

IMET 2000 PAL

International Medical Education Trust - Palestine

physical and developmental assessment of the child

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What is Assessment

It's like detective work..... searching for clues....



What is Assessment



Or like being a scientist... coming up with various hypotheses to be tested...

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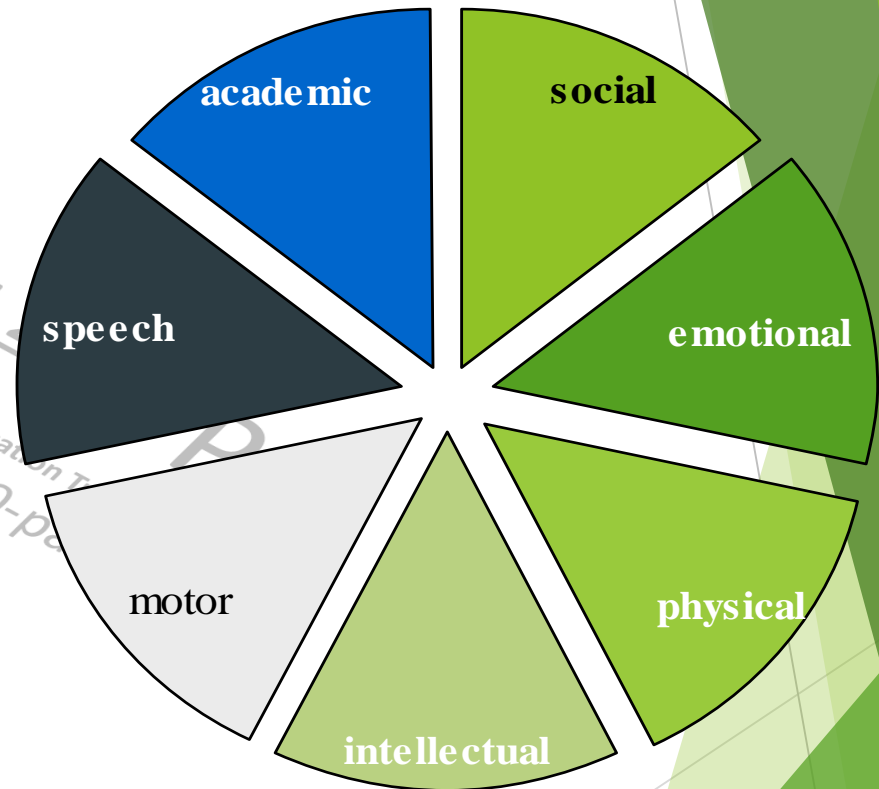
by the end of this session the students will be able:

- ▶ Describe guidelines for communication and interviewing.
- ▶ State the component of a complete health history.
- ▶ Prepare child for physical and developmental assessment.
- ▶ Perform and record physical assessment from head to toe.

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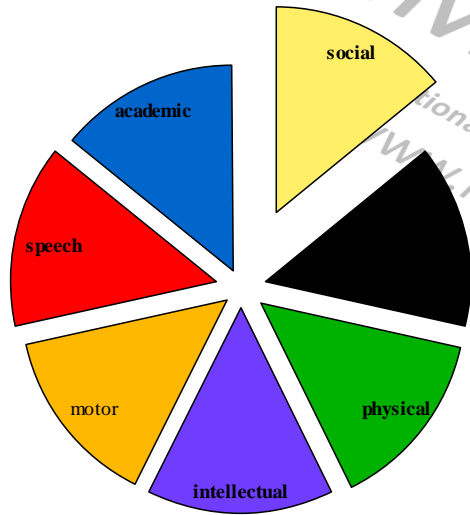
How we do Assessment

- ▶ Create a whole picture of the child
- ▶ Look at various areas of development



Social Development

▶ Interactions with others



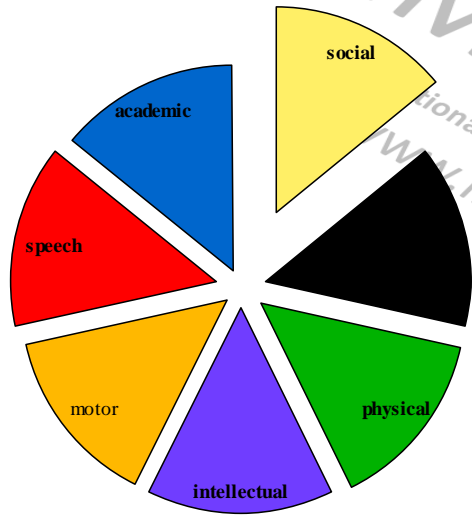
▶ Peer relationships

▶ Social skills

▶ Responsiveness

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Social Development



▶ Adaptive Behavior

▶ Communication

▶ Daily Living Skills

▶ Socialization

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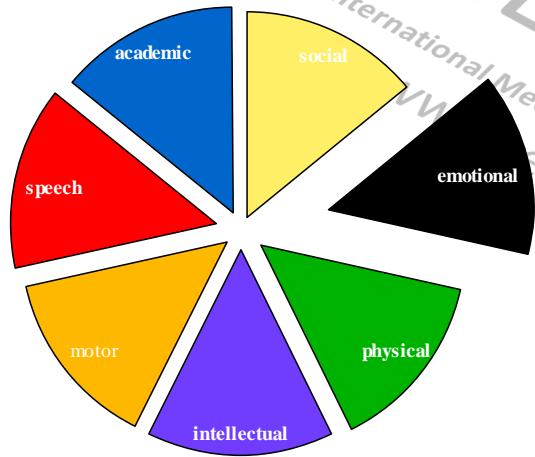
Emotional & Behavioral Development

