



King Saud University

Collage of Nursing

Medical Surgical Nursing depart

## Application of Health Assessment

NUR 225

### Module Seven

Physical examination of gastrointestinal and urinary system



### **Learning Outcomes:**

**At the end of the session, the student should be able to:**

- 1. Discuss the correct sequence of performing the abdominal examination.**
- 2. Describe the anatomic correlates of the quadrants and nine regions of the abdomen.**
- 3. Differentiate between normal and abnormal findings during application of abdominal examination.**
- 4. Perform a thorough physical assessment of the female urinary system.**
- 5. Differentiate normal and abnormal findings as an outcome of the examination performed;**

## Gastrointestinal examination

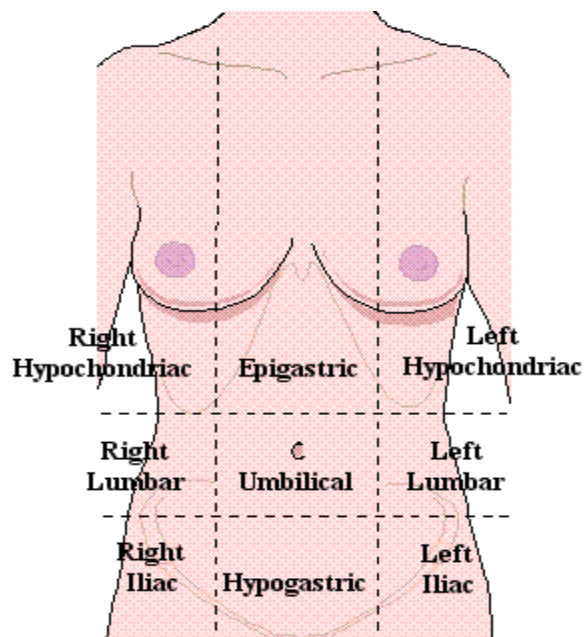
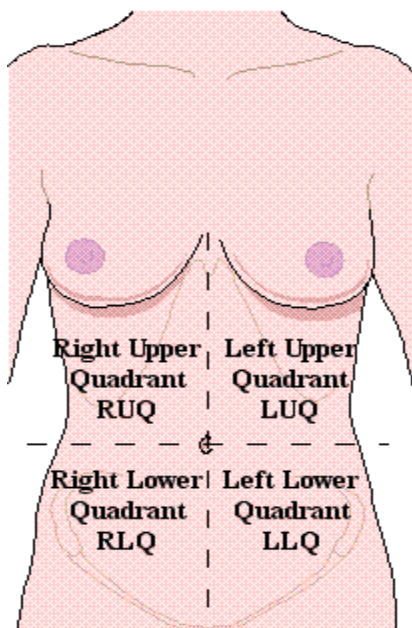
1- Obtain health history related to gastrointestinal disorders

2- **Prepare equipment Needed:**

- ✓ A Stethoscope
- ✓ Small centimeter ruler
- ✓ Marking pen
- ✓ Portable light

3- **In preparation for examination of the abdomen, the patient should:**

- ✓ Have an empty bladder.
- ✓ Should be lying on supine position, knees bent or on pillow and arms at the sides to prevent tensing of the abdominal muscles.
- ✓ Expose the abdomen and drape the genitalia and female breast
- ✓ The examination room must be quiet and warm to perform adequate auscultation and percussion.
- ✓ Warm the stethoscope end piece and your hands to avoid abdominal tensing.
- ✓ Keep your fingernail short.
- ✓ Watch the patient's face for signs of discomfort during the examination.
- ✓ Examine painful areas last to avoid any muscle guarding.
- ✓ Use this sequence of examination; inspection, auscultation, percussion, palpation ( percussion and palpation can change the character of the bowel sound and lead to an inaccurate assessment )
- ✓ The abdominal exam usually begins at the patient's right side and proceeds in a systematic fashion.
  - Right lower Quadrant (RLQ)
  - Right upper quadrant (RUQ)
  - Left Upper Quadrant (LUQ)
  - Left Lower Quadrant (LLQ)



## Gastrointestinal examination

### NORMAL RANGE OF FINDINGS

### ABNORMAL FINDINGS

#### I -Inspection:

##### **Inspect the abdomen for:**

a) Shape and contour of abdomen

Protruding caused by obesity , pregnancy or Ascities ( accumulation of fluid in peritoneal space)

b) Symmetry

Bulges , masses and asymmetric shape

c) Pulsation from aorta beneath the skin in epigastric area

Marked aortic pulsation

d) Peristalsis (wavelike motion)

Marked visible peristalsis

**Inspect skin of abdomen** for color, scar, striae, Lesion & turgor

Pink purple striae – Cushing’s syndrome  
Dilated veins – inferior vena cava obstruction  
Poor turgor.

