# ADVANCED ASSESSMENT
# Abdomen

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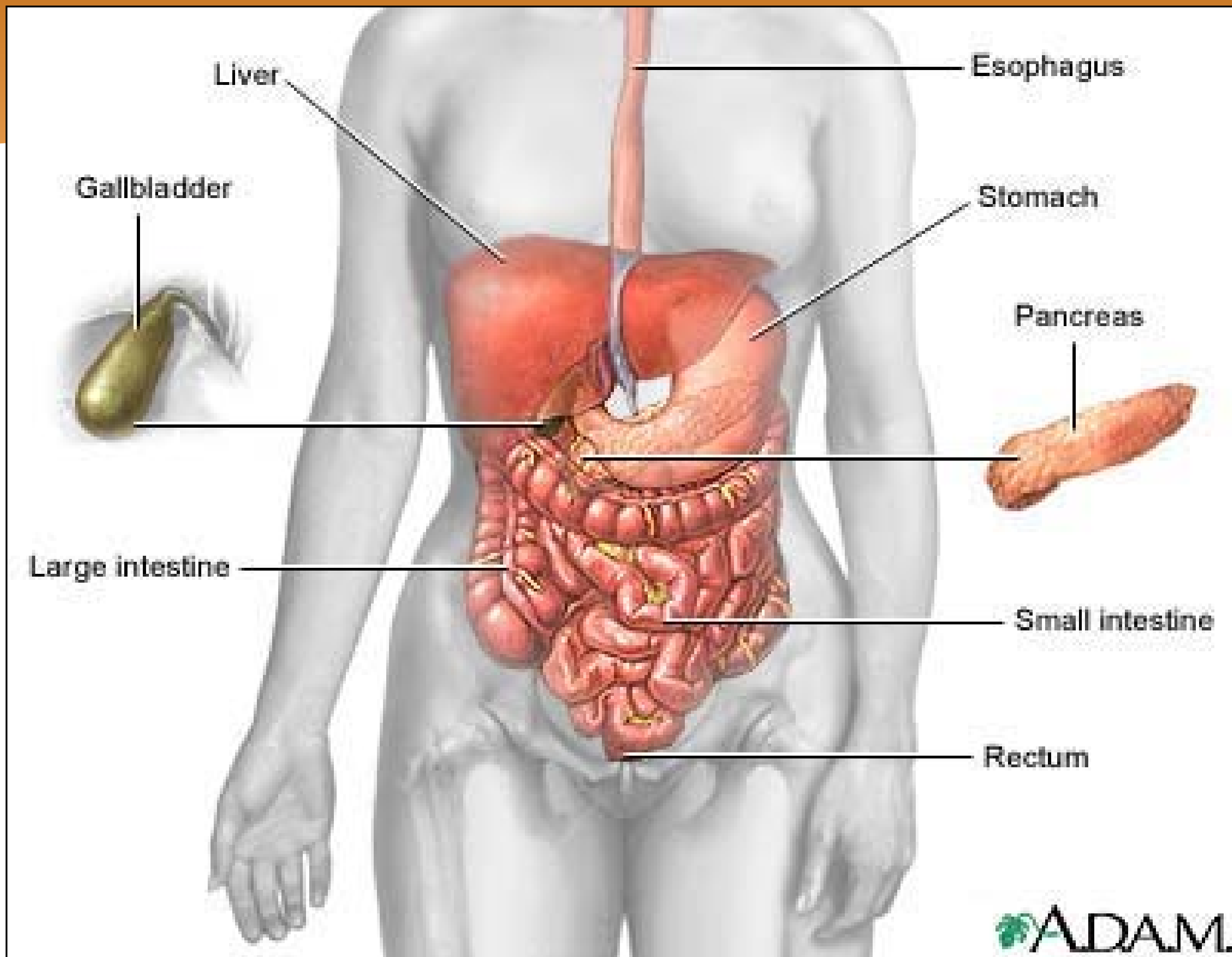
# Introduction

- why assess the abdomen in the prehospital setting?
- abdominal pain accounts for up 10% of emergency visits (Hamilton, 2003)
- 15-30% of patients with an acute abdomen will require a surgical procedure


Liver
Esophagus
Gallbladder
Stomach
Pancreas
Large intestine
Small intestine
Rectum
A.D.A.M.

# Anatomy

- Gastrointestinal system involves the esophagus ,stomach, small and large intestines
- They work with the pancreas liver and gallbladder to convert nutrients from food into energy.
- Waste is then excreted.