▶ Moods and Attitudes

▶ Activity Level

▶ Odd or harmful behaviours

▶ Personality Traits



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THE PEDIATRIC MISSION

- ▶ To promote & optimize the growth and development of each child
 - detailed history
 - careful physical examination
 - early detection of problems and implementation of solutions

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General Approaches Toward Examining the Child

- ▶ Head-to-toe sequence for assessing adult clients
- ▶ Sequence for pediatric assessments generally altered to accommodate child's developmental needs

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The Adult Patient Vs. The Child Patient

- ▶ An adult gives you the history directly
 - a child needs his parents to relay the history
- ▶ Adult somatic growth is complete
 - a child's growth is constantly changing in predictable ways
- ▶ An adult has completed all stages of development
 - a child's development and age are integrally related and impact all aspects of her physical and emotional states

When in Doubt, Check the Chart

- ▶ Pediatric “norms” are derived from comparing peers at the same age and developmental stages
 - Most “norms” have been plotted on standard charts
 - weight, length, head circumference
 - vital signs
 - developmental milestones

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Interpreting the Charts

- ▶ REMEMBER: all data points are contained in a bell curve
- ▶ Patterns may be more useful than one point in time
 - always refer to old chart when possible!!
- ▶ Children all develop and grow in their own unique ways
- ▶ Some populations may need their own special charts (premature infants, Down Syndrome, Turner's Syndrome)

Pediatric Age Classifications

- ▶ Newborns (birth to 1 month)
- ▶ Infants (1 month to 12 month)
- ▶ Toddlers (1 year to 2-3 years)
- ▶ Preschool: 3-5 years
- ▶ School Age (5 or 6 years to 11/12 years)
- ▶ Adolescents (12 years to 18/20 years)

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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

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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

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Preschool Exam

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

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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

Bio-graphic Demographic

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

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Past Medical History

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

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GENERAL APPEARANCE

- ▶ FACIES expression
- ▶ POSTURE
- ▶ POSITION
- ▶ BODY MOVEMENT
- ▶ HYGIENE
- ▶ NUTRITION
- ▶ BEHAVIOR
- ▶ DEVELOPMENT

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PHYSIOLOGIC MEASUREMENTS

- ▶ TEMPERATURE
 - Various devices
 - Avoid invasive techniques
- ▶ Pulse
 - Apical pulse in child <<2yo
 - One full minute
- ▶ RESPIRATION
 - One full minute
 - Abdominal movement in infants
- ▶ BLOOD PRESSURE
 - Cuff selection, position, and site
 - Know normals for age

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Temperature

Position for taking
axillary temperature



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Pulse

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

Heart Rates in Children

| AGE | AVERAGE RATE |
|-------------|--------------|
| Birth | 140 |
| 0-6 months | 130 |
| 6-12 months | 115 |
| 1-2 years | 110 |
| 2-6 years | 103 |
| 6-10 years | 95 |
| 10-14 years | 85 |

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Respiratory Rates in Children

- ▶ Compared with adults: more responsive to illness, exercise and emotion
- ▶ Average ranges:
 - newborn: 30-80 breaths per minute
 - early childhood: 20-40 breaths per minute
 - late childhood: 15-25 breaths per minute
 - adult range: by 15 years of age
- ▶ Special patterns in children:
 - periodic breathing in infants
 - diaphragmatic breathing in infancy and early childhood

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Blood Pressure in Children

- ▶ Systolic BP increases gradually during childhood
- ▶ Normal systolic BP's (mm Hg):
 - birth: 50
 - 6 months: 70
 - 1 year: 95
 - 6 years: 100
 - 10 years: 110
 - 16 years: 120
- ▶ Diastolic BP's:
 - 60 at 1 year and increase to 75 in childhood

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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