**-Inspect umbilicus** for shape, location, signs of inflammation, viscera through abnormal opening muscle wall

Hernia ( protrusion of abdominal)

##### **Inspect kidney and bladder**

-Inspect skin color, shape, swelling, lesions, bulging or mass, scars.

Presence of bulging or mass

- Skin should be free of lesions and swelling

#### II. Auscultation

##### **Auscultate the abdomen for bowel sounds.**

Be sure to auscultate before palpating and percussing the abdomen so that the presence of bowel sound or pain is not altered.

Listen for bowel sounds in all four quadrants

Bowel sounds are heard as high pitched, gurgling, irregular sounds as fluid is moving away from one area to another.

Use the diaphragm of the stethoscope and press lightly. Listen in a systematic progression, such as from (RLQ) to (RUQ) to (LUQ) to (LLQ) and finally

Normal bowel sounds are harsh and high pitched occurring irregularly 5-34 times/minute.

Note the character and frequency of bowel sound. (Hyperactive, hypoactive, absent).

Hyperactive bowel sounds (Increased bowel sounds) can sometimes be heard even without a stethoscope. Hyperactive bowel sounds mean there is an increased in intestinal activity.

Hypoactive bowel sounds are normal during sleep and also occur normally for a short time after the use of certain medications and after abdominal surgery.

Decreased or absent bowel sounds occur with mechanical obstruction or paralytic ileus as well as with peritonitis and bowel obstruction.

#### **Auscultate the abdomen for arterial and venous vascular sounds.**

Listen with the bell of the stethoscope. Listen over aorta and renal, iliac and femoral arteries of bruits.

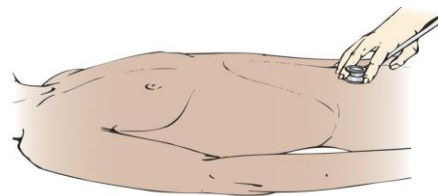
They make “swishing sounds” occur during systole, and are continuous regardless of the client’s position.

Also listen with the bell over the epigastric region and around the umbilicus for a venous hum, a soft low –pitched and continuous sound.

Normally vascular sounds are not heard.

Bowel sounds should be noted every 5 to 15 seconds. The duration of a single bowel sound may range from 1 second to several seconds. The sound are high pitched gurgles or clicks, although this varies greatly.

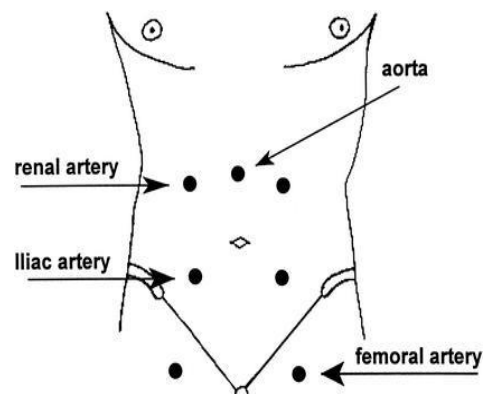
Audible sounds produced by hyperactive peristalsis is termed borborygmi, and create rumbling, gurgling, and high-pitched tinkling sounds. This can sometimes occur with diarrhea and after eating. Very high-pitched bowel sounds may be a sign of early bowel obstruction.



A bruit indicates a turbulent blood flow caused by narrowing of a blood vessel.

Bruits over the aorta suggest an aneurysm.

Two sound patterns may indicate renal arterial stenosis: soft, medium-to low-pitched murmurs heard over the upper midline or toward the flank or epigastric bruits that radiate laterally.



