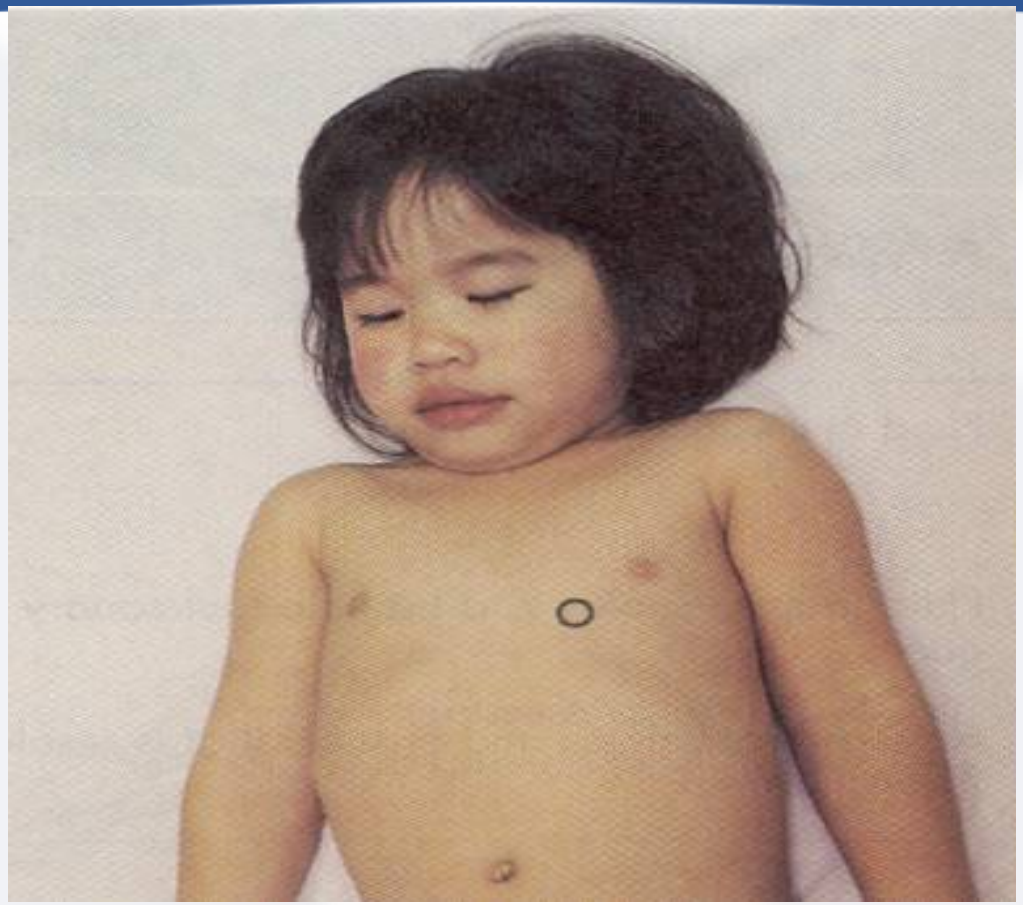
# Pulse

- Apical pulse for infants and toddlers under 2 years
- Count for 1 full minute
- Will be increased with: crying, anxiety, fever, and pain

