Pediatric Assessment

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Objectives:

- Review concepts of family-centered care
- Discuss unique challenges of pediatric assessments
- Review the elements of a health history
- Review the elements of a thorough head-to-toe physical assessment
- Review elements of a newborn assessment
- Review elements of a youth/adolescent assessment
- Discuss some of the common pediatric assessment findings

Family-Centered Care

A collaborative approach to healthcare that treats patients and their families as integral partners, respecting their unique strengths, cultures and expertise.

Core Principals:

- **Respect & Dignity:** actively listening to the family and respecting the cultural, ethnic and socioeconomic diversity of families
- **Information Sharing:** communicating and sharing unbiased information to allow families to be part of informed decision making and participate in care
- **Participation:** encouraging the participation of families in their child's care to the extent they choose
- **Collaboration:** supporting families as they engage in policy work, professional education, facility design etc.

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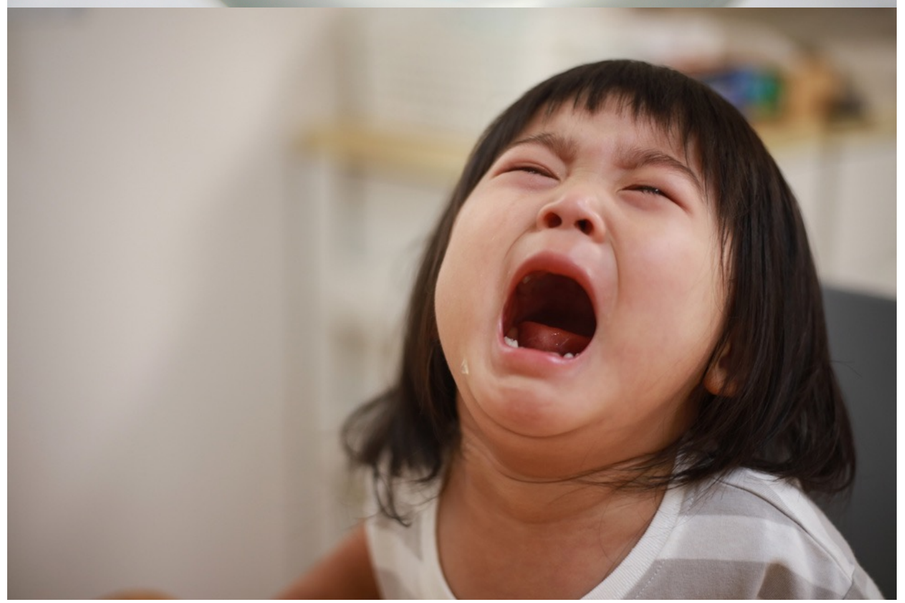
Challenges

- Non-verbal
- Fear & anxiety
- Cooperation
- Anatomical differences
- Vital sign interpretation
- Pharmacokinetic differences
- Caregiver history
- Pain assessment



Health History

- Demographic information
- “Chief complaint” Reason for admission (in the family’s own words)
- Subjective history of present illness/issue
- Past medical history
- Medications
- Allergies
- Family history/psychosocial data (who they live with, supports, family dynamics)
- Immunizations
- CIAMPEDS, SAMPLE

Elements of a Peds Physical Exam

Least invasive to most invasive!

Inspection

Auscultation

Palpation

Percussion

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Developmental Stages

Newborn/Neonate (0-28 days)
- Pre-term Gestational Age < 38 weeks
- Term Gestational Age 38-42 weeks
- Post-term Gestational Age > 42 weeks

Infant (1 - 12 months)

Toddler (1 - 3 years)

Pre-Schooler (3 - 5 years)

School Age (6 - 9 years)

Pre-Adolescent (10 - 12 years)

Adolescent/Youth (13 - 18 years)

Each stage requires distinct approaches to communication and assessment

Newborn

Rely heavily on caregiver history

- Subjective history of chief complaint
- Feeding history
- Sleeping history
- Elimination history (wet diapers/24hr)

Observe physical cues:

- Crying (high-pitched, consolable?)
- Body position (arched back, legs drawn up?)

Perform as much of the assessment as you can with the patient in the caregiver's arms/bundled. Least invasive to most invasive.

Infant

Infants begin to communicate through crying, cooing and facial expressions. History focuses on growth, development and any signs of discomfort.