Blood Pressure Cuff

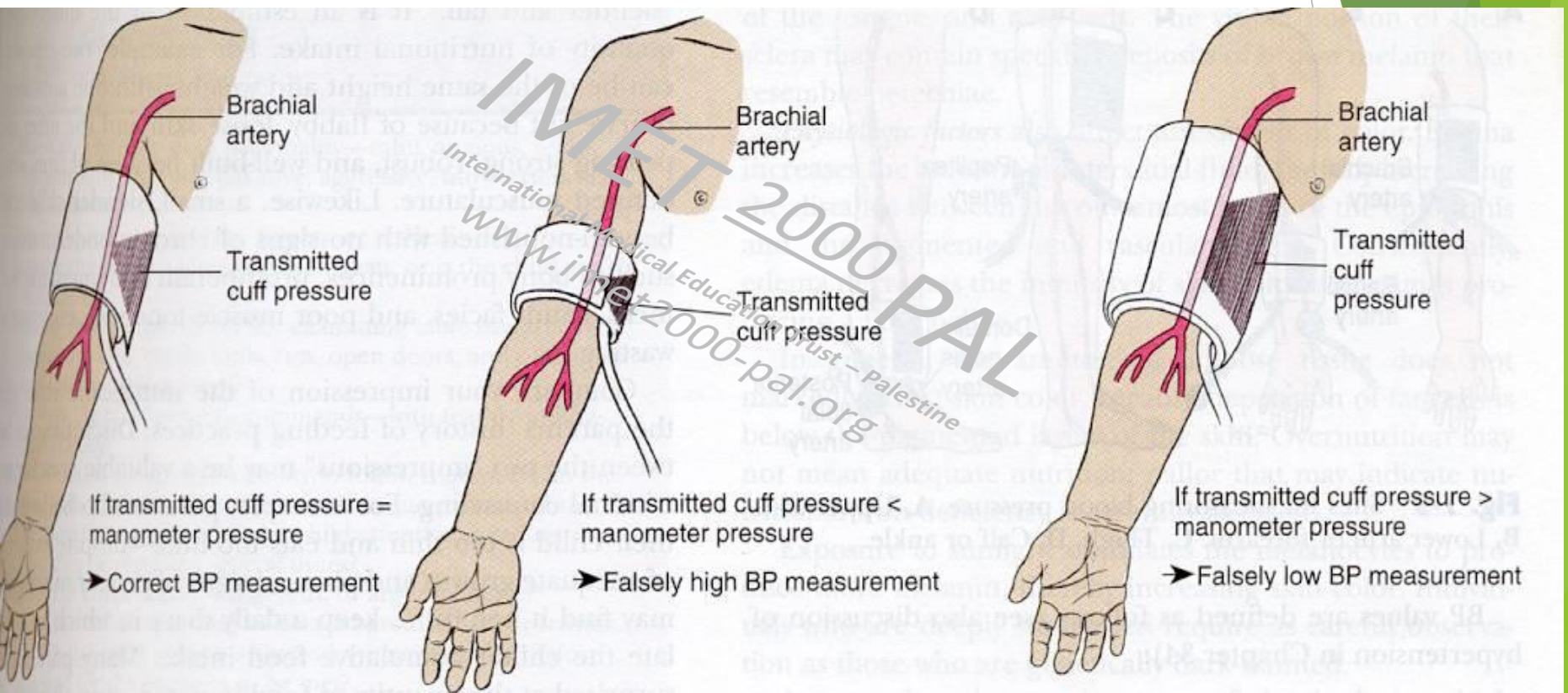


Fig. 7-8 Effect of cuff size on blood pressure measurement.

ABDOMEN

- ▶ INSPECTION, AUSCULTATION, PALPATION
- ▶ CONTOUR
- ▶ MOVEMENT
- ▶ UMBILICUS
- ▶ HERNIAS
- ▶ BOWEL SOUNDS
- ▶ PALPATION
 - SUPERFICIAL
 - DEEP

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HEART

- ▶ APICAL PULSE
- ▶ PERIPHERAL PULSES
- ▶ CAPILLARY FILLING TIME
- ▶ HEART SOUNDS
 - QUALITY, INTENSITY, RATE & RHYTHM
 - S1 & S2
 - MURMURS
- ▶ CLUBBING
- ▶ CYANOSIS
- ▶ ACTIVITY INTOLERANCE

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LUNGS

- ▶ RESPIRATORY MOVEMENT
- ▶ RESPIRATORY RATE, RHYTHM, DEPTH, & QUALITY

PHYSIOLOGIC MEASUREMENTS

- ▶ BREATH SOUNDS
 - CRACKLES
 - WHEEZES
 - ABSENT OR DIMINISHED
- ▶ PERSUSSION

SKIN

- ▶ COLOR
- ▶ TEXTURE
- ▶ TEMPERATURE
- ▶ MOISTURE
- ▶ TISSUE TURGOR
- ▶ PIGMENT LESIONS
- ▶ ACCESSORY STRUCTURES
 - HAIR
 - NAILS

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LYMPH NODES

- ▶ SUBMENTAL
- ▶ SUBMAXILLARY
- ▶ TONSILLAR
- ▶ CERVICAL
- ▶ AXILLARY
- ▶ INGUINAL
- ▶ ** REMEMBER SMALL NONTENDER SINGLE NODES ARE COMMON IN CHILDREN

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EARS

- ▶ EXTERNAL STRUCTURES
- ▶ POSITION
- ▶ CERUMEN
- ▶ INTERNAL STRUCTURES
 - LANDMARKS
 - TYMPANIC MEMBRANE
 - LIGHT REFLEX
- ▶ AUDITORY TESTING

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EYES

- ▶ SIZE
- ▶ SHAPE
- ▶ SYMMETRY
- ▶ CONJUNCTIVA
- ▶ CORNEA
- ▶ PUPILS
- ▶ FUNDOSCOPIC EXAM
 - FUNDUS, RED REFLEX, BLOOD VESSELS
- ▶ VISION TESTING
 - OCULAR ALIGNMENT, VISUAL ACUITY, PERIPHERAL VISION, COLOR VISION