# Pulse rates

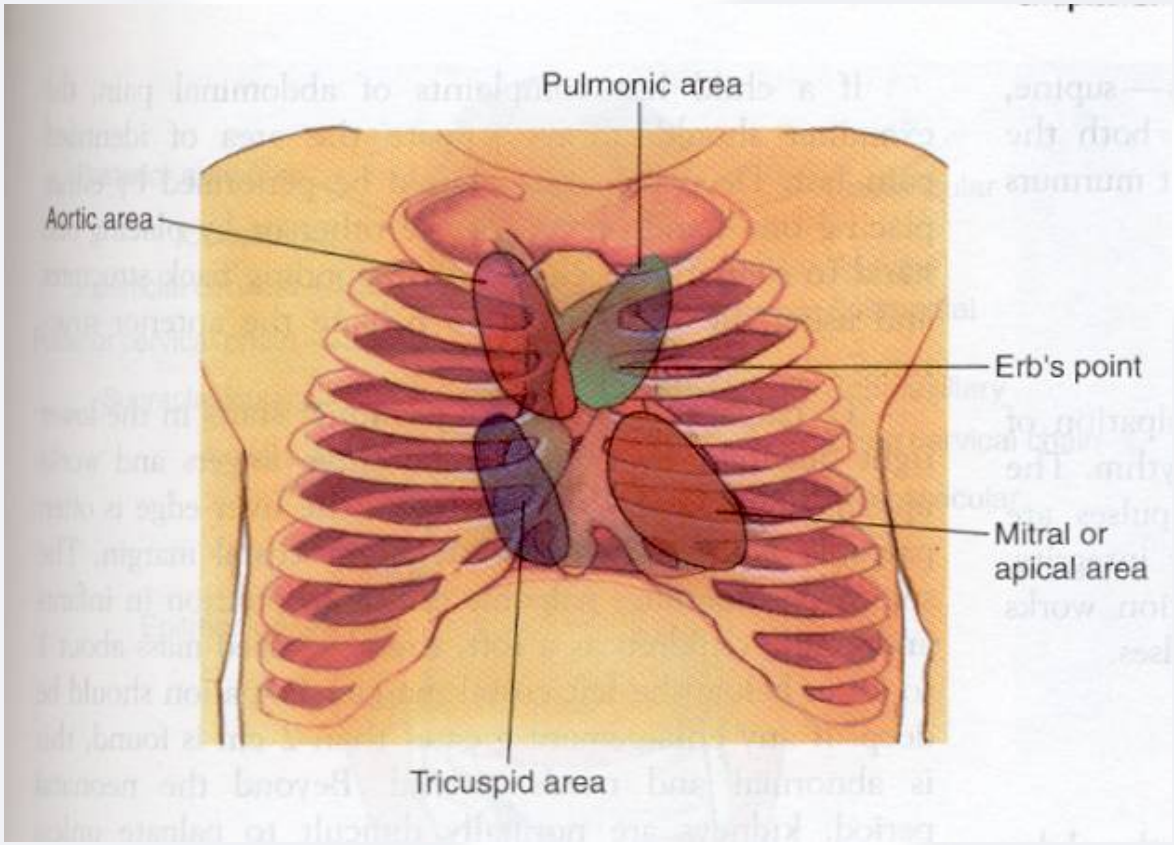
- Neonate: 70 – 190
- 1-year: 80 – 160
- 2-year: 80-130
- 4-year: 80 – 120
- 6-year: 75-115
- 10-year: 70-110
- 14-year: 65 – 105 / males 60 – 100
- 18-year: 55-95 / males 50 - 90

# Apical Pulse



In child younger than 7 years.

# Heart Sounds



# Auscultating Heart Sounds

Pillitteri

# Respiratory

- Count for one full minute
- May want to do before you wake the infant up
- Rate will be elevated with crying / fever
  - Pre-term: 40 – 60
  - Newborn: 30 – 40
  - Toddler: 25
  - School-age: 20
  - Adolescent: 16

**Panic levels: < 10 or > 60**

# Clinical Tip

- To accurately assess respirations in an infant or small child wait until the baby is sleeping or resting quietly.
- You might need to do this before you do more invasive exam.
- Count the number of breaths for an entire minute.