# Anatomy - 4 Quadrant System

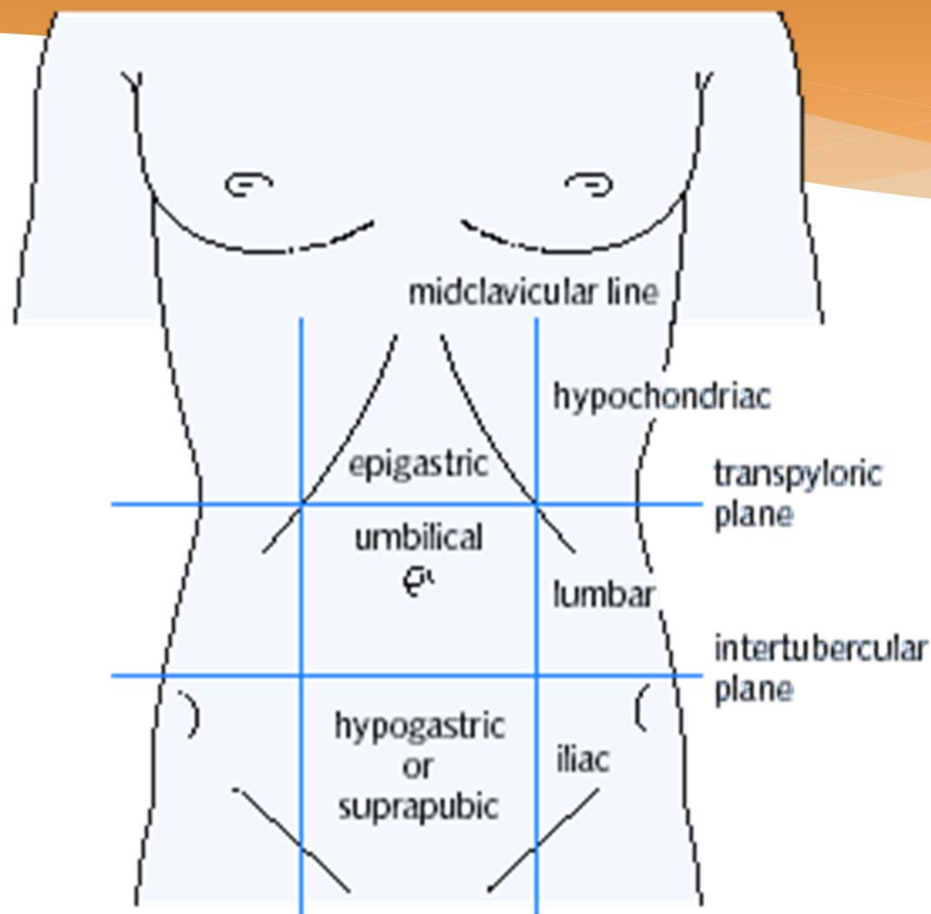
| Right Upper Quadrant (RUQ) | Left Upper Quadrant (LUQ) |
| --- | --- |
| ◆ diaphragm<br>◆ liver<br>◆ gallbladder<br>◆ kidney<br>◆ Hepatic flexure -large colon<br>◆ small intestine | ◆ spleen<br>◆ kidney<br>◆ pancreas<br>◆ stomach<br>◆ Splenic Flexure –large colon<br>◆ small intestine |
| **Right Lower Quadrant (RLQ)** | **Left Lower Quadrant (LLQ)** |
| ◆ appendix<br>◆ large ascending colon<br>◆ ovary<br>◆ uterus<br>◆ bladder<br>◆ small intestine | ◆ descending colon<br>◆ ovary<br>◆ uterus<br>◆ bladder<br>◆ small intestine |

# Anatomy - 9 Quadrant System

| | | |
|---|---|---|
| Right Hypochondriac | Epigastric | Left Hypochondriac |
| Right Lumbar | Umbilical | Left Lumbar |
| Right Iliac | Hypogastric (suprapubic) | Left Iliac |