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HEAD & NECK

- ▶ SHAPE
- ▶ SYMMETRY
- ▶ HEAD CONTROL
- ▶ HEAD POSTURE
- ▶ ROM OF NECK

NOSE

- ▶ EXTERNAL STRUCTURE
 - POSITION & PLACEMENT
 - NASAL FLARING
- ▶ INTERNAL STRUCTURES
 - MUCOSA
 - TURBINATES
 - SEPTUM
- ▶ NASAL DRAINAGE & ODOR

MOUTH & THROAT

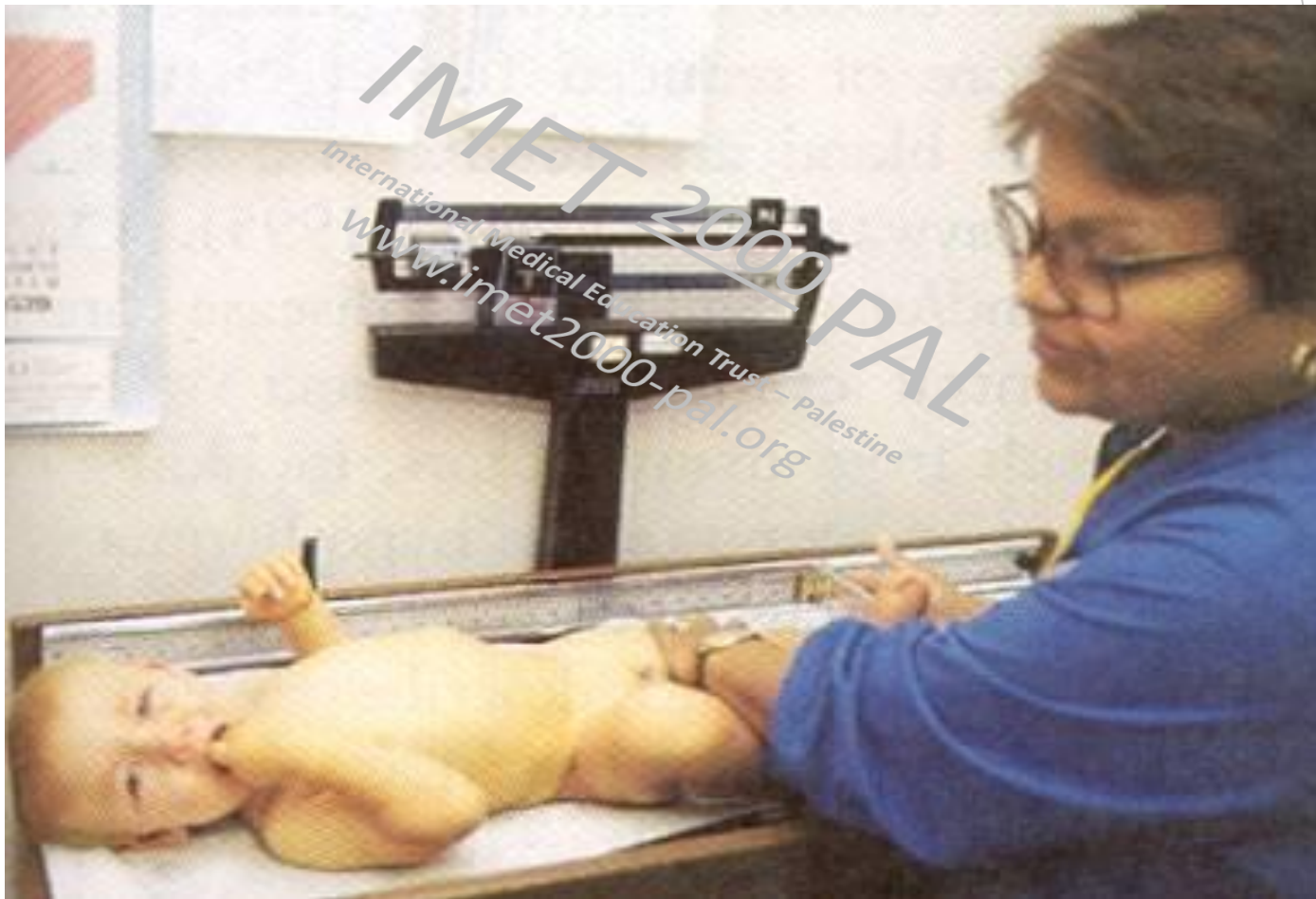
- ▶ MUCUS MEMBRANES
- ▶ TEETH
- ▶ GUMS
- ▶ TONGUE
- ▶ HARD & SOFT PALATE
- ▶ UVULA
- ▶ TONSILS
- ▶ EPIGLOTTIS

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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



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.”