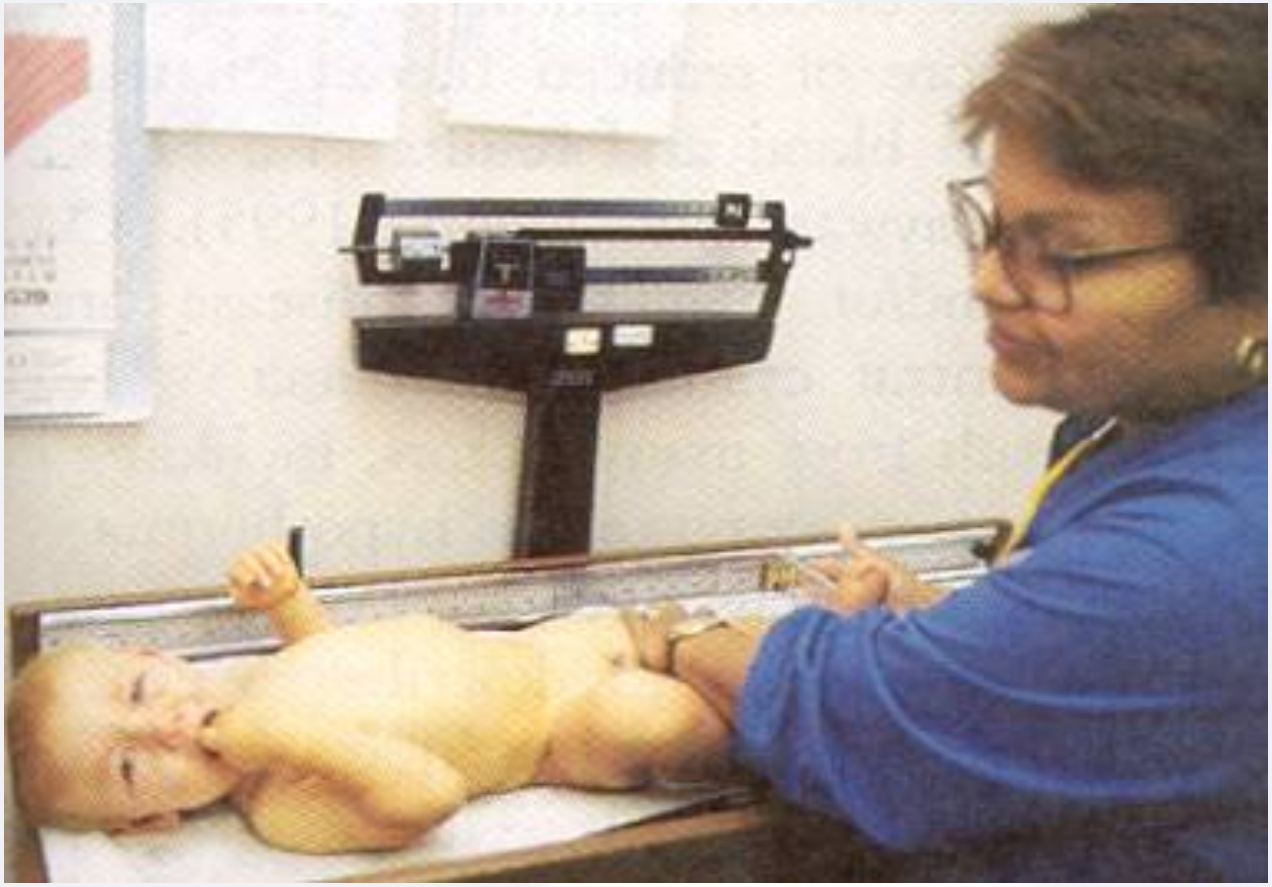
# Blood Pressure

- The width of the rubber bladder should cover two thirds of the circumference of the arm, and the length should encircle 100% of the arm without overlap.
- Crying can cause inaccurate blood pressure reading.
- Consider norms for age.