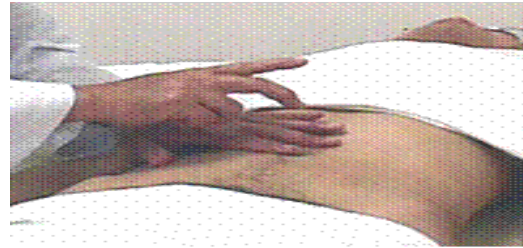
### III- Percussion

#### A) Percuss the abdomen for tones.

Percuss all quadrants for tones, using indirect percussion to assess density of abdominal contents, size, location of abdominal organ, air or fluid in abdomen – stomach – bowel.

**Use:** Direct Percussion, Indirect Percussion, clockwise direction, start from RUQ to remaining of 4 quadrants.

- Percuss in each quadrant for tympany.
- The suprapubic area may be dull when the urinary bladder is distended.
- Hear:
  - Tympany for empty stomach and bowel
  - Dullness for solid organs (liver and spleen)



Tympany is the most common percussion tone heard and is due to the presence of gas.

Note any marked dullness in a localized area that may indicate an abdominal mass.

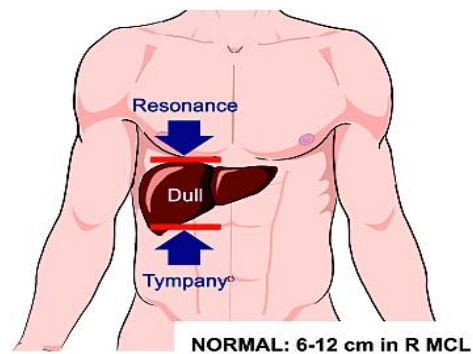
#### B) Percuss the liver to determine span and descent.

To estimate the size of the liver, follow the percussion pattern shown here.

**1. Beginning below** the level of the umbilicus at the right midclavicular line (RMCL), percuss upward until the tone changes from a tympany to a dull percussion tone indicating the liver border. Mark the border with a pen. The lower border is usually at the costal margin or slightly below it.

**2. Beginning over** the lung in the RMCL, percuss the intercostal spaces downward until the tone changes from resonant to dull indicating the upper liver border. Mark the location with a pen. The upper border usually begins in the 5<sup>th</sup> to 7<sup>th</sup> intercostal space.

3. Measure the span between the two lines using a ruler or tape measure to estimate the mid clavicular liver span.



4. To assess the liver descent, as the client to take a deep breath and hold it, then percuss upward from the stomach to the RMCL.

**Normally,**

The mid clavicular liver span is 2.5 to 4.5 inches (6 to 12 cm).

Liver span correlates with body size and gender, large people and men tend to have larger spans.

The lower border of the liver should descend downward 0.75 to 1.25 inches (2-3 cm.).

**C) Assess The Abdomen For Fluid.**

If fluid is suspected within the abdomen, perform the following test:

**Shifting fluid dullness:**

This maneuver is performed with the patient supine, so that any fluid pools in the lateral (flank) area.

Percuss over the umbilical and directed to flanks, point the area transition from tympany to dullness noted.

The patient then is rolled on his/her side away from the examiner, and percussion from the umbilicus to flank area is repeated.

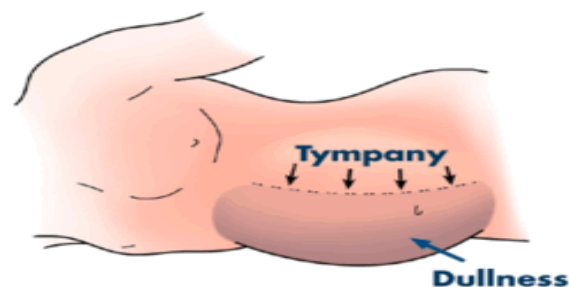
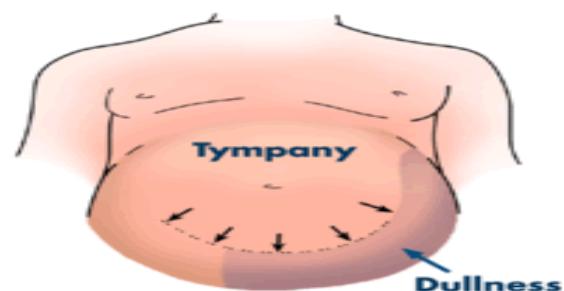
Positive test: When ascites is present, the area of dullness will shift to the dependent site. The area of tympany will shift toward the top.

when the lower border of the liver exceeds 0.75 to 1.25 inches (2.3cm) below the costal margin, this indicates an enlarged liver (hepatomegaly), which is associated with cirrhosis and hepatitis.

when dullness extends above the 5<sup>th</sup> intercostal space, it indicating hepatomegaly.

clients with COPD (Chronic Obstructive Pulmonary Disease) may have flat diaphragm. Which

makes percussion of the upper border of the liver difficult.



