Abdominal examination

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- Talk to the child and parents
  - Introduce yourself
  - Confirm the child's name and age

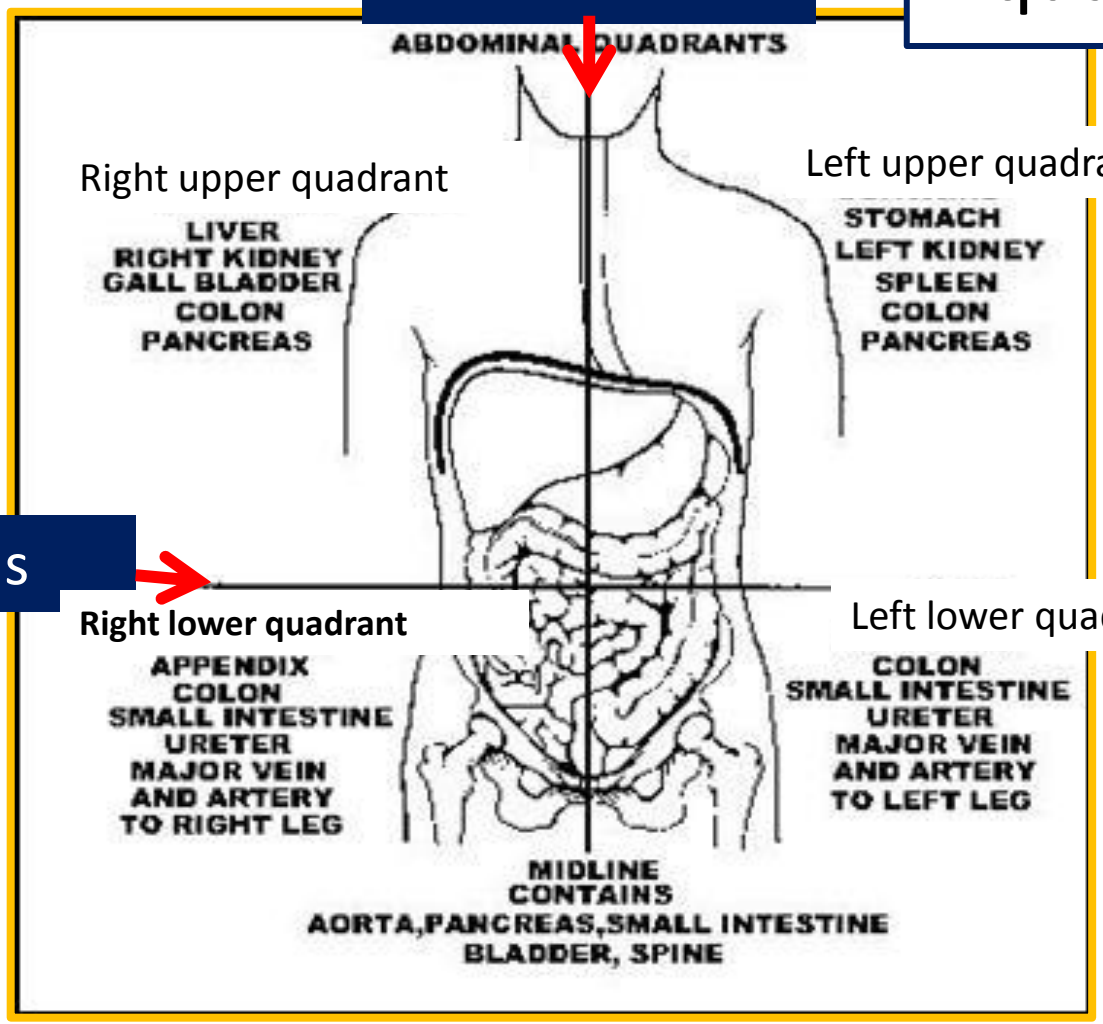
•Room should be ➔

- Well-lighted
- Warm
- Comfortable

Abdomen quadrants

Middle of the sternum

4 quadrants