- Developmental milestones
- Routines: feeding schedule, sleep
- Observe physical cues: consolability, interacting with their caregivers/environment, signs of pain (crying, pulling at ears, arching back)
- Involve the caregiver

Least invasive to most invasive

Toddler

Emerging communication skills through gestures, basic words and emotions.

- Use simple language and pictures
- Incorporate play into your assessment
- Get down to their level
- Often fearful, allow toddlers to feel in control. “Do you want to listen to your heart with my stethoscope?”
- Engage the caregiver
- Allowing toddlers to explore equipment may make them feel more comfortable.

Least invasive to most invasive

Pre-School

Capable of expressing some thoughts and feelings, though their understanding of illness may be limited. Often ask many questions, may have fears around medical procedures.

- Use clear, simple language
- Incorporate play and toys, use toys to explain medical procedures
- Incorporate distraction techniques (videos, stickers)
- Use validation and comfort - acknowledge their fears and explain what you are doing and why

Least invasive to most invasive

School Age

Capable of understanding more complex ideas and can articulate their symptoms.

- Involve the child in their own care and decision making. Ask them directly what they are feeling. “Can you tell me where it hurts?”
- Be straightforward and honest. Children this age want explanations and reasons.
- Provide choices where possible - “Do you want me to listen to your heart first or take your temperature?”

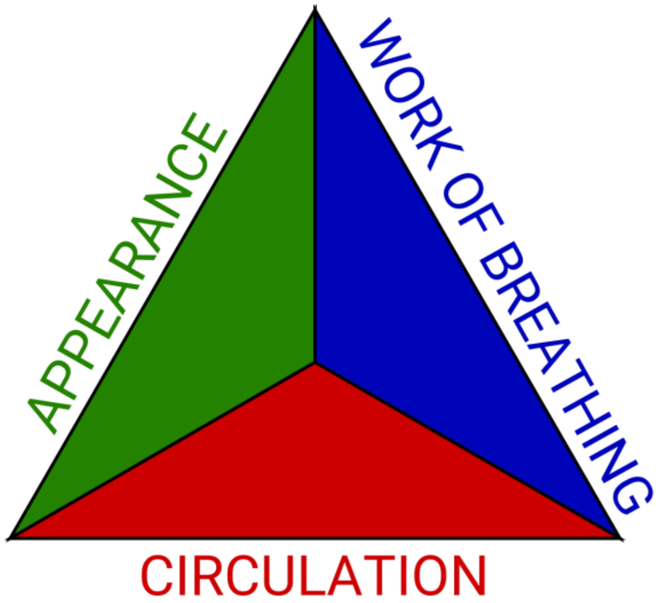
Least invasive to most invasive

Adolescence/Youth

Developing their own autonomy. Involving them in the history taking process and decisions is important for respecting their growth and independence.

- Respect privacy and confidentiality
- Address emotional and social concerns. May have concerns around body image, peer relationships, bullying
- May be more comfortable if caregivers step out of the room for the assessment

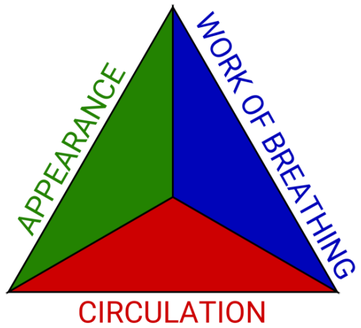
Pediatric Assessment Triangle (PAT)



Nurse obtains a quick (10-15 second) general impression of the patient's physiologic status. Performed before engaging in direct physical contact with the patient.

It's your "across the room look"

Pediatric Assessment Triangle (PAT)



Appearance

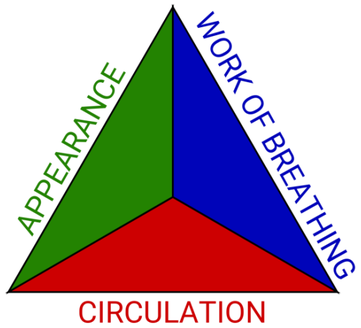
- Most important component of the PAT
- TICLS mnemonic
- **Tone:** is it appropriate? Is the child moving their arms and legs, or does the child appear limp and flaccid?
- **Interactiveness:** Is the child interacting with their environment and caregiver appropriately?
- **Consolability:** Is the child easily consoled and comforted?
- **Look/gaze:** If the eyes are open, does the child appear alert or are they staring off into space? If the eyes are closed, do they open to sound, is the child sleeping?
- **Speech/cry:** Is the child's speech appropriate? Is the cry weak, listless or high-pitched?