# Height

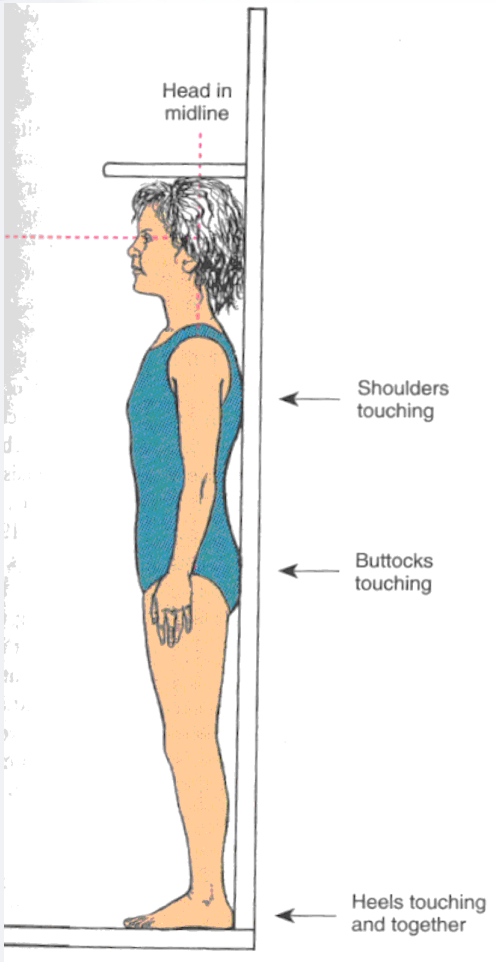
- Needs to be recorded on a growth chart
- Gain about an inch per month
- Deviation of height on either extreme may be indication for further investigation: endocrine problems

# Height Measurement



Infants head is against end point and legs fully extended.

# Height Measurement




Child is measured while standing in stocking or bare feet with the heels back and shoulders touching the wall.

# Weight

- Needs to be recorded on a growth chart
- Newborn may lose up to 10% of birth weight in 3-4 days.
- Gains about ½ to1 oz per day after that
- Too much or too little weight gain needs to be further investigated.
- Nutritional counseling

# Weight Norms

- Double birth weigh by 5-6 months
- Triple birth weight by 1 year

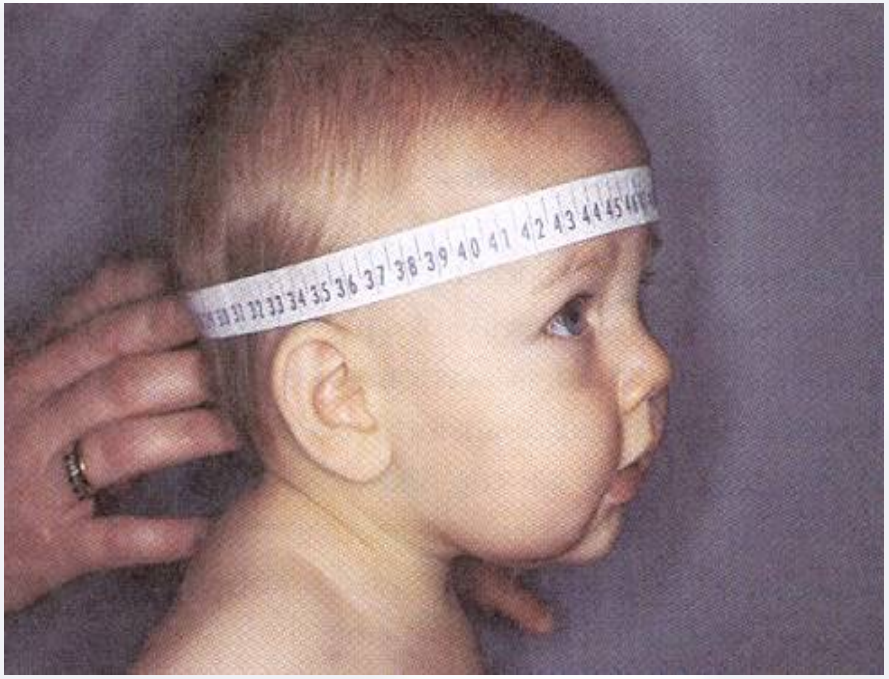
# Nutrition

- How much formula?
- How often being breast fed?
- Solid foods: 4 to 6 months of age
- What are they eating?
- Over 1 year: How much milk vs solid foods
- School age: typical diet
- Favorite foods

# Nutrition

- Most common nutritional problems:
  - Iron deficiency anemia
  - Obesity
  - Anorexia

# Head Circumference



Head circumference is measured by wrapping the paper tape over the eyebrows and the around the occipital prominence.