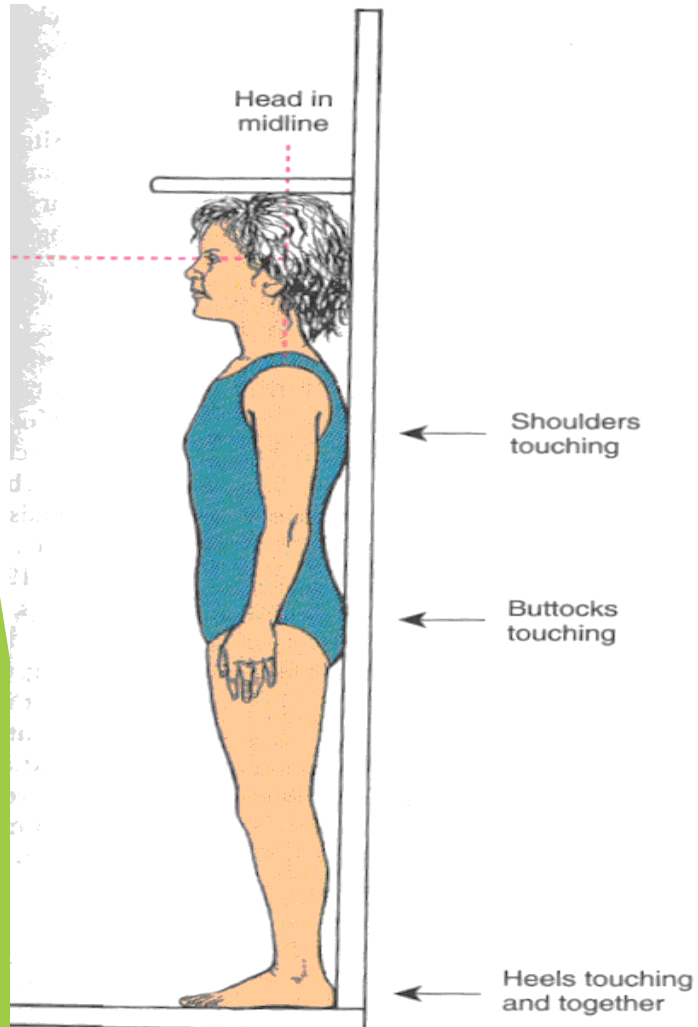
Temperature

- ▶ 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.
- ▶ Check with hospital policy.

Auscultating Heart Sounds



Height Measurement



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

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.

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

Apical Pulse



In child younger than 7 years.

Weight



Note close proximity of nurses hands for safety

Weight

- ▶ Needs to be recorded on a growth chart
- ▶ Newborn may lose up to 10% of birth weight in 3-4 days.
- ▶ Gains about $\frac{1}{2}$ to 1 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

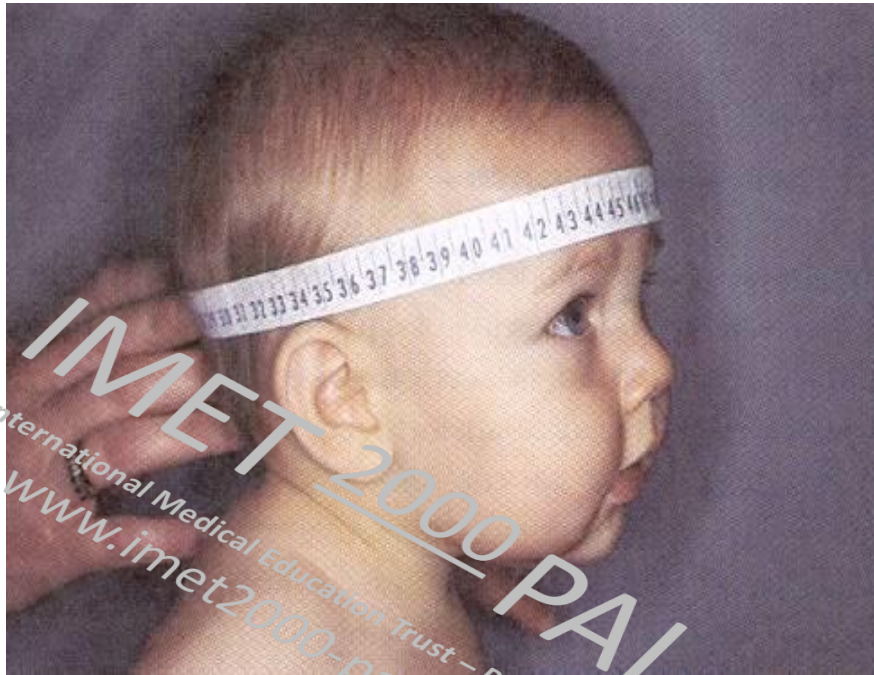
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Nutrition

- ▶ School age: typical diet
- ▶ Favorite foods
- ▶ I always child if I were to ask their mom what do they need to eat more of what would she say?

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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

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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 be corrected surgically
- ▶ 5-year-old and up can have vision screening
 - ▶ Refer to ophthalmologist if there are concerns