Pediatric Assessment Triangle (PAT)

Work of Breathing

- Observe respiratory effort
- Abnormal positioning (tripoding)
- Retractions (subcoastal, supraclavicular, intercostal, subcostal)
- Nasal flaring
- Head bobbing
- Audible stridor or wheeze
- Grunting
- Persistent cough
- Respiratory rate

Pediatric Assessment Triangle (PAT)



Circulation

- Color of the skin (pay attention centrally)
- Pale?
- Mottled?
- Cyanotic?
- Ashen, grey or dusky?
- Darker skin tones: look at the lips, tongue, conjunctiva, mucous membranes, nail beds, palms and soles of feet
- Unusual redness
- Rashes

Vital Signs

Age	Heart Rate (beats/min)	Respiratory Rate (resp/min)	Blood Pressure
0-1 month	93-182	26-65	45-80/33-52
1-3 months	120-178	28-55	65-85/35-55
3-6 months	107-197	22-52	70-90/35-65
6-12 months	108-178	22-52	80-100/40-65
1-2 years	90-152	20-50	80-100/40-70
2-3 years	90-152	20-40	80-110/40-80
3-5 years	74-138	20-30	80-115/40-80
5-7 years	65-138	20-26	80-115/40-80
8-10 years	62-130	14-26	85-125/45-85
11-13 years	62-130	14-22	95-135/45-85
14-18 years	62-120	12-22	100-145/50-90

- Heart rate and respirations are counted for one full minute. For infants and young children use stethoscope (on the skin not on clothes)
- Oxygen saturations > 90-92%
- Neurovascular assessment
- CHEWS - Children's Hospital Early Warning Score

CHEWS

- Validated, evidence-based tool to help HCPs in the recognition and identification of patient deterioration. May prevent in-hospital arrests.
- Should perform a CHEWS assessment at the beginning of each shift, with each scheduled vital signs check, and when a change in the patient's conditions prompts a full assessment.
- Five categories:
  - Respiratory
  - Cardiovascular
  - Neurological
  - Parent/family
  - Staff concern

Appendix A – CHEWS Scoring Interventions

0 - 2 Green Stable	3-4 Yellow Decompensation	≥ 5 Red Critical
• Continue Routine Assessment	• Place patient on cardiac monitor • Consider activating SPOT • Increase frequency of vital signs / CHEWS assessment (minimum hourly) • RN responsible for immediate interpretation of vital signs • Notify charge nurse • Notify resident • Resident or designate to assess at bedside • Discuss treatment plan with team • Consider higher level of care • Document interventions	• If score =3 on any domain consider Code Blue • Activate SPOT • Place patient on cardiac monitor • Notify Attending Physician • Resident, NP or Attending to assess at bedside • Increase frequency of vital signs / CHEWS assessment • RN responsible for immediate interpretation of vital signs • Consider higher level of care • Discuss treatment plan with team • Document interventions