Movement of dullness as the client shifts position reflects the shift of fluid in the peritoneal cavity (ascites).

#### **D) Kidney Percussion:**

Place the palm of your non-dominant hand over costovertebral angle. Strike the ball of that hand with the ulnar surface of your other hand. Ask the patient about pain

Patient will normally feel the thud but no pain



Sharp pain occurs

#### **E) Bladder Percussion**

Ask the patient to empty the bladder first.

Place patient in a supine position.

Start at the symphysis pubis and percuss upward toward the bladder and over it

You should hear tympanic sound



Full bladder produce dull sound

### **IV- Palpation of abdomen**

#### **A. Light Palpation:**

**Palpate the abdomen lightly for tenderness, muscle tone and surface characteristics.**

1. Palpate all quadrants of the abdomen. Use the Gentle horizontal dipping motion with pads of the fingertips to depress the abdomen 1 to 2 cm. Have the patient supine with knees slightly flexed.

\* No tenderness should be present and the abdominal muscles should be relaxed.

\* Note consistent tension as you move across the smooth surface.

\* When the client has abdominal pain, palpate over the area of pain last.



\* Note any cutaneous tenderness or hypersensitivity.

\* Note any superficial masses or localized areas of rigidity or increased tension. Rigidity is associated with peritoneal irritation and may be diffuse or localized.

#### **B) Deep Palpation**

**Palpate the abdomen deeply for tenderness, masses and aortic pulsation.**

1. Palpate all quadrants.

2. Use either the distal flat portions of the finger pads and gradually and deeply 4 to 6 cm into the palpation area, or use a bimanual technique, with the lower hand resting lightly on the surface and





the upper hand exerting pressure for deep palpation.

3. Observe for facial grimaces during palpation that may indicate areas of tenderness.
4. Ask the client to breathe slowly through the mouth to facilitate muscle relaxation.
5. When the client has abdominal pain palpate over the area of pain last.
6. The aorta is often palpable at the epigastrium, as well as above and slightly to the left of the umbilicus.
7. Palpate for location, shape, size, consistency, mass, tenderness, mobility and vibration.

Note any pain that is present in local or generalized areas.

The client may respond to pain by using muscle guarding, facial grimaces or pulling away from the nurse.

Abnormal findings include masses that descent during inspiration, lateral pulsatile masses (abdominal aortic aneurysm), laterally mobile masses and fixed masses.

### **Palpate The Liver For Lower Border And Tenderness.**

**To palpate the liver.**

**Begins by placing the left hand under the 11<sup>th</sup> and 12<sup>th</sup> ribs to lift the liver closer to the abdominal wall.**

**Place your right hand parallel to the right costal margin and press down and under the costal margin .**

**Ask the client to take some deep breathe. The border and contour of the liver are often not palpable.**

**The liver may “bump” against the right fingers during inspiration, especially in thin clients.**

**No tenderness should be present.**



A very enlarged liver may lie under the nurse's hand as it extends downward into the abdominal cavity.

Note any irregular surfaces or edges, as well as any tenderness.

The client may complain of pain when taking a deep breath during this assessment.



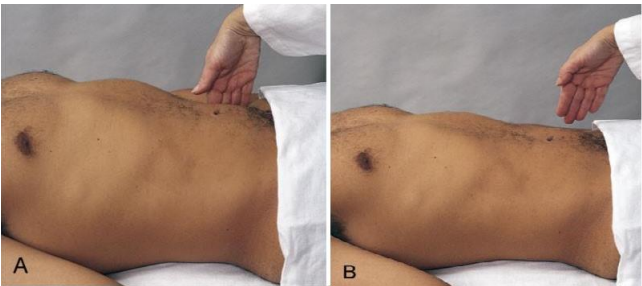
### **Palpation of spleen**

**Palpate the spleen for border and tenderness.**

Use your left hand to lift the lower rib cage and flank.