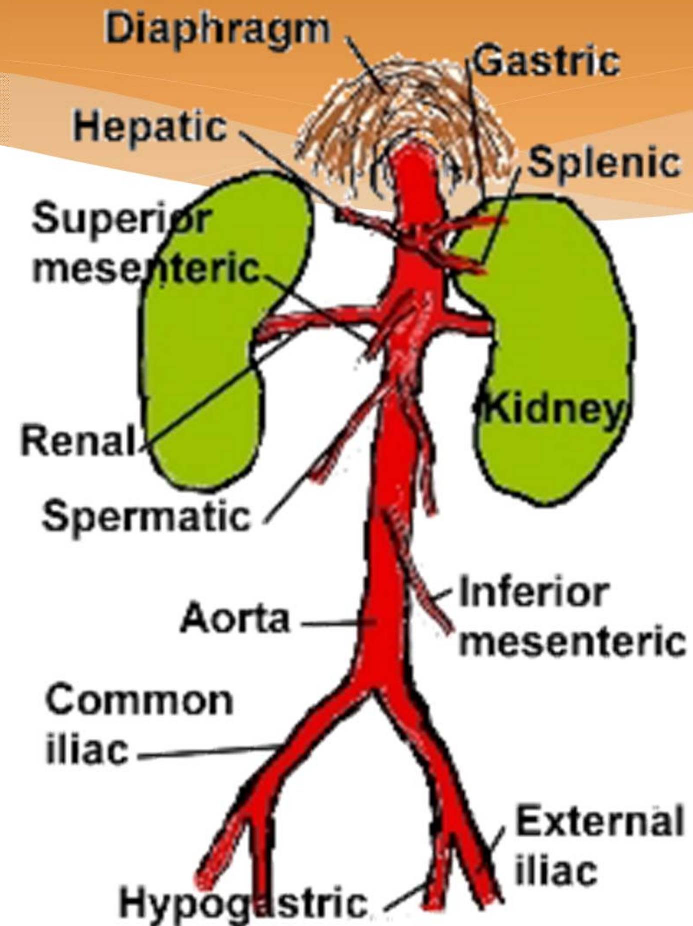
*See graphic on next slide*

# Anatomy - 9 Quadrant System



# Anatomy of Abdominal vessels

- The descending aorta runs through the abdomen
- The hepatic artery branches off and supplies the liver
- The mesenteric artery branches off and supplies the stomach and intestines



# Neuroanatomy of abdominal pain

**Visceral**

- stimulated by distension, inflammation and/or ischemia
- stretch receptors in the walls and capsules of hollow organs (i.e. gallbladder and intestines) and solid organs (i.e. spleen and liver)
- dull, achy, cramping or gassy pain
- generally localized to the epigastrium , periumbilical or suprapubic area
- comes and goes
- presents with nausea and vomiting, diaphoresis and tachycardia

# Neuroanatomy of abdominal pain

**Somatic / parietal**

- also known as parietal
- constant and localized
- knife like with increased pain on movement
- presents with guarding and lying on side or back with legs up
- usually caused from bacterial or chemical irritation of nerves

# Neuroanatomy of abdominal pain

**Referred**

- Pain located nowhere near where the affected organ is
- Due to neurons that share the same pathway
- "Kehr's" sign is shoulder pain associated with abdominal pain.
- Back pain is also a common occurrence with abdominal pain

# Assessment of Abdominal pain
# O-P-Q-R-S-T

## ONSET

- rapid onset of severe pain is more consistent with a vascular catastrophe, passage of a ureteral or gallbladder stone, torsion of the testes or ovaries, rupture of a hollow, viscous, ovarian cyst, or ectopic pregnancy
- slower onset is more typical of an inflammatory process such as appendicitis or cholecystitis

# Assessment of Abdominal pain O-P-Q-R-S-T

## Provokes / palliates

- pain provoked/aggravated by movement, such as hitting bumps on the road or walking is typical of somatic (parietal) peritoneal pain such as that seen in pelvic inflammatory disease or appendicitis
- eating often relieves ulcer related pain
- eating exacerbates biliary colic – especially fatty foods (usually 1-4 hours following a meal)
- Pancreatitis is palliated (relieved) by curling up in a fetal position
- frequent movement or writhing in pain is more typical of renal colic

# Assessment of Abdominal pain
# O-P-Q-R-S-T

## Quality

- dull, achy or crampy is more likely to be visceral
- sharp, stabbing pain is more likely to be somatic or peritoneal
- severe tearing pain is classic of dissecting aneurysm

# Assessment of Abdominal pain
# O-P-Q-R-S-T

## Region / radiation

- location of pain can vary with time
- periumbilical pain that migrates to the right lower quadrant is classic of appendicitis
- epigastric pain localizing to the right upper quadrant for several hours is typical of cholecystitis

# Assessment of Abdominal pain
# O-P-Q-R-S-T

## Severity

- the patient's quantification of severity of pain is generally unreliable for distinguishing the benign from the life-threatening
- assigning a 1-10 pain scale rating does however allow for a baseline to gauge the patient's response to treatment
- pain that increases in severity over time suggests a surgical condition
- Severe epigastric or mid-abdominal pain out of proportion to physical findings is classic for mesenteric ischemia or Pancreatitis