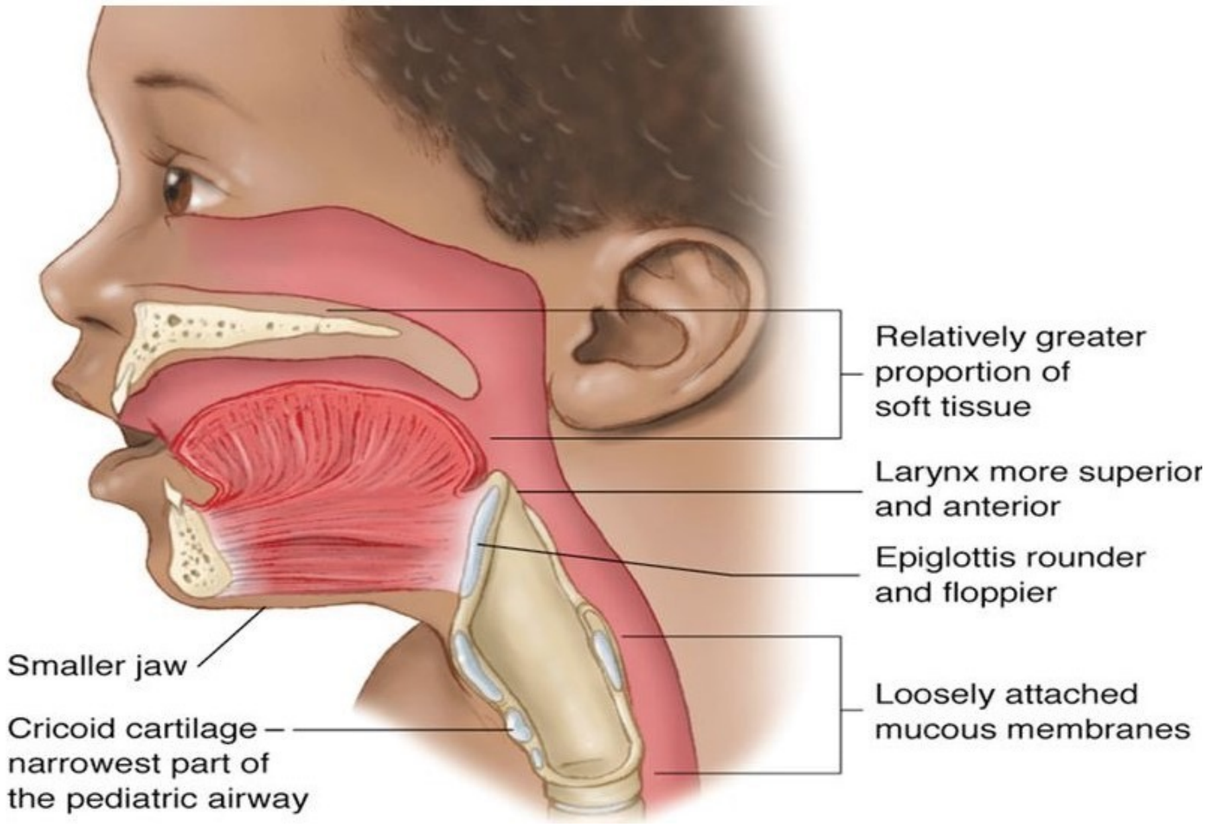
CHEWS

- Score 0 - 2: Continue routine assessments
- Score > 3: Requires an increase in the level of monitoring and involvement of the interdisciplinary team
- Score > 5: Immediate notification of the attending physician. Consider additional resources and protocols (Code Blue/Pink)

Physical Assessment

Airway

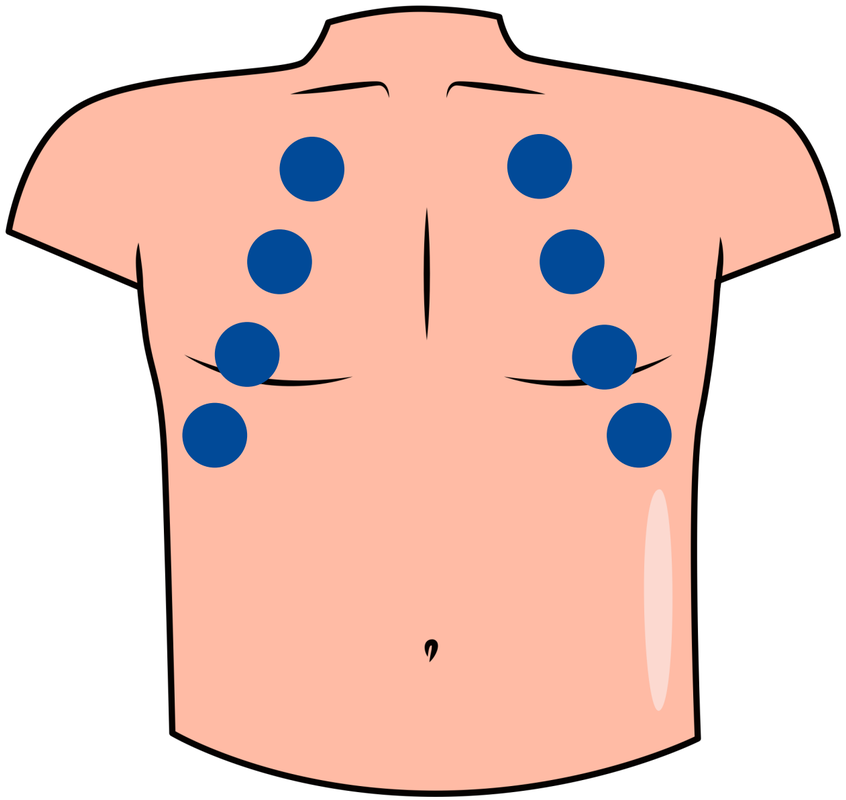
- Gurgling (may need a suction)
- Snoring (repositioning)
- Stridor (foreign body? croup?)