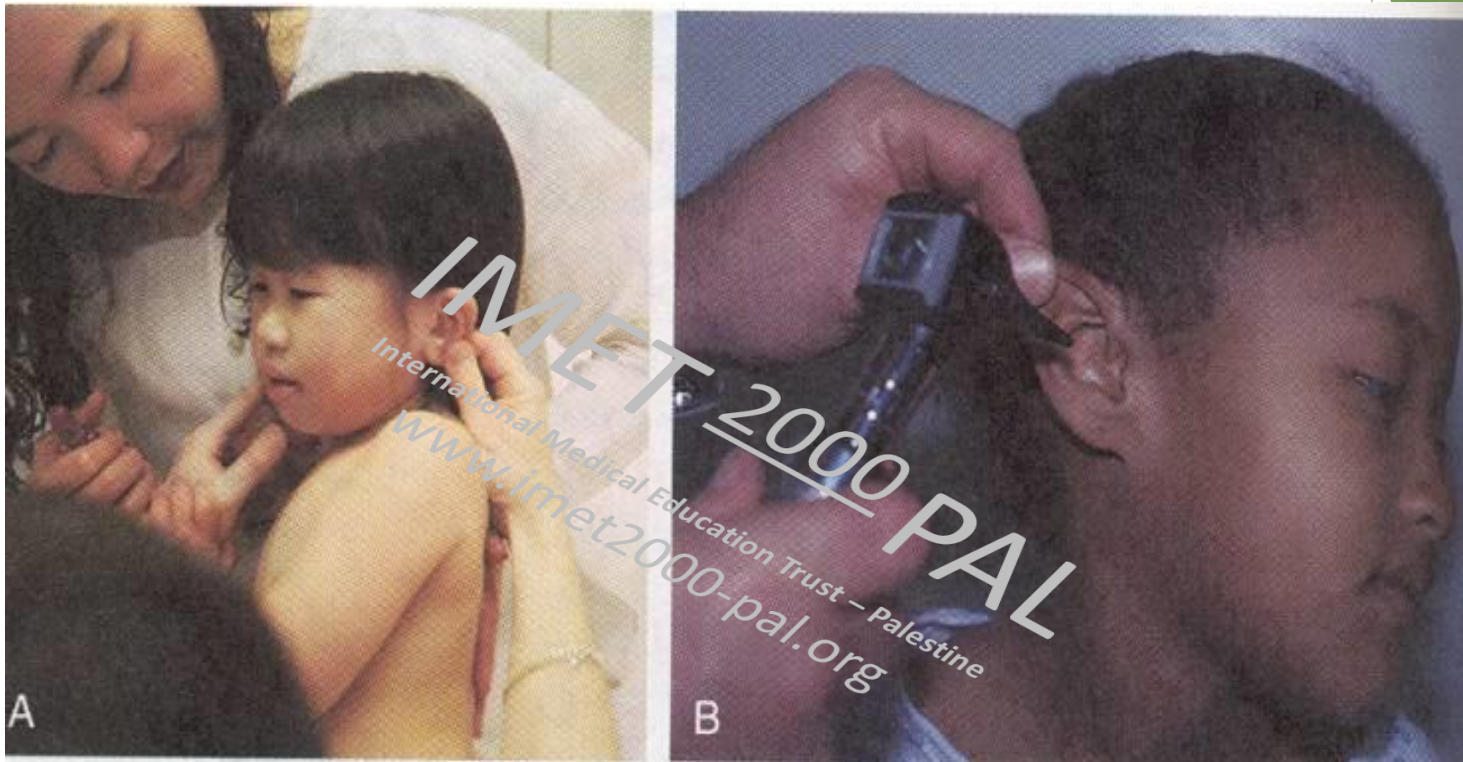
Common eye infections:

▶ 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

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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

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Otitis

- ▶ ROM: right otitis media
- ▶ LOM: left otitis media
- ▶ BOM: bilateral otitis media
- ▶ OME: Otitis media with effusion
(effusion means fluid collection)

Pleural effusion, effusion of knee

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

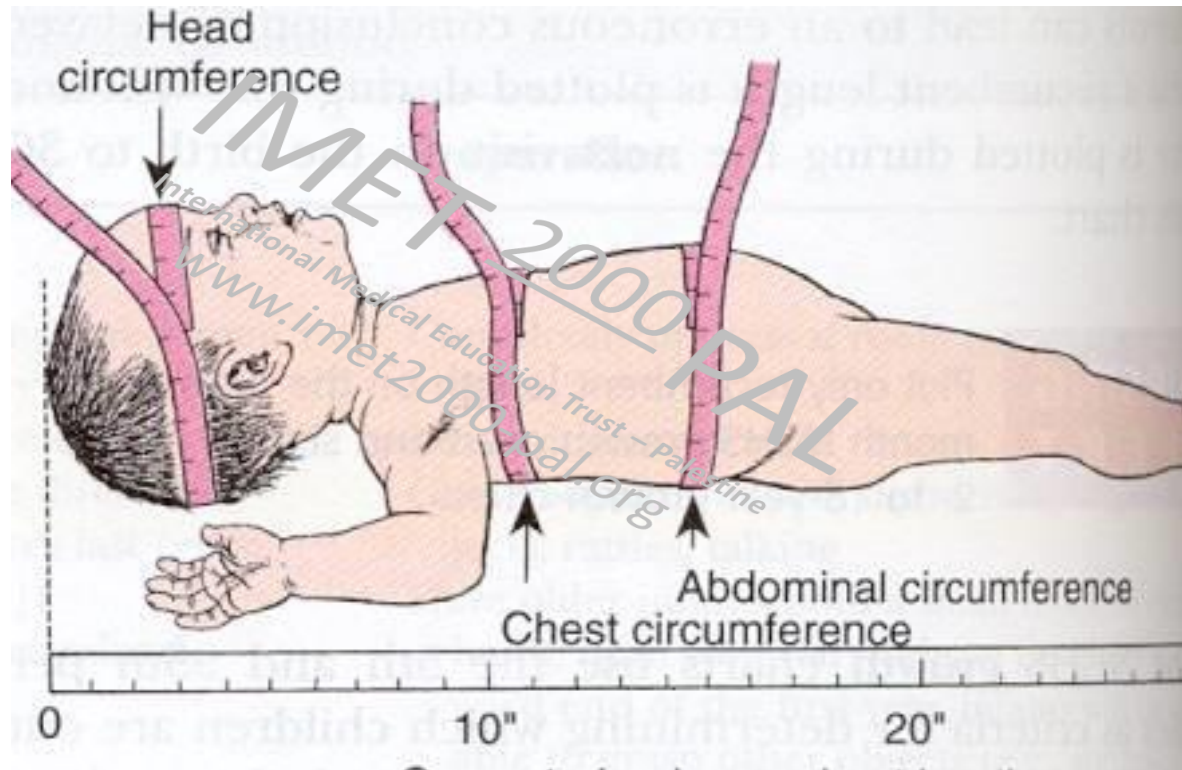
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Management