# Assessment of Abdominal pain O-P-Q-R-S-T

## Timing

- crampy pain that comes in waves is generally associated with obstruction of a viscous
- constant pain has a worse diagnostic outcome

# Associated signs & symptoms

**Nausea & vomiting (N/V)**

- N/V generally associated with visceral disorder
- excessive vomiting should raise suspicion of a bowel obstruction or Pancreatitis
- lack of vomiting is common in uterine or ovarian disorders
- pain present before vomiting is more likely caused by a disorder that will require surgery
- vomiting that precedes Abdo pain is more likely a gastroenteritis or other non-surgical condition

# Associated signs & symptoms

**Urgency to defecate**

may suggest…

- intra-abdominal bleeding
- inflammation/irritation in the recto sigmoid area
- ectopic pregnancy
- abdominal aortic aneurysm (AAA)
- retro peritoneal hematoma
- omental vessel hemorrhage

# Associated signs & symptoms

**Anorexia**

- intra-abdominal inflammation
- common in appendicitis

# Associated signs & symptoms

**Change in bowel habits**

- diarrhea with vomiting is almost always associated with gastroenteritis
- diarrhea may occur with Pancreatitis, Diverticulitis and occasionally Appendicitis
- bloody stool indicates GI bleed
- constipation or difficulty passing stool or gas may be due to an ileas (impairment in paristalsis) of bowel obstruction

# Associated signs & symptoms

**Genitourinary symptoms**

- dysurea, urgency and frequency are suggestive of cystitis (inflammation of the bladder), salpingitis, diverticulitis or appendicitis
- Hematurea with pain suggests urinary tract infection, but can also indicate renal colic, prostatitis or cystitis

# Associated signs & symptoms

**Extra-abdominal symptoms**

- myocardial infarction
- pneumonia
- pulmonary embolus

} can present with abdominal pain

# Relevant history

**Past medical history**

- prior abdominal surgery is a common cause of adhesions and can lead to bowel obstruction
  - prior surgery may also help eliminate certain diagnosis – e.g. appendicitis, cholecystitis
  - Diabetes, heart disease, lung disease, liver disease, hypertension, or renal disease increase the risk of abdominal disorders – e.g. HTN is associated with abdominal aortic aneurysm, atrial fibrillation is a common cause of emboli in the mesenteric vessels and can lead to infarction of parts of the GI tract and an ileus or bowel obstruction

# Relevant history

**Medication**

- Corticosteroids and other immunosuppressants alters the response to abdominal pathology – i.e. pain less severe or absent. Fever may be absent
- antibiotics may cause GI discomfort and diarrhea – especially erythromycin and tetracycline
- laxatives, narcotics and psychotropic medication may alter GI motility – e.g. use of codeine can to an ileus, severe constipation or bowel obstruction
- ASA and other NSAIDS can cause gastritis, peptic ulcer and GI bleeding

# Causes of Abdominal Pain

- Mesenteric artery occlusion
  - Mortality rate of 70 – 90%
  - Found in people with heart conditions like atrial fibrillation, atrial flutter and those who have had heart valves replaced
  - Occlusion causes ischemia and pain out of proportion to their appearance

# Causes of Abdominal Pain

- Appendicitis
  - Most common abdominal emergency
  - Caused by viral or bacterial infection or obstruction
  - Becomes gangrenous and ruptures
  - Early onset presents as visceral pain
  - Later presentation is somatic, intense and localized to “McBurney’s Point”  (RLQ just inside the iliac crest)

# Causes of Abdominal Pain

- Abdominal Aortic Aneurysm
  - AAA
  - Usually found between the bottom of the renal arteries and the top of the iliac arteries
  - Affects more men then women
  - Usually over 50 years old
  - Tearing ripping pain through to the back
  - Look for a pulsating mass

# Causes of Abdominal Pain

- Epigastric pain
  - Gastro-esophageal reflux (heart burn) is caused from the back up of stomach acid into the esophagus
  - Peptic ulcers may be the cause.  This is when there is a break in the lining of the esophagus or the stomach
  - Gnawing or burning feeling
  - REMEMBER this can be cardiac related

# Causes of Abdominal Pain

- Bowl Obstruction
  - common in the elderly
  - Intestinal pathway becomes blocked
  - usually a severe onset with nausea and vomiting
  - gassy fecal odour
  - localized cramping pain