Physical Assessment

Breathing

- Respiratory rate
- Respiratory effort - retractions/accessory muscle use?
- Auscultate breath sounds - any adventitious sounds? Wheeze, stridor, crackles?
- Air entry

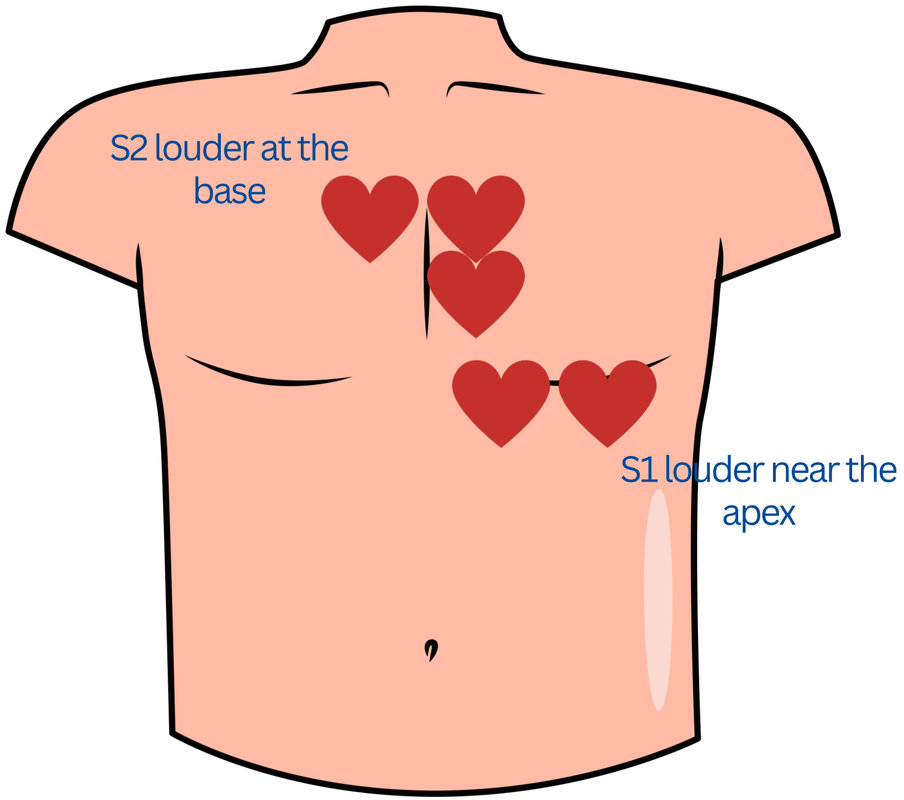


Auscultate both the front and the back!

Physical Assessment

Circulation

- Perfusion - cap refill, skin color
- Temperature of the skin to touch - symmetrical?
- Heart rate - regularity, rhythm, rate
- Pulses - strength and regularity. Comparing central vs. peripheral pulses
- Auscultate heart sounds - S1, S2, murmurs
  - 2nd ICS right: Aortic
  - 2nd ICS left: Pulmonic
  - 3rd ICS left: Erb's
  - 5th ICS left: Tricuspid
  - 5th Midclavicular: Mitral



Physical Assessment

Neurological

- Level of consciousness - GCS
- Mental status/interaction
- Activity, movement, muscle tone, reflexes
- Balance, coordination, gait
- Age-appropriate responses
- Child's usual baseline

Physical Assessment

HEENT

- **Head -** size, symmetry, fontanelles (anterior and posterior)
- **Eyes** - size, spacing, lids, eyelashes, muscles, movement
- **Ears** - symmetry, position, external structures, tympanic membrane, hearing
- **Nose** - Patency, sinuses
- **Throat** - tonsils/adenoids, lymphadenopathy, lips, tongue, teeth

Physical Assessment

Gastrointestinal

- Inspecting for any distention
- Auscultating bowel sounds in all 4 quadrants - normal, hyper/hypoactive?
- Palpating abdomen - soft, any tenderness, masses
- Appetite
- Asking about bowel movements - frequency, consistency