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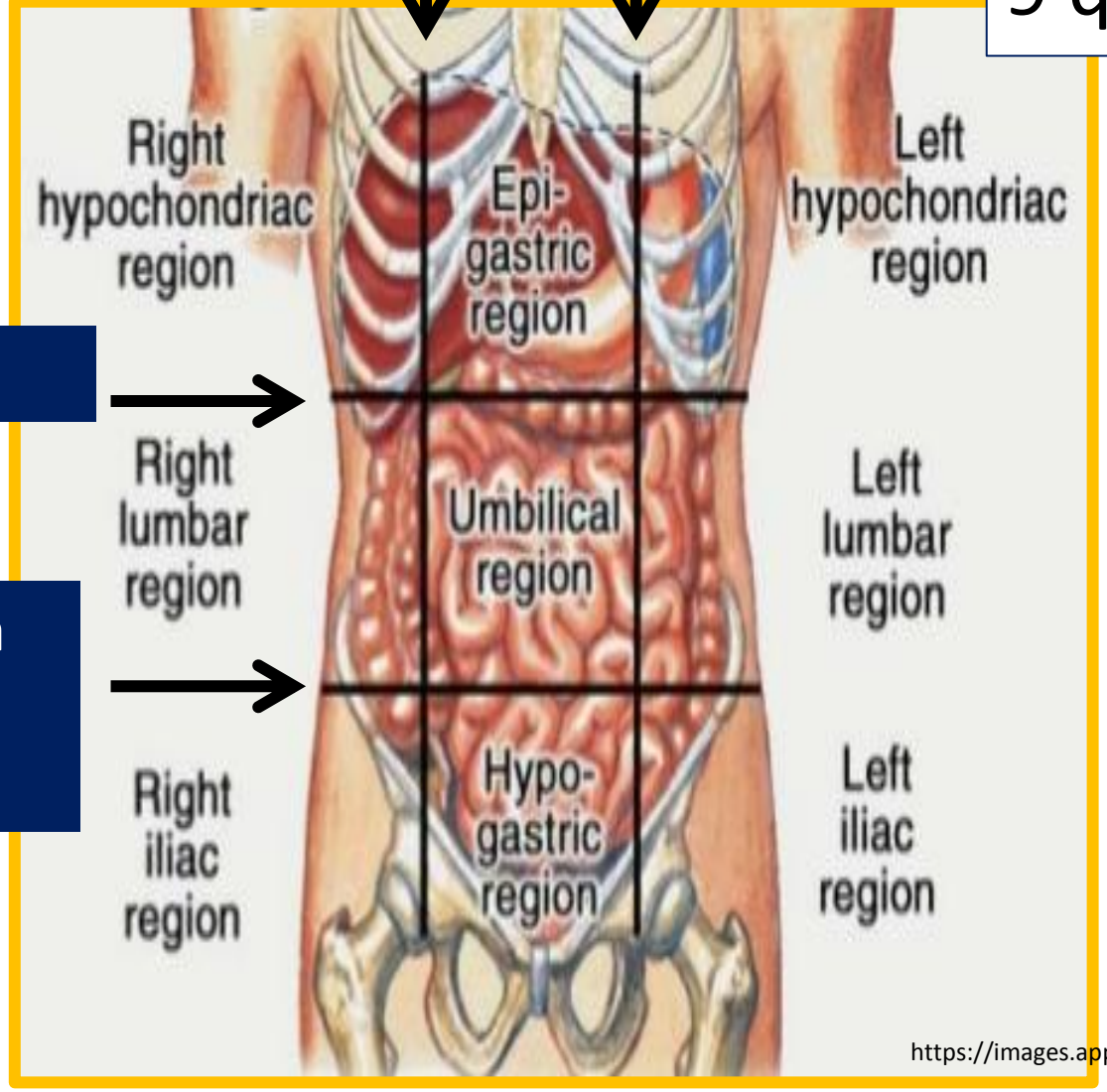
Abdomen quadrants

Midclavicular line

9 quadrants



Subcostal

Spina illiaca anterior superior

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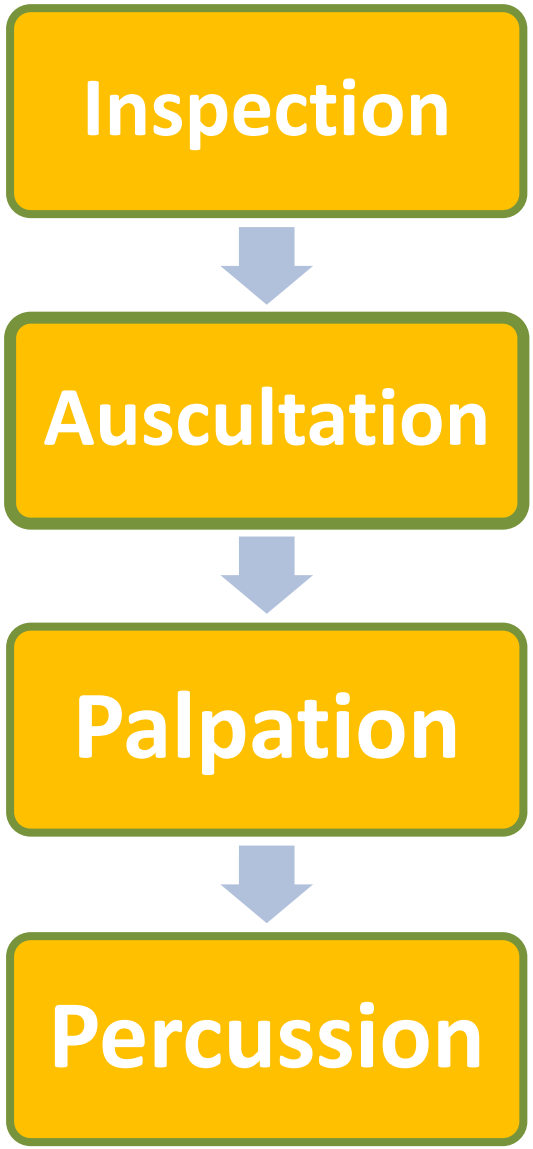
Abdominal examination