# Head

- Needs to be measured until age 2 years
- Plot on growth curve
- Check fontales:
  - Anterior: 12 to 18 months
  - Posterior: closes by 2-5 months
- Shape: flat headed babies due to back-to-back sleep position

# Mouth

- Palate
- Condition of teeth
- Number of teeth
- No teeth eruption by 12 months think endocrine disorder
- Appliances
- Brushing / visit to dentist

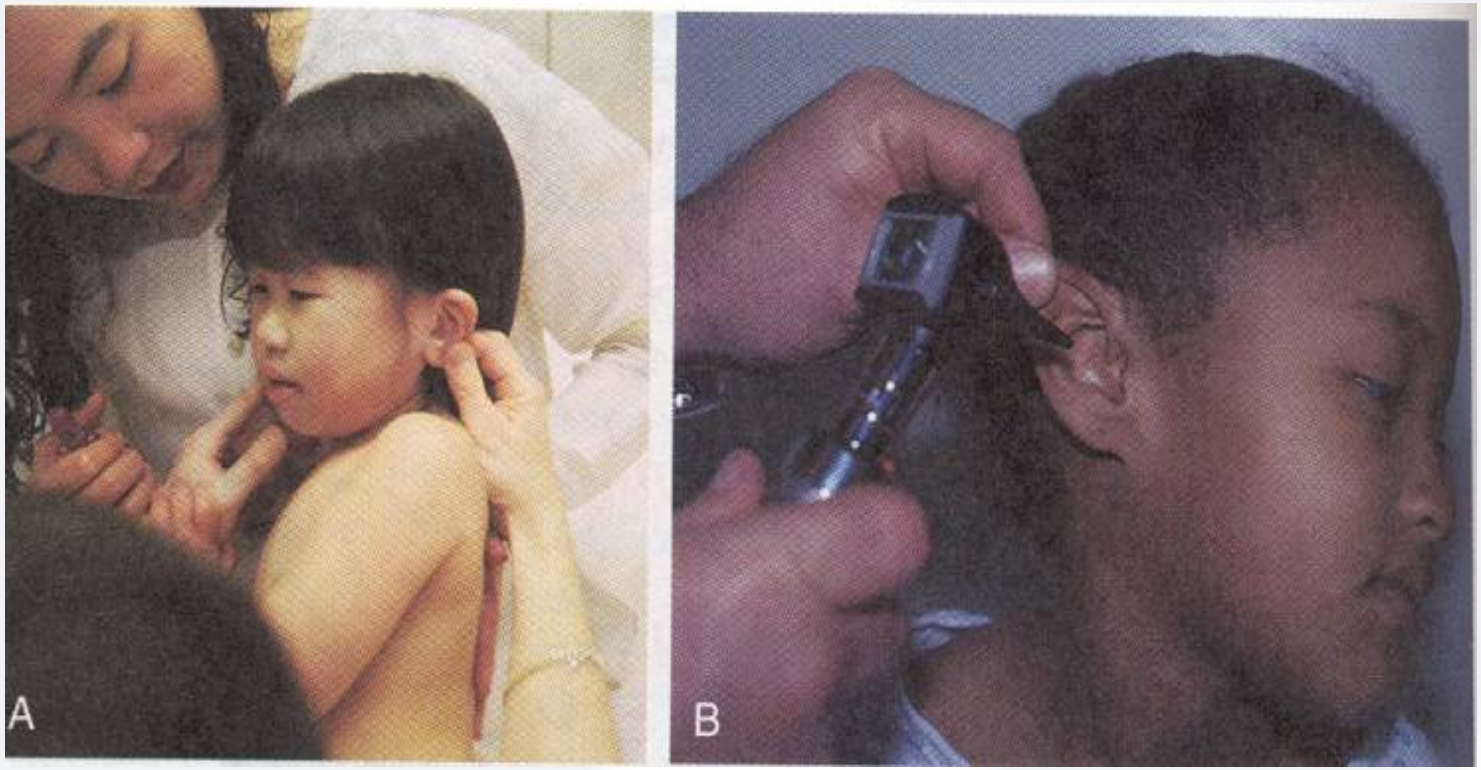
# Eyes

- Check for red-reflex
- Can the infant see: by parent report
- Strabismus:
  - Alignment of eye important due to correlation with brain development
  - May need to corrected surgically
- 5-year-old and up can have vision screening
  - Refer to ophthalmologist if there are concerns