Physical Assessment

Genitourinary

- Genitalia
- Urinary output
  - Normal: 1 - 2ml/kg/hr
  - Oliguria: < 1ml/kg/hr
  - Polyuria: > 3ml/kg/hr
  - Anuria: no urine output
- Hydration status
- Menstruation

Physical Assessment

Fluid Volume Deficit

Loss of water and electrolytes due to:

- Fever
- Vomiting & Diarrhea
- GI suction
- Diaphoresis
- Increased urine output (polyuria)

Signs & Symptoms:

- Dry mucous membranes
- Decreased skin turgor
- Hypotension
- Sunken eyes
- Sunken fontanelles
- No tearing
- High urine specific gravity
- Dry/sticky tongue
- Urine output < 1ml/kg/hr

Physical Assessment

Fluid Volume Excess

Causes:

- Renal/liver failure
- Congestive heart failure (CHF)
- Over administration of fluids
- High sodium intake

Signs & Symptoms:

- Peripheral edema
- Puffy eyes
- Full/bulging fontanelles
- Pulmonary edema
- Pleural effusions
- Ascites
- Distended neck veins
- Bounding pulses

Physical Assessment

Special Fluid Requirements

Hyperhydration:

- Chemotherapy
- Increased insensible losses
- Fever
- Increased resp. rate

Fluid Restriction:

- SIADH (syndrome of inappropriate antidiuretic hormone secretion)
- Renal failure
- Cardiopulmonary failure

Physical Assessment

Integumentary

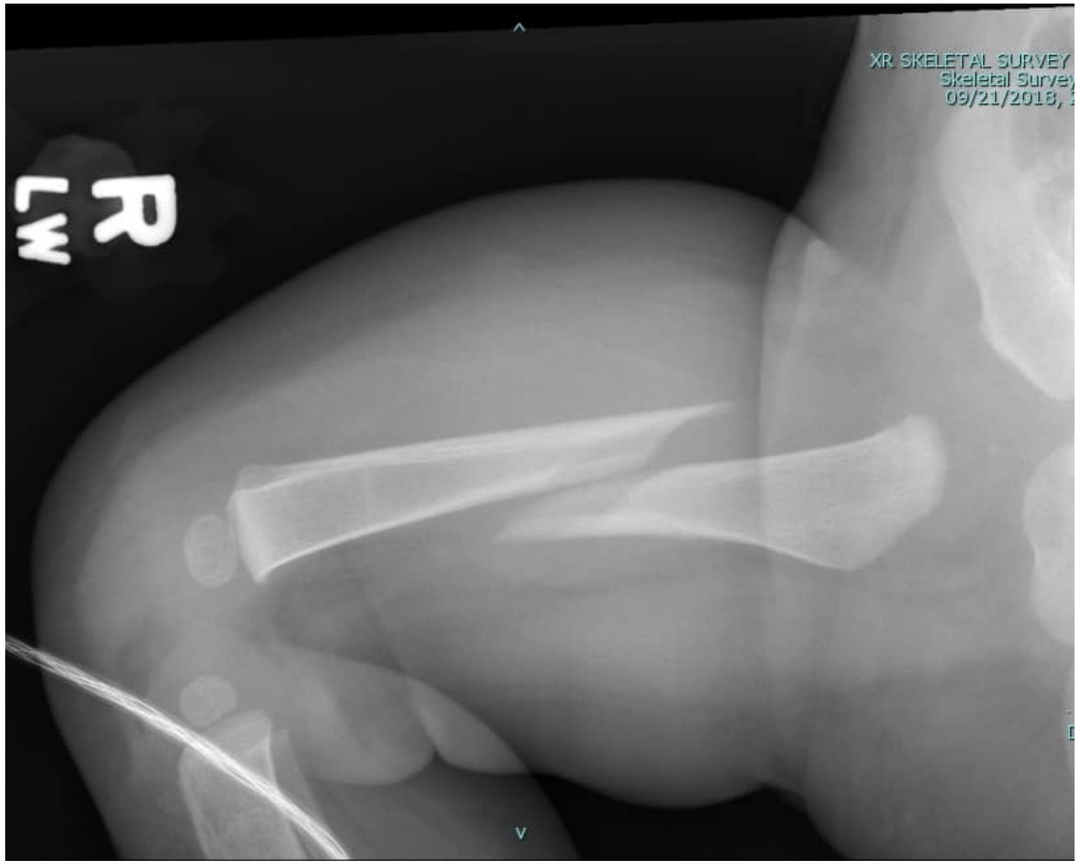
- Skin - jaundice, cyanosis, rashes, skin integrity, bruises, pigmentation, rashes, moisture, turgor, edema
- Skin lesions/wounds - streaking, exudate?
- Hair - lice, distribution, scalp health