- Wash your hands
- Warm your hands
- Relax the child (Abdominal wall muscles must be relax)

- The child should lie down flat (with their hands by their sides)
- Keep the parents close, they may hold the child's hand
- To keep the child calm, we can perform physical examination while she/he is lying down on mother's knees or sleeping…

INSPECTION

The following should be considered in abdominal inspection

- Participitation of the abdomen in breathing
- General appearance of the abdomen
- Skin of abdomen

INSPECTION

- Abdominal movements during breathing
- The abdomen should participitate in breathing
- More prominent abdominal breathing in;
  - Healthy newborns and young infants
    - Weakness of intercostal muscles
    - High percentage of critalage costa
    - Abdominal muscles are used to pull the diaphgram down
  - Chronic lung disease, neurological disease affecting thoracic muscles
- No participitation to breathing➔Peritonitis

INSPECTION

- General appearance of the abdomen
  - Protuberance
  - Scaphoid
  - Distension

- The abdomen is protuberant in normal toddlers and young children

•Hypotonic baby➔
  - •Hypotonic abdominal walls
  - •Enlarged swollen abdomen, protrudes to lateral sides

Scaphoid abdomen
•Sunken walls, presents a concavity

Newborn➔Diaphragmatic hernia

INSPECTION

Abdominal distension may be due to accumulation of fluid, air (flatus) or organomegaly and intraabdominal masses

INSPECTION-Distension

Ascites is the pathologic accumulation of fluid in the peritoneal cavity.

Ascites may be due to

Noninflammatory
Heart failure
Hepatic vein thrombosis
Cirrhosis
Portal vein thrombosis
Budd-Chiari syndrome
Veno-occlusive disease
Malignant infiltration of hepatic sinusoids
Cancer

Chylous
Surgical disruption of lymphatic vessels
Congenital lymphangiectasia

Inflammatory
Intestinal perforation
Pancreatitis
Biliary tract perforation
Bacterial peritonitis

INSPECTION-Abdominal Distension

- Gas accumulation (Flatus) may be due to;
  - Food
  - Aerophagia
  - Dysbiosis
  - Malabsorption syndromes
    - Celiac disease, cystic fibrosis, exocrine pancreatic insufficiency…
  - Ileus

INSPECTION-Abdominal Distension

- Organomegaly
  - Liver
  - Spleen
  - Renal
  - Intestine
- Tumor
  - Malign
    - Wilms tm
    - Burkitt lymphoma
    - Neuroblastoma
  - Benign(fecaloid, bezoar, intestinal duplication cyst etc)

INSPECTION

- General appearance of the abdomen
  - Stoma, tubes
  - Umblicus [protusion, hernia, umblical cord (newborn)]
  - Hernias (umblical, inguinal, incisional, epigastric)
  - Ompholecele
  - Gastroschisis
  - Increased bowel peristaltism (Pilor stenosis,ileus)

INSPECTION

- General appearance of the abdomen
- Skin
  - Color (Pallor, jaundice)
  - Scars
  - Hyperemia, erosions, bruise
  - Itching scars
  - Stria
  - Nevus
  - Hyper/hypopigmentation (Cafe au lait spots, vitiligo)
  - Rash (vesicular, papular, maculopapular, petechial)
  - Hypertrichosis
  - Vessels (Superficial veins, spider angioma, hemangioma)

AUSCULTATION

- Should be done before palpation and percussion
- Each of the abdominal quadrants should be oscultated , at least for 1 minutes
- Normal: 4-6 movements/minute
- Absent bowel sounds➔Paralytic ileus, after abdominal surgery
- Increased bowel sounds➔ Gastroenteritis, mechanical ileus (proximal of the obstruction)

AUSCULTATION

- Venous hum
  - Re-opening of umblical-paraumblical veins in portal hypertension (peri-umblical)

  (Cruveilhier Baumgarten syndrome)

