Examination of children

In theory

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Objectives

- To understand how to adapt a clinical examination to children at different age
- To know about different approoaces of doing a clinical examination
- To describe the differences between a clinical examination of an adult, a newborn and a child

How to succeed in examining a child - 1

- Get the parent(s) on your team
- Age dependent
  - Newborn different form teenager
  - Majority; young and insecure
- Be mild and patient, but still firm
- Be flexible but still structured

How to succeed in examining a child - 2

- Where
  - Lap or bench? On the floor playing?
  - Get down on the child's level
- Demonstration
- Distraction
- Incomplete/suboptimal examination – then what?

A few hints

- Do not ask the child for permission – give another choices if necessary
- Timing and time consumption:
  – Window of cooperation is not endless
- Children mirror their parents
  – Establish alliance with parent(s) before approching the child, especially if she/he is sceptical

A multidimensional approach

There are different ways to categorize a clinical examination, and they do not exclude each other

1. Practical
2. Organsystem - specific

Also negative findings are important (example: no murmur, no enlargement of liver)

1. Practial approach - modalities

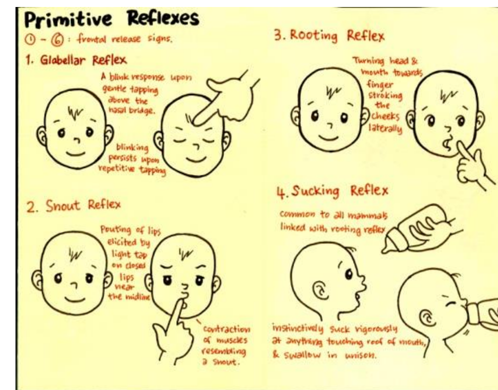
1. Observation
2. Auscultation
3. Percussion
4. Palpation
5. Otoscopy and oral inspection

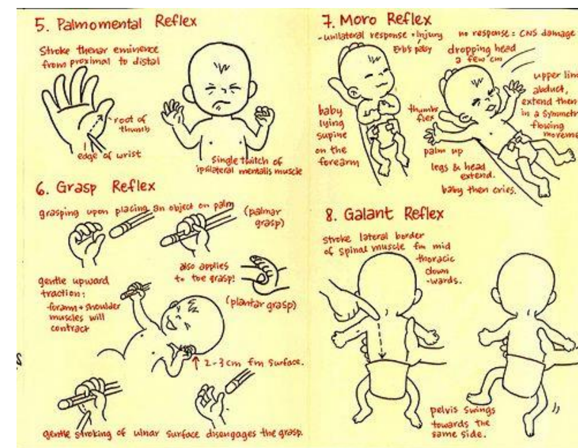
Observation

- Starts when the patient enters the room
- Mental status
  - Social interaction: visual and verbal contact
  - Interest in surroundings?
  - Mood: worried or comfortable, irritable?
  - Level of consciousness
- Movements and level of development according to age
  - Spontanious
  - Symmetrical
  - Walking, crawling, sitting
  - Coordination

Primitive reflexes

NEWBORN REFLEX	DISAPPEARANCE
BLINKING	N/A
MORO	3-6 months
GRASP	3-4 months
STEPPING	1-2 months
TONIC NECK	3-4 months
SNEEZE	N/A
ROOTING	4-6 months
GAG REFLEX	N/A
COUGH REFLEX	N/A
BABINSKI SIGN	12 months





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Observation continued

- **Clothes off!**
  - Distention?
- Skin
  - General colouration: pale, grey, blue?
  - Rashes
  - Oedema
- Respiratory movements
  - Retractions
  - Respiratory rate
  - Nasal flaring
- Genitalia
  - Look normal?
  - Malformations?
    - Ex hypospadia
  - Testicals descended?
  - Pubertal stage
- Head/face
  - Normal or syndromatic
  - Neck stiffness?

Inspection

- Examine:
  - The eyes for signs of jaundice and anaemia
  - The tongue for coating and central cyanosis
  - The fingers for clubbing
- The abdomen is protuberant in normal toddlers and young children
- The abdominal wall muscles must be relaxed for palpation

Auscultation

- Approach
  - Quiet child required
  - Get down
  - Gentle, let her/him touch stethoscope, show on partens or yourself first
- Pulmones (both with and without stetoscope)
  - any obvious noise?
  - Wheezing
  - Crepitation/crackles: Fine or coarse
  - Stridor
  - Bronchial/increased sound?
  - Decreased or absent respiratory sounds
  - Location

Auscultation continued

- Heart sounds
  - Heart rate
  - Murmurs
    - Systolic/ diastolic
  - Location
  - Intensity (1-6)
  - Radiation
  - PitchU
- Use the bell, not the membrane first

- Abdomen
  - Bowel sounds present?
  - Charachteristics

Percussion

- **Practice – Practice – Practice - Practice!**
- Thorax
  - Is there side difference?
  - Lung borders
  - (Heart)
- Abdomen
  - Not mandatory
  - If distended – tympanic?