Press down just below the left costal margin with your right hand.



<p>Ask the patient to take a deep breath.</p> <p>The spleen is <b>not</b> normally palpable on most individuals.</p>	<p>A palpable spleen will feel like a firm mass that bumps against the nurse's fingers.</p> <p>Spleen tenderness may indicate infection or trauma.</p>
<p><b><u>Palpation of Kidney:</u></b></p> <p>palpate for the right kidney by placing your nondominant hand below the client's right flank</p> <p>place dominant hand above the kidney pole and apply pressure. Press the two hands together firmly and ask the person to take a deep breath</p> <p>Repeat procedure over the left kidney</p> <p>Normally You will feel the lower end of the right kidney as a smooth round mass</p>	 <p>Enlarged, hydronephrosis, cysts or tumors</p>
<p><b><u>Palpation of Bladder:</u></b></p> <p>If the bladder is full, you will feel it</p> <p>Use the fingers of one hand to palpate the lower abdomen in a light dipping motion.</p> <p>Normally A distended bladder will feel firm and smooth</p>	 <p>Mass or tumors</p>
<p><b><u>Rebound Tenderness</u></b></p> <p>-It is performed if the client reports abdominal pain or if tenderness was detected during palpation</p> <p>-This is a test for peritoneal irritation or peritonitis</p> <p>-Choose a site away from the painful area , Press deeply with fingertips vertically on the abdomen and release pressure completely while keeping fingertips in contact with skin.</p> <p>-Ask client about pain induced any area in the abdomen.</p>	

### Obturator Sign

- This is a test for appendicitis.  
Increased abdominal pain indicates a positive obturator sign
- Raise the patient's right leg with the knee flexed.
- Rotate the leg internally at the hip.



Pain in the hypogastric region is a positive Sign indicating irritation of the obturator muscle Which may be caused by a ruptured appendix or Pelvic abscess.

**Quick Quiz**  
**Gastrointestinal System**

Name.....Mark.....

**Test Your Knowledge!**

1. Bowel sounds can be irregular  
a. True                      b. False
2. The nurse must listen for 5 minutes before deciding bowel sounds are completely absent:  
a. True                      b. False
3. The sigmoid colon is located in the right lower quadrant  
a. True                      b. False
- 4- Bowel sounds should be heard in all four quadrants  
a. True                      b. False
- 5-Negative obturator sign is indicated of appendicitis:  
a.True                      b.False
- 6- To test deep ballotement the finger tips of nurse must keep in vertical position:  
a.True                      b.False
7. What is the preferred order for examination of the abdomen?  
a. inspection, auscultation, palpation, percussion  
b. inspection, auscultation, percussion, palpation  
c. auscultation, inspection , palpation, percussion  
d. auscultation, inspection, percussion, palpation.
8. List the 9 regions of the abdomen  
a.....                      b.....  
c.....                      d.....  
e.....                      f.....  
g.....                      h.....  
i.....
- 9.. List the 4 regions of the abdomen.  
a.....                      b.....  
c.....                      d.....
10. Hematuria define as.....

## **Attachments**

### **Box 1 – Anatomic Correlates of the Quadrants of the Abdomen**

<b><u>Right Upper Quadrant (RUQ)</u></b> <ul style="list-style-type: none"><li>• Liver and gallbladder</li><li>• Pylorus</li><li>• Duodenum</li><li>• Head of pancreas</li><li>• Right adrenal gland</li><li>• Portion of right kidney</li><li>• Portions of ascending and transverse colon</li></ul>	<b><u>Left Upper Quadrant (LUQ)</u></b> <ul style="list-style-type: none"><li>• Left lobe of liver</li><li>• Spleen</li><li>• Stomach</li><li>• Body of pancreas</li><li>• Left adrenal gland</li><li>• Portion of left kidney</li><li>• Portions of transverse and descending colon</li></ul>
<b><u>Right Lower Quadrant RLQ)</u></b> <ul style="list-style-type: none"><li>• Lower pole of right kidney</li><li>• Cecum and appendix</li><li>• Portion of ascending colon</li><li>• Bladder (if distended)</li><li>• Right ureter</li><li>• Right ovary and salpinx</li><li>• Uterus (if enlarge)</li><li>• Right spermatic cord</li></ul>	<b><u>Left Lower Quadrant (LLQ)</u></b> <ul style="list-style-type: none"><li>• Lower pole of left kidney</li><li>• Sigmoid colon</li><li>• Portion of descending colon</li><li>• Bladder if distended</li><li>• Left ureter</li><li>• Left ovary and salpinx</li><li>• Uterus if enlarged</li><li>• Left spermatic cord</li></ul>