# Causes of Abdominal Pain

- Pancreatitis
  - Inflammation of the pancreas due to poor production of digestive enzymes
  - Sharp twisting pain in the LUQ or in the epigastric area radiating to the back
  - Presents with fever, nausea and vomiting, distention and diaphoresis

# Causes of Abdominal Pain

- Gallstones
  - Formed in the gallbladder from cholesterol saturated in bile which then calcifies
  - Sharp pain localized in the RUQ
  - Restless, nausea and vomiting
  - Pain can radiate into back
  - Often have had past occurrences

# Causes of Abdominal Pain

- Gastrointestinal Bleeding
  - Often caused from ruptured esophageal varicies
  - Peptic ulcers
  - Mallory-Weis tear at the esophageal gastric junction from severe retching
  - Rectal abnormalities
  - Presents with frank bright red emesis, coffee ground emesis, melena and bright red stool

# Causes of Abdominal Pain

Ectopic Pregnancy

- assume females of child bearing years with abdominal have an ectopic pregnancy until proven otherwise
- when the fertilized egg implants outside the uterine cavity
- also called a tubal pregnancy
- present with extreme unilateral lower pain – worsened by palpation
- referred pain to shoulder
- usually around 6 weeks
- has menstrual cycle been regular?
- any loss of blood or other coloured fluid?

# Causes of Abdominal Pain

Renal Colic

- presents with sudden severe pain..
- can be flank radiating down to groin
- can be just flank or even just around the back
- Patient writhing in pain..have a yellow/green hue to their skin
- vomiting with the pain
- may have a previous history of the same
- can have blood in the urine..new or ongoing for a couple of days.

# Causes of Abdominal Pain

- Questions to ask
  - Use the mnemonic  OPQRST
  - Is it tender to touch
  - Have they had a fever
  - Any history of the same
  - Are they pregnant (females of course), and which trimester are they in
  - Have they eaten or had anything to drink

# Causes of Abdominal Pain

- Have they eaten anything different
- Any excessive alcohol or drug use
- Any history of hypertension, cardiac or respiratory disease
- What is the position of most comfort
- Any dizziness
- Check for orthostatic vital signs – if patient stable
- If they look sick…….they are.

# Causes of Abdominal Pain

- Look for pulsating masses (don’t press it)
- Are there bowl sounds present
- Look for distal cyanosis
- Tenderness, guarding or distention
- Bowl movements.  Have they been regular or has there been a change (diarrhea or blood)
- Any vaginal bleeding

# Question # 1

A 42 year old has ingested ethyl alcohol 2 hours previous and is now complaining of severe abdominal pain.He seems quite hot to touch and is tachycardic and hypotensive. What is this most likely to be?

| | |
|---|---|
| **A** | gastritis |
| **B** | hernia |
| **C** | peptic ulcer |
| **D** | Pancreatitis |

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## Question # 2

A 24 year old just recovered from “gastroenteritis” however he states that he has severe pain that he pinpoints to being just above his right groin. What would be the most likely cause?

| | |
|---|---|
| **A** | diverticulitis |
| **B** | appendicitis |
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# Question # 3

A 40 year old female is complaining of severe diffuse abdominal pain.  Questions to ask?

**A** last menstrual period?

**B** any problems voiding?

**C** last bowel movement?

**D** all of the above

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A 40 year old female is complaining of severe diffuse abdominal pain. Questions to ask?

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**D** all of the above

# Question # 4

The cause of acute abdominal pain is most accurately assessed in the prehospital setting by which of the following?

**A** abdominal examination

**B** patient history

**C** secondary assessment

**D** vital signs assessment

# Question # 4

The cause of acute abdominal pain is most accurately assessed in the prehospital setting by which of the following?

**B** patient history

RATIONALE: The patient’s age, gender and description of the medical history often reveals more about the abdominal problem that the physical examination of the abdomen. The severity of the patient’s condition is determined by the physical exam.

# Question # 5

Which of the following conditions best describes an open erosion wound in the digestive system that can bleed?

| | |
|---|---|
| **A** | gastritis |
| **B** | hernia |
| **C** | peptic ulcer |
| **D** | abdominal aortic aneurysm |
| **E** | esophageal varicies |

# Question # 5

Which of the following conditions best describes an open erosion wound in the digestive system that can bleed?

| | |
|---|---|
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| E | esophageal varicies |

ONTARIO
BASE HOSPITALS

# Well Done!

Ontario Base Hospital Group

Self-directed Education Program

SORRY,
THAT’S NOT THE CORRECT ANSWER