# Common eye infections:

- Conjunctivitis:
  - A red-flag in the newborn may be STD from travel down the birth canal
  - Pre-school: number one reason they are sent home: wash with warm water / topical eye gtts
  - Inflammation of eye: history of juvenile arthritis

# Ear Exam




Pinna is pulled down and back to straighten ear canal in children under 3 years.

# Otitis Media

- Most common reason children come to the pediatrician or emergency room
- Fever or tugging at ear
- Often increases at night when they are sleeping
- History of cold or congestion

# Otitis

- ROM: right otitis media
- LOM: left otitis media
- BOM: bilateral otitis media
- OME: Otitis media with effusion

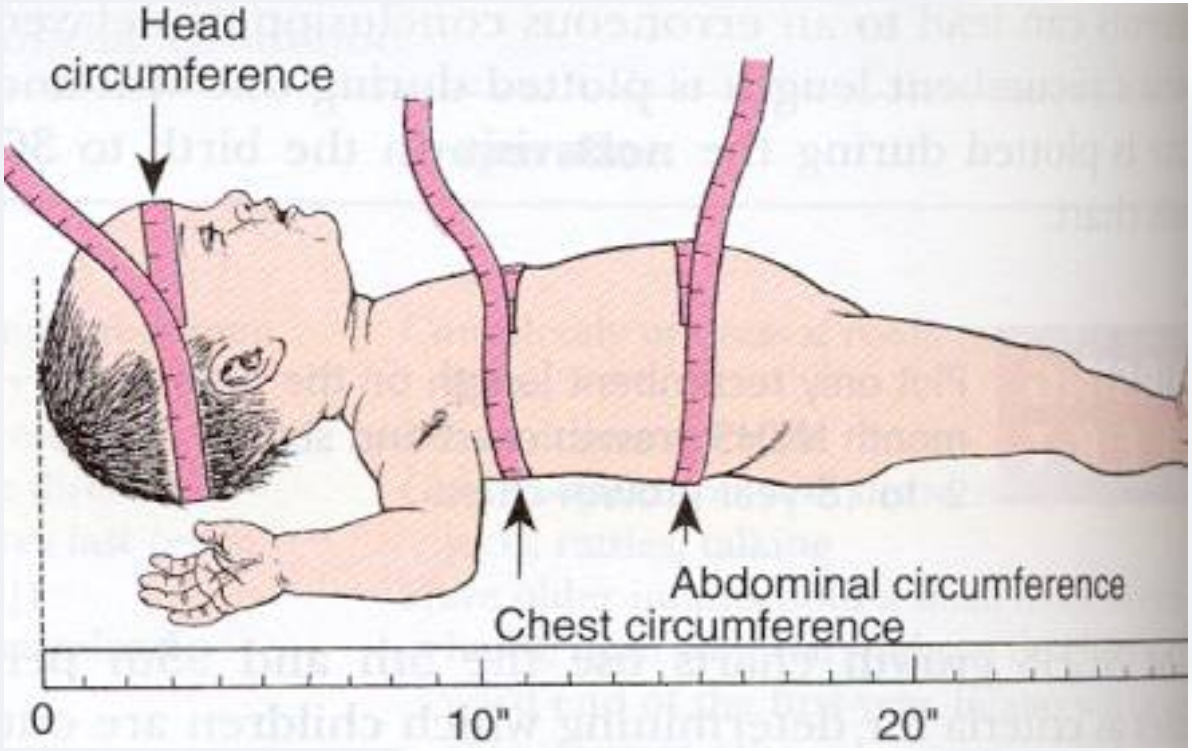
# Why a problem?