## Box 2 – Anatomic Correlates of the Nine (9) Regions of the Abdomen

<u><b>Right Hypochondriac</b></u> <ul style="list-style-type: none"> <li>• Right lobe of liver</li> <li>• Portion of gallbladder</li> <li>• Portion of duodenum</li> <li>• Portion of right kidney</li> <li>• Right adrenal gland</li> </ul>	<u><b>Epigastric</b></u> <ul style="list-style-type: none"> <li>• Pyloric end of stomach</li> <li>• Duodenum</li> <li>• Pancreas</li> <li>• Portion of liver</li> <li>• Portion of gallbladder</li> </ul>	<u><b>Left Hypochondriac</b></u> <ul style="list-style-type: none"> <li>• Stomach</li> <li>• Spleen</li> <li>• Tail of pancreas</li> <li>• Upper pole of left kidney</li> <li>• Left adrenal gland</li> </ul>
<u><b>Right Lumbar</b></u> <ul style="list-style-type: none"> <li>• Ascending colon</li> <li>• Lower half of right kidney</li> <li>• Portion of duodenum and jejunum</li> </ul>	<u><b>Umbilical</b></u> <ul style="list-style-type: none"> <li>• Lower duodenum</li> <li>• Jejunum and ileum</li> <li>• Transverse colon</li> </ul>	<u><b>Left lumbar</b></u> <ul style="list-style-type: none"> <li>• Descending colon</li> <li>• Lower half of left kidney</li> <li>• Portion of jejunum and ileum</li> </ul>
<u><b>Right Iliac</b></u> <ul style="list-style-type: none"> <li>• Cecum</li> <li>• Appendix</li> <li>• Ileum (lower end)</li> <li>• Right ureter</li> <li>• Right spermatic cord</li> <li>• Right ovary</li> </ul>	<u><b>Hypogastric</b></u> <ul style="list-style-type: none"> <li>• Ileum</li> <li>• Bladder</li> <li>• Uterus (in pregnancy)</li> </ul>	<u><b>Left Iliac</b></u> <ul style="list-style-type: none"> <li>• Sigmoid colon</li> <li>• Left ureter</li> <li>• Left spermatic cord</li> <li>• Left ovary</li> </ul>

## Box 3 – definitions of urinary Abnormal findings

- **Polyuria**: Increase volume of urine voided more than 2,500 ml of urine daily.
- **Oliguria**: Urine out put less than 400ml/day
- **Anuria**: Urine out put less than 50ml/day
- **-Urinary frequency**: An increased urge to urinate more than every 3 hours
- **-urgency**: Strong desire to urinate
- **-Hesitancy**: Delay or difficulty in initiating voiding.
- **-Nocturia**: Excessive urination at night,
- **Dysuria**: Painful or difficulty voiding
- **Incontinence**: Involuntary loss of urine
- **Enuresis**: Involuntary voiding during sleep
- **-Hematuria**: Red blood cells in the urine.
- **Proteinuria**: Abnormal amounts of protein in the urine
- **Pyuria**: Presence of pus in urine



King Saud University  
College of Nursing  
Medical Surgical Nursing

Application of Health Assessment  
NURS 225

PERFORMANCE CHECKLIST  
**Abdominal Assessment**

Student name.....Student Number.....