Physical Assessment

Musculoskeletal

- Joint pain
- Fractures
- Soft-tissue injuries
- Myalgias/weakness
- Gait disturbances
- Scoliosis/hip dysplasia
- ROM - active/passive
- CSM
- 5 P’s of compartment syndrome

Physical Assessment



Child Maltreatment

- Neglect, physical abuse, psychological abuse, sexual abuse
- Thorough physical assessment and history taking. Have a heightened level of suspicion if the story and the injury don't add up
- Suspicious bruises - TEN 4 FACES
  - Torso (including genitals)
  - Ears
  - Neck
  - < 4 years or any bruising at all < 4 months
  - Frenulum (or torn frenulum)
  - Angle of the jaw/auricular area
  - Cheek
  - Eyelid
  - Subconjuntivae
- Human trafficking
- Munchausen syndrome by proxy

Physical Assessment

Newborn Assessment

- Birth trauma?
- Sweet, pink, warm - glucose levels, well perfused, warm as newborns at risk of hypothermia
- Normal abnormal - grey slate nevi, stork bite, hemangioma, milia
- Jaundice - doesn't develop right away
- Tone - flexed and midline. Legs partially abducted. Clenched fists
- Head - fontanelle assessment (flat & soft, bulging, sunken). Molding, caput succedaneum, cephalhematoma
- Parental attachment/bonding. Social/medical supports

Physical Assessment

Fluid Status in Infants

- Quite vulnerable to fluid volume deficit
- Have a high metabolic rate and large metabolic wastes to excrete daily
- Need relatively larger water intake than older children
- Immature kidneys which are unable to concentrate urine efficiently
- Experience greater fluid loss through the skin
- Are prone to fluid/electrolyte imbalances

Physical Assessment

Adolescent/Youth Assessment

- No judgement zone
- Respect privacy/confidentiality. Parent-free time
- Increased risk-taking behaviors and psychosocial issues, contributing to morbidity and mortality
- HEADS interview
  - Home
  - Education, Employment & Eating
  - Activities & Adherence (meds, etc)
  - Drugs
  - Sexuality, Suicide/Depression, Safety
- Consider the use of a chaperone for physical assessment

Physical Assessment

Tanner Stages

5 stage scale used to measure physical development during puberty based on breast/genital growth and pubic hair development.

- Stage 1 - pre-pubertal
- Stage 2 - physical changes begin
- Stage 3 - Continued growth
- Stage 4 - Puberty in full stride
- Stage 5 - Final adult development

	Breast	Pubic Hair	Genitals	Pubic Hair
Stage 1	Small nipples. No breast. 	No pubic hair. 	No signs of puberty. Scrotum, testes, and penis as in childhood. 	No pubic hair. 
Stage 2	Breast and nipples have just started to grow. The areola has become larger. Breast tissue bud feels firm behind the nipple. 	Initial growth of long pubic hairs. These are straight, without curls, and of light color. 	Initial growth of scrotum and testes. The skin on the scrotum has become redder, thinner, and more wrinkled. The penis may have grown a little in length. 	Few hairs around the root of the penis. The hairs are straight, without curls, an of light color. 
Stage 3	Breast and nipples have grown additionally. The areola has become darker. The breast tissue bud is larger. 	The pubic hair is more widespread. The hair is darker, and curls may have appeared. 	The penis has now grown in length. Scrotum and testes have grown. The skin of the scrotum has become darker and more wrinkled. 	Hairs are darker and curlier and still sparse, mostly located at the penis root. 
Stage 4	Nipples and areolas are elevated and form an edge towards the breast. The breast has also grown a little larger. 	More dense hair growth with curls and dark hair. Still not entirely as an adult woman. 	The penis has grown in both length and width. The head of the penis has become larger. The scrotum and testes have grown. 	More dense, curly, and dark hair. The hair growth is reaching the inner thighs. 
Stage 5	Fully developed breast. Nipples are protruding, and the edge between areola and breast has disappeared. 	Adult hair growth. Dense, curly hair extending towards the inner thighs. 	Penis and scrotum as an adult. 	Pubic hair extends upwards to the umbilicus. It is dense and curly. 

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Thank you!

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