- Infection can lead to rupture of ear drum
- Chronic effusion can lead to hearing loss
- OM is often a contributing factor in more serious infections: mastoiditis, cellulitis, meningitis, bacteremia
- Chronic ear effusion in the early years may lead to decreased hearing and speech problems

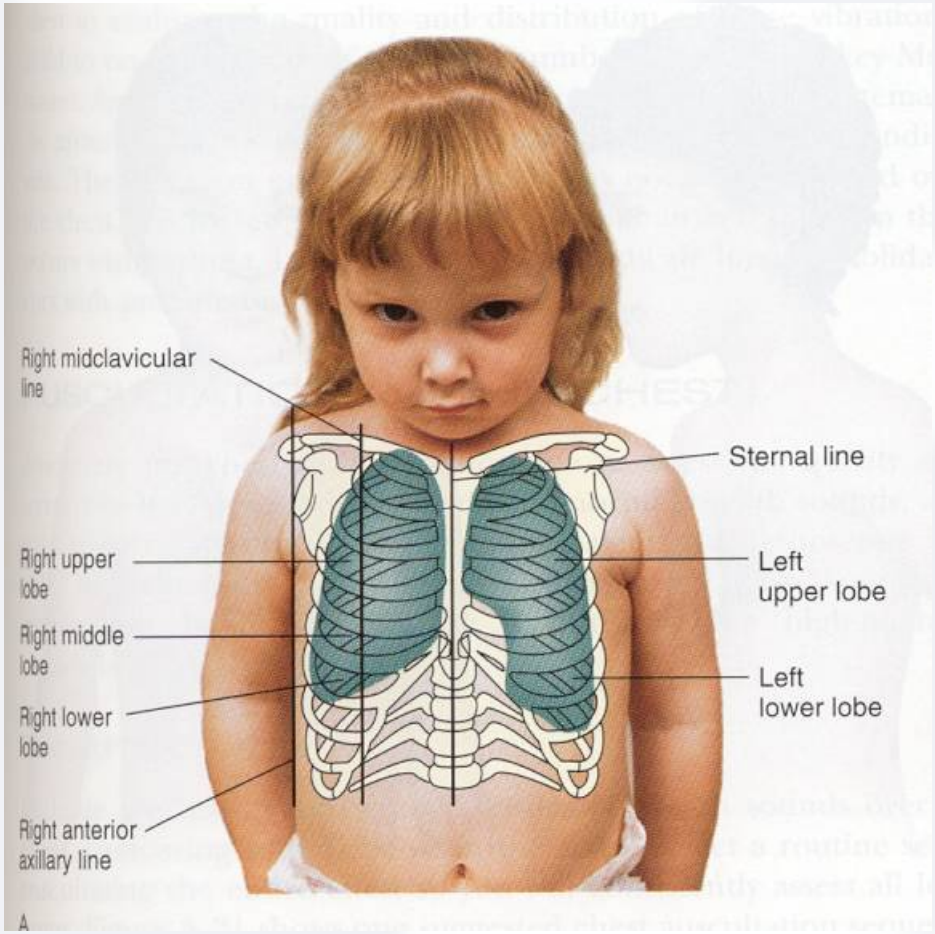
# Management

- Oral antibiotics: re-check in 10 days
- Tylenol for comfort
- Persistent effusion:
  - PET: pressure equalizing tubes
  - Outpatient procedure
  - Need to keep water out of ears
  - Hearing evaluation
  - Speech evaluation

# Head, chest, and abdominal circumference



# Child Chest


Right midclavicular line
Sternal line
Right upper lobe
Left upper lobe
Right middle lobe
Left lower lobe
Right lower lobe
Right anterior axillary line
A

# Chest Exam

- A high percentage of admissions to hospital are respiratory: croup, bronchitis, pneumonia, and asthma
- In the infant it is hard to separate upper air-way noises from lower air-way noises.
- How does the child look? Color, effort used to breathe

# Possible Sites of Retractions

Observe while infant or child is quiet.