Performance Criteria	Competency Level					
	Trial 1			Trial 2		Comment
	Done Correctly (2)	Done with Assistance (1)	Not done (0)	Competent	Not competent	
ABDOMEN History Taking. Obtain health history r/t GI problems <ul style="list-style-type: none"><li>• Appetite- Anorexia</li><li>• Weight loss</li><li>• Heartburn</li><li>• Excessive gas or flatus</li><li>• Regurgitation</li><li>• Vomiting- amount, type of vomit, color</li><li>• Abdominal pain and its characteristic</li><li>• Medical problems related to the abdomen- ex: Hepatitis, gallbladder problems, or pancreatitis.</li><li>• Surgeries of the abdomen</li><li>• Use of tobacco, alcohol and illegal drugs</li><li>• Hereditary disorders affecting the abdomen</li><li>• Bowel movements, and urination</li></ul>						
History Taking about bowel movements, and urination. <ul style="list-style-type: none"><li>• Frequency</li><li>• Consistency</li><li>• Pain</li><li>• Color</li><li>• Difficulty</li></ul>						
History Taking about <ul style="list-style-type: none"><li>• Urine Color Changes .</li><li>• Voiding pattern changes: hesitancy, frequency, urgency, nocturia and incontinence</li></ul>						

Prepare required equipment.						
Explain procedure.						
Prepare Client <ul style="list-style-type: none"> <li>✓ The patient should have an empty bladder.</li> <li>✓ The patient should be lying on supine position, knees bent or on pillow and arms at the sides .</li> <li>✓ Expose the abdomen and drape the genitalia and female breast</li> <li>✓ The examination room must be quiet and warm to perform adequate auscultation and percussion.</li> <li>✓ Warm the stethoscope end piece and your hands to avoid abdominal tensing</li> <li>✓ Keep your fingernail short</li> <li>✓ Watch the patient's face for signs of discomfort during the examination</li> <li>• Examine painful areas last to avoid any muscle guarding</li> </ul>						
Instruct client appropriately						
<b>ABDOMINAL EXAMINATION</b>						
<b>INSPECTION</b>						
1. Scars, striae, stretch marks 2. Rashes or lesions 3. Umbilicus for shape, location , signs of inflammation, hernia 4. Shape and contour 5. Symmetry 6. Peristalsis (wavelike motion) 7. Pulsations from aorta beneath the skin in epigastric area. 8. Inspect skin above the kidney and bladder For color, shape, swelling, lesions, bulding or mass, scars						
<b>AUSCUTATION</b>						
1. Bowel sound by using diaphragm of stethoscope						
2. Bruits over the renal arteries, iliac arteries and aorta- by using diaphragm of stethoscope.						



## PERCUSSION

1. Percuss the 4 quadrants
2. Tympany (gastric bubble)
3. Dullness (over) the liver and spleen or a mass)
4. Measure liver size in the right midclavicular line (6-12 cm).

### **Bladder Percussion**

5. Ask the patient to empty the bladder first.
6. Place patient in a supine position.
7. Start at the symphysis pubis and percuss upward toward the bladder and over it .

### **Kidney Percussion:**

8. Assist client in a sitting position
9. Place the palm of your non-dominant hand over costovertebral angle. Strike the ball of that hand with the ulnar surface of your other hand. Ask the patient about pain.

## PALPATION

1. Light Palpation- to assess any superficial organs or masses or tenderness

2. Deep Palpation- to assess any superficial organs or masses or tenderness

3. Liver Palpation (Standard technique)

4. Spleen Palpation

5. **Kidney palpation**

- palpate for the right kidney by placing your nondominant hand below the client's right flank.
- place dominant hand above the kidney pole and apply pressure. Press the two hands together firmly and ask the person to take a deep breath.
- Repeat procedure over the left kidney

6. <b><u>Bladder Palpation:</u></b> - Use the fingers of one hand to palpate the lower abdomen in a light dipping motion.						
<b>ABDOMEN-SPECIAL NEEDS</b>						
1. <b>Shifting dullness</b> <ul style="list-style-type: none"> <li>Percuss the client's abdomen to outline areas of dullness and tympany</li> <li>Position the client on the right or left side.</li> <li>Percuss and again outline areas of dullness and tympany</li> <li>Discuss findings.</li> </ul>						
2. <b>Rebound Tenderness</b> <ul style="list-style-type: none"> <li>Press deeply with your hand (at a 90 – degree angle) away from the painful area</li> <li>Quickly release pressure</li> <li>Discuss findings.</li> </ul>						
3. <b>Obturator Sign</b> <ul style="list-style-type: none"> <li>Raise the client's right leg with the knee flexed.</li> <li>Rotate the leg internally at the hip</li> <li>Discuss findings.</li> </ul>						

Evaluated by: \_\_\_\_\_ Signature \_\_\_\_\_ Total Grade- \_\_\_\_\_