- ▶ 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

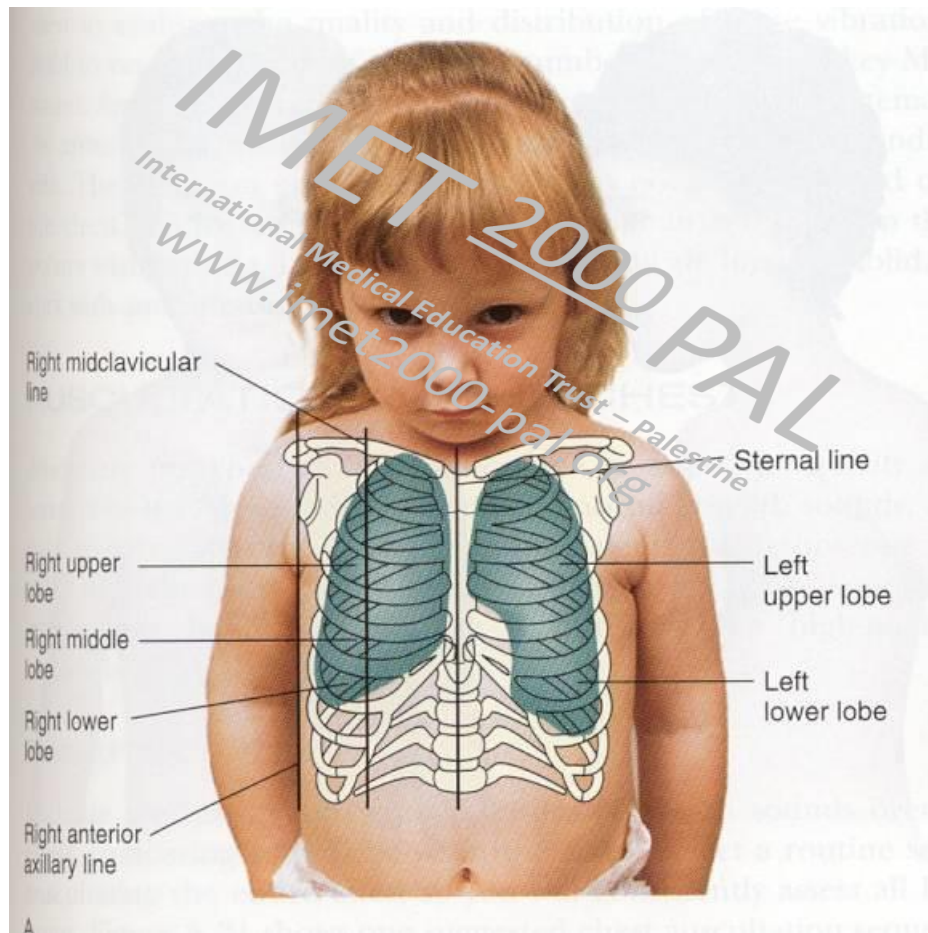
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Head, chest, and abdominal circumference.



Whaley and Wong

Child Chest



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

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.