# Chest Assessment

- Retractions
  - Subcostal
  - Intercostal
  - Sub-sternal
  - Supra-clavicular

Red flags: grunting / nasal flaring

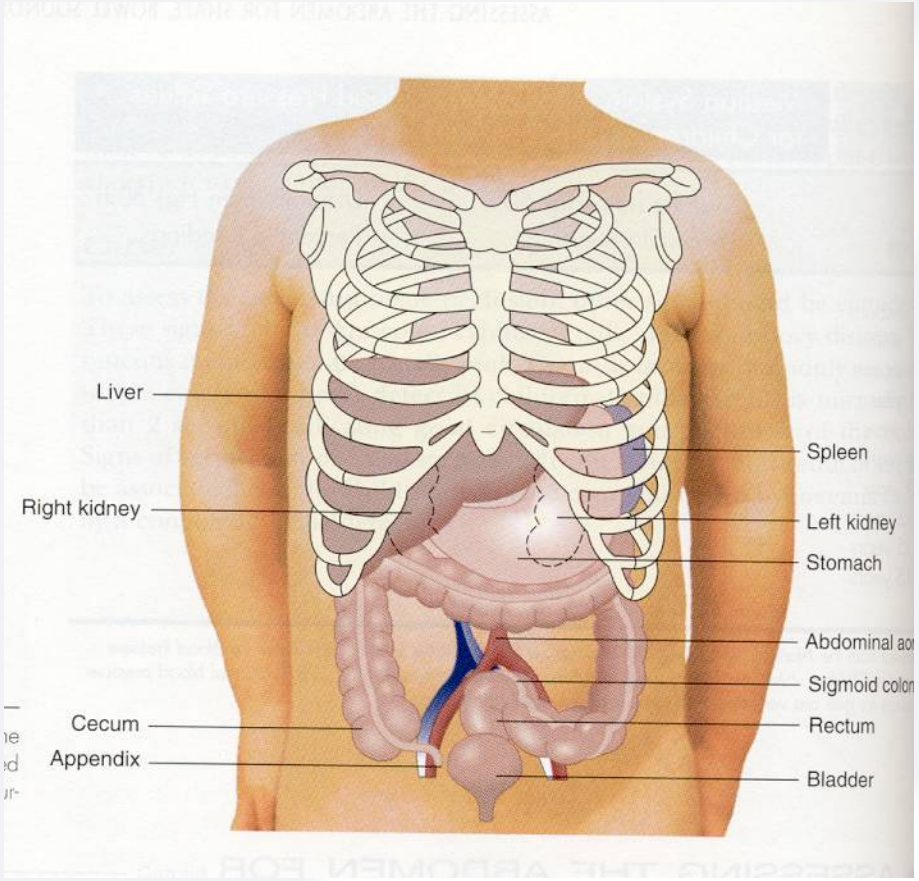
# Wheeze or Stridor

- Wheezes occur when air flows rapidly through bronchi that are narrowed nearly to the point of closure.
- Wheezes is lower airway
  - Asthma = expiratory wheezes
- A stridor is upper airway
  - Inflammation of upper airway+

# Abdominal Girth

Abdominal girth should be measured over the umbilicus Whenever possible.

# Abdomen


Liver
Right kidney
Cecum
Appendix
Spleen
Left kidney
Stomach
Abdominal aor
Sigmoid colon
Rectum
Bladder

# Abdominal Assessment

# Clinical Tip

- Inspection and auscultation are performed before palpation and percussion because touching the abdomen may change the characteristics of the bowel sounds.

# Bowel Sounds

- Normally occur every 10 to 30 seconds.
- Listen in each quadrant long enough to hear at least one bowel sound.
- Absence of bowel sounds may indicate peritonitis or a paralytic ileus.
- Hyperactive bowel sounds may indicate gastroenteritis or a bowel obstruction.