- Arterial murmur
  - Aorta
  - Renal
  - Mesenteric
  - Illiac

PALPATION

- **Abdominal wall muscles** must be **relaxed** for palpation to be effective
- Begin palpation ➔
  - Far away from the painful area
  - From the most peripheral sites (inguinal region)

•It should be done by placing the fingertips and palm on the abdomen

•Don’t push down too much, it may hurt

•All quadrants must be palpated systemetically

•Look at the child’s face to assess **tenderness.**

•You can do both light and deep palpaption

Palpation

- **Light palpation reveals;**
  - Skin lesions
  - Pain+/-
  - Tenderness +/-
  - Mass +/-

- **Deep palpation reveals;**
  - Pain +/-
  - Tenderness +/-
  - Mass +/-
  - Organ palpation

Palpation

- Skin lesions
  - Lipoma, cyst, fibrom, abcess
- Abdominal wall defects
  - Diastasis recti
  - Hernias
- Organomegaly (liver, kidneys, spleen)
- Intestinal loops
- Abdominal mass
- Urinary bladder (if it is full)

- Muscular defense (abdominal guarding) It may be voluntary or involuntary
  - In crying child palpate when the child pauses to cry while breathing
  - If there is involuntary defense we can tell the older children flex their hips 45 degrees and the knees 90 degrees
- Tenderness
  - Local/ diffuse
- Rebound tenderness
- Rigidity
- Pulsation
- Ascites

PALPATION

- Liver may be palpable below the right costal margin on the midclavicular line
  - 2-3 cm. in newborns
  - 1-2 cm. in infants

- A normal liver➔ soft and blunt

  ➔no tenderness

- In cirrhosis liver is firm and sharped margin.

PALPATION

- Spleen
  - Shouldn’t be palpated in infants and children.
  - May be palpable below the left costal margin on the midclavicular line up to 1 cm. in newborns

PALPATION

- Bimanuel examination
  - Place one hand on the back of the patient to the flank area and push anteriorly, place other hand on the anterior wall and try to palpate the organs or mass between two hands

We can palpate➔

- Abdominal masses
- Kidneys
  - Normally non- palpable (except very thin newborns)
  - Polycystic renal disease, renal tumours, multicystic renal disease

PALPATION

- Urine bladder
  - Normally non-palpable
  - May be palpable on the symphisis pubis as a elastic ball if it is full.

- Ovarian tm/teratoma
  - Palpable mass in lower quadrants

PALPATION

Sensetion de flot (sansasyon de flu)

- With an assistant placing the ulnar surface of her hand firmly to the midline of the patient's abdomen
- Tap from one side to feel the wave other side

Ballottement

- A flicking motion of the hand or fingers on the abdominal wall just like dribbling a basketball.
- We can detect or examine a floating object in the body, such as enlarged spleen or abdominal masses in the ascites fluid

PALPATION

- Clapotage
  - The splashing feeling on tubulary organs such as stomach and intestine due to mixed gas and air.

- Pulsation
  - Abdominal aort aneurysm on midline (+)

PERCUSSION

- Place your left hand under the xhiphoid process, and begin percussion by tapping with the middle finger of right hand to the middle finger of left hand.
- Below the xhipoid process, percute through the midline till the symphysis pubis.
- Then percute right and left quadrants, included liver and spleen area
- Percute all quadrants of the abdomen downwardly.
- Normally ➔Tympanic sound

PERCUSSION

- A protuberant abdomen with bulging flanks
- If the percussion is tympanic on the upper abdomen changes to dullness ascites should be considered, with an upward concavity.

- If there is a downward concavity dullness on the lower abdomen, it may be due to pelvic mass or pregnancy.

•Shifting dullness

•Roll the patient to one-side, wait 30 seconds

•Percute the abdomen again

•In the presence of ascites, the fluid and so the dullness will shift to the downwards.

PERCUSSION

Liver

- Percuss downward from the chest to the abdomen in the right midclavicular line to detect the top and lower edge of the liver

- Normally;
  - Resonant above 4.intercostal space (ICS)
  - Slight dullness between 4-5. ICS
  - Dullness ➔6.- 9. ICS

PERCUSSION

Traube's space

- Normally tympanic sound
- Location:
  - Lateral: Left anterior axillary line
  - Inferior: Left costal margin
  - Superior: Horizantal line through xihiphoid
  - (Medial:Midclavicular line)

Dullness over Traube's space

1. Splenomegaly (X3N)
2. Left pleural effusion, ampiem
3. Gastric fundus tumor
4. Left colon flexura tumor
5. After a meal (full stomach)

- Physical examination is very important step in patient evaluation
  - Determines patient status
  - Help in diagnosis
- Please record all of your findings systematically
  - Compare to the previous findings
  - It is very valuable during follow-up