Bowden & Greenberg

Chest assessment

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

Red flags: grunting / nasal flaring

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Wheeze or Stridor

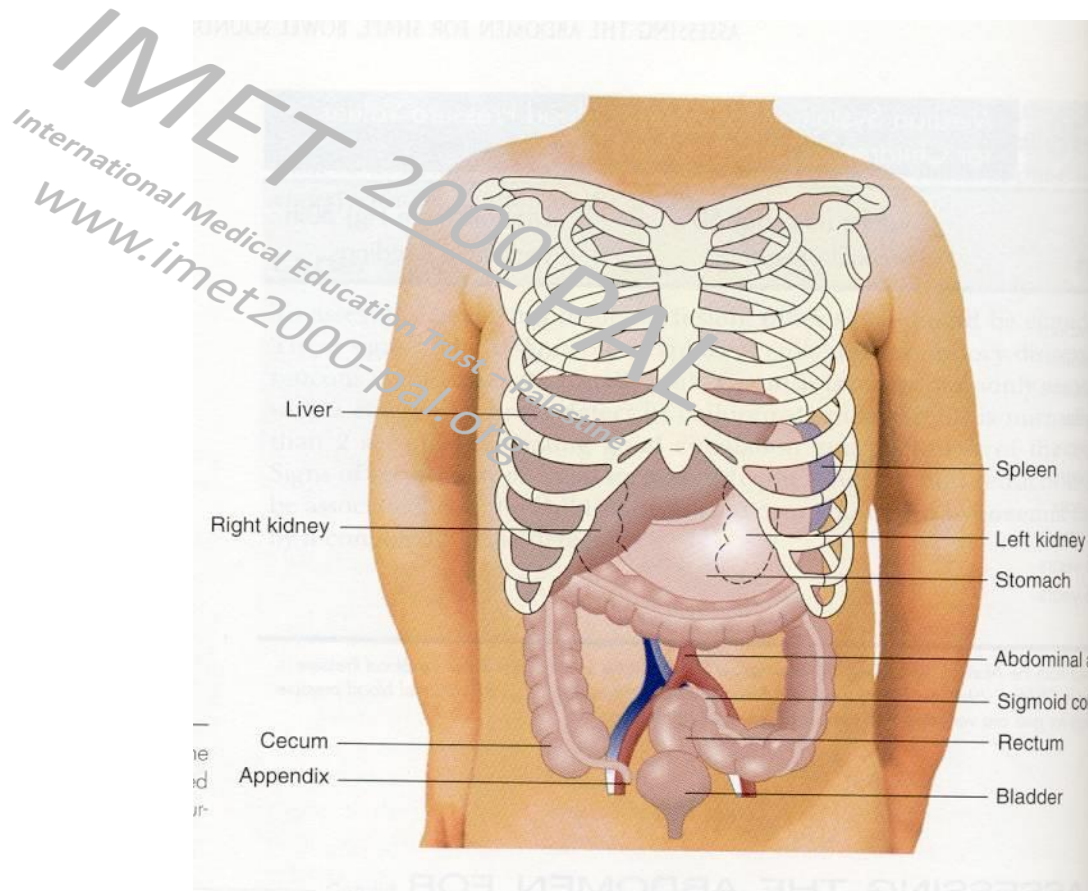
- ▶ Wheezes occur when air flows rapidly through bronchi that are narrowed nearly to the point of closure.
- ▶ Wheezes is lower airway
 - ▶ Asthma = expiratory wheezes
- ▶ A stridor is upper airway
 - ▶ Inflammation of upper airway or FB

Abdominal Girth



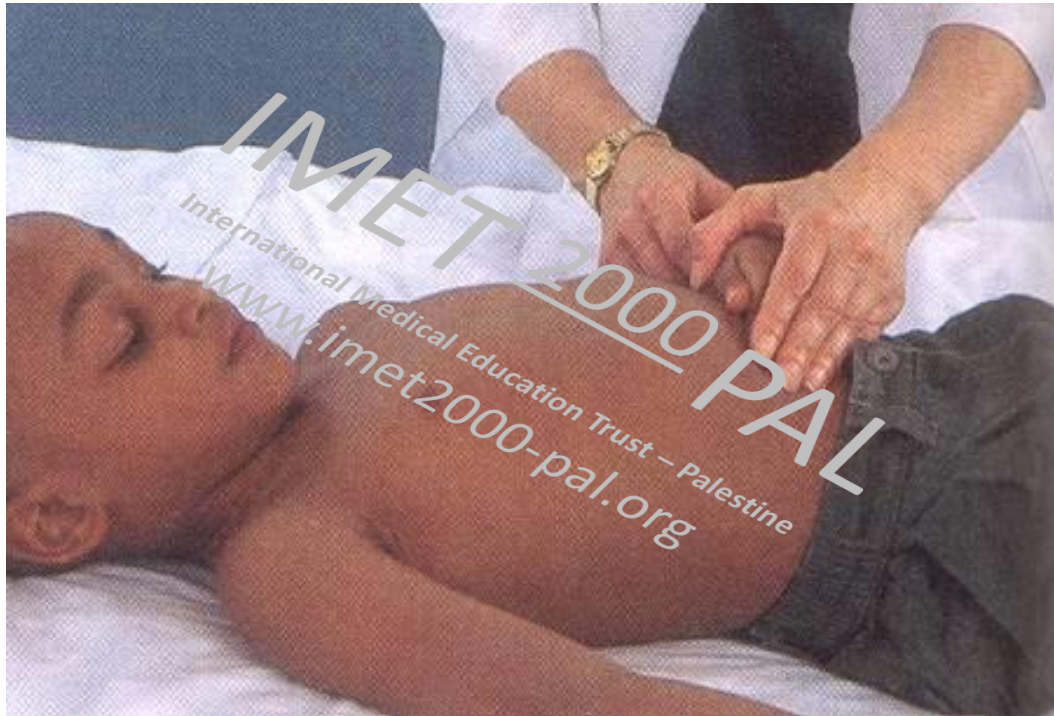
Abdominal girth should be measured over the umbilicus
Whenever possible.

Abdomen



Ball & Bindler

Abdominal Assessment



Pillitteri

Clinical Tip

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

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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.



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Any question

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