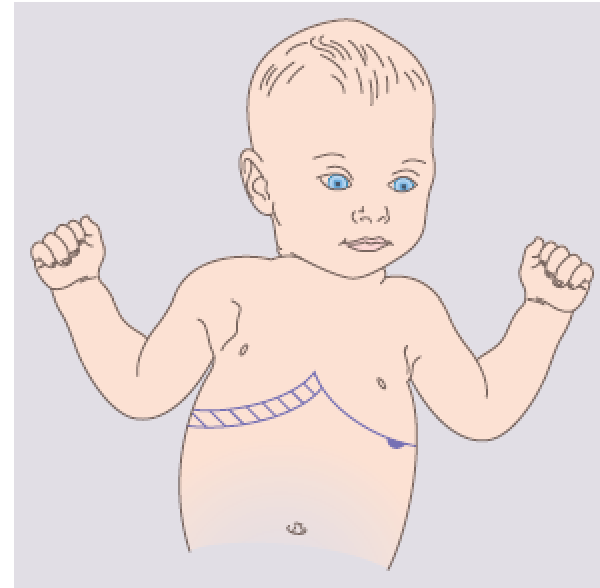
Palpation

- Skin turgor
- Capillary refill time
  - Press down for 5 seconds – observe
  - Sternum
- Pulses
  - Brachialis, radialis
  - Femoralis
  - Tibialis posterior/dorsalis pedis

- Fontanelle: normal/bulging/sunken
- Lymph nodes – start on top
  - Occipital
  - Sternocleidomastoideus
  - Submandibular
  - Axillary
  - Groin

Palpation

- Abdomen
  - General consistency
  - Symmetrical
  - Enlarged organs
    - Liver/spleen size?
  - Other abdominal masses – tumor?
  - Pain? – eye contact



Normal findings of liver and spleen:
•The liver is 1-2 cm below costal margin in infants and young children
•The spleen may be 1-2 cm below the costal margin in infants

Palpation of abdomen

- Use warm hands, explain, relax the child and keep the parent close at hand
- Palpate in a systematic fashion – liver, spleen, kidneys, bladder, through four abdominal quadrants
- Ask about tenderness
  - Watch the child's face for grimacing as you palpate
  - A young child may become more cooperative if you palpate first with their hand or by putting your hand on top of theirs

Otoscopy and oral inspection

- Most intruding – therefore at the end of examination
- Otoscopy
  - Parents lap
  - Parent fixate head and both patients arms
  - Support your hand on the childs head/cheek
    - Redness, retraction, fluid, light reflex
- Oral examination
  - Be firm, gentle and quick
  - Redness
  - Tonsilis – bulging, pus, assymetri?
  - Wet mucus membranes?
  - Teeth status

2. Organsystem failure?

Airways

Breathing

Circulation

Disability

Exposure

Don't **E**ver forget glucose!

2. Cont. organsystem failure?

- Airway
  - Open?
  - Compromised?
- Breathing
  - Tachypnoe
  - Retractions
  - Breath sounds
  - Skin: pale, clammy, cyanotic
- Circulation
  - Skin: pale, cold, clammy, cyanotic
  - Heart rate
  - Palpation of pulses
  - Capillary refill time
  - Blood pressure
  - Edema
  - Respiratory rate
  - Enlarged liver/spleen

2. Cont. organsystem failure?

- Disability - Neurological
  - AVPU
  - Alterd mental status: behave, speech, consciousness
  - Fine and gross motoric
  - Pupils
  - Reflexes
  - Fontanelle
- Exposure
  - Temperature
  - Injuries (always have child abuse in your mind!)
  - Rashes
  - Skin bleednings
    - Small (petechia) or large (purpura, ecchymoses)

Final remarks

- Note that children who are frightened or in pain may act younger than their age
- Have a plan- but be flexible!
  - Adjust yourself to:
    - Childs mood
    - Your own findings and reasoning
- Don`t loose your focus
    - Is the main concern properly addressed?
- Smile and use your social skills
  - Good cooperation makes it so much easier….

Status presens, date and time:

- X-month/year-old boy/girl, generally good health/ill-health, well/thin/emaciated
- Hollow eyes, sunken fontanelle, reduced turgor?
- Degree of contact
  - Movement. Co-operation during the examination.
- Oedema (seldom seen in children)
- Rash, cyanosis, jaundice, petechiae
- Nuchal and back rigity
- Enlarged lymph nodes – where?
- Respiratory distress? (tachypneae, laboured breathing/ease of respiration, nasal flaring)

- Pulse (high, low, normal for the age)
- Respiratory frequence (RF: XX/min (high, low, normal for the age)
- Blood pressure (high, low, normal for the age)
- Temperature
- Capillary refill time (central/peripheral, high, low)

Paediatric patients records

- Both history taking and examination differs between children and adult patients
- You must have done it all to write a medical record
- It could be that parents will ask you not to perform an examination such as looking in the mouth or the ears, if a GP/emergency room or a doctor at Barnemottaket has already done it, ok, BUT - You should do most of it yourself!

- The nurses have not always done all the readings, such as blood pressure, weight/height if they do not see the necessity in just this case
  - You should at least get vitals (RF, pulse, saturation and temperature) and weight
- If done, it can easily be seen on a PEVS – form, which you can bring into the room or copy before entering
- If the values divide from the norm you must comment; for instance caused by unrest, crying etc

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Summary

- How to adapt and perform a clinical examination on a child
- How examination of a newborn and a child differs from adult examination