So tell me a little bit about the abdominal pain that you’ve been experiencing.

Your learning objectives for mastering the abdomen examination are: to inspect for symmetry, scars and striae; to auscultate bowel sounds; percuss the liver and measure its span. You will perform light and deep palpation of the abdomen and palpate the liver edge. You will examine the spleen and assess costovertebral angle tenderness.

You should be skilled at assessing for guarding and rebound tenderness, and be able to listen for and identify abdominal and inguinal bruits.

Health History

Common or concerning symptoms relating to the abdomen and which are specific to gastrointestinal disorders include: indigestion, nausea, vomiting, hematemesis, abdominal pain, dysphagia and odynophagia, change in bowel function, constipation or diarrhea, and jaundice.

Common or concerning symptoms relating to the abdomen and which are specific to urinary and renal disorders include: suprapubic pain; dysuria, urgency, or frequency; hesitancy, decreased stream in males; polyuria or nocturia; urinary incontinence; hematuria; kidney or flank pain; and ureteral colic

Eliciting the patient’s concerns before the examination, makes your examination more efficient and more reassuring to the patient.

Anatomy Review—Abdomen

Before beginning, let’s review the anatomy of the abdomen.

The abdominal wall extends from the rib cage above, to the pelvis and inguinal ligaments below. The rectus abdominus muscles can be identified when the patient raises both head and shoulders from a supine position. Palpation is easier lateral to these muscles.

For descriptive purposes, the abdomen is divided by imaginary lines that cross at the umbilicus. These lines form the right upper, left upper, right lower, and left lower quadrants.

The abdomen may also be divided into nine areas. The three mid-line areas are the epigastric, umbilical, and hypogastric (or suprapubic) areas.
The abdominal cavity extends up under the rib cage to the dome of the diaphragm. Most of the liver and stomach, and usually all of the spleen, are within the abdominal cavity. The normal spleen is mostly posterior to the left midaxillary line.

The abdominal aorta, usually palpable in the upper abdomen, bifurcates into the common iliac arteries below the umbilicus. As the external iliac arteries pass under the inguinal ligaments, they become the femoral arteries.

The intestines fill much of the abdomen.

The sigmoid colon and portions of the transverse and descending colons may be palpable as tubular structures. Except for a pregnant or gravid uterus, or a distended bladder, normal pelvic organs are not detectable through the abdominal wall.

The kidneys lie posteriorly, partly protected by the posterior ribs. The right kidney is slightly lower than the left. To assess for kidney tenderness, locate the costovertebral angles. They are posterior to, and below, the 12th ribs lateral to the vertebrae.

**Examining the Abdomen**

With the patient’s health history in mind, and after good hand hygiene, you are ready to examine the abdomen.

Before you examine the abdomen, make sure that the patient has emptied his bladder. Lower the table flat. Then, ask the patient to lie down and relax.

Expose the supine patient’s lower abdomen by raising the gown to below the nipple line and lowering the drape to the supra pubic level.

Inspect the skin for scars, striae, dilated veins, rashes, or ecchymoses.

Inspect the symmetry and contour of the abdomen. Is it flat, rounded, protuberant, or markedly concave or hollowed? Are there any bulges?

Observe the contour of the umbilicus to look for signs of inflammation or hernias.

Are peristalsis or aortic pulsations visible in the epigastrium?

Warm your hands and your stethoscope. Listen for bowel sounds by placing the diaphragm of the stethoscope gently over each quadrant. Listen to the abdomen before performing percussion because these maneuvers may alter the frequency of bowel sounds.

Occasionally you may hear the normal stomach growling.

If the patient has high blood pressure or atherosclerotic disease, listen in the epigastrium over the aorta...

...then listen over the iliac arteries and the femoral arteries.
Everything sounds fine.

Next, lightly percuss the abdomen to assess the distribution of tympany and dullness. Tympany is a high pitched musical sound that indicates a hollow space filled by air or gas in the stomach or intestine. Dullness suggests fluid or underlying organs like the liver and spleen.

Okay, continue to stay relaxed. Let me know if you feel any tenderness.

Now palpate the four quadrants of the abdomen beginning gently and saving painful areas for last.

With your fingers together, place your hand flat on the abdomen and press using a light dipping motion. Moving smoothly palpate all quadrants identifying any tenderness or increased resistance to your hand.

Observe the patient’s face closely for indications of tenderness or discomfort.

Take some slow, deep breathes for me, please. And just try to relax as much as you can.

If the abdominal muscles are tense, try to relax the patient and palpate gently again. Having the patient flex the knees is often helpful.

Then palpate by pressing more deeply in all four quadrants as you feel for any masses or tenderness, placing one hand on top of the other.

Watch closely for signs of an acute abdomen from inflammation of the parietal peritoneum or peritonitis. Signs include abdominal pain with coughing, rigid or board-like abdomen, guarding, rebound tenderness, and percussion tenderness.

**Examining the Liver**

Percuss the span of the liver. First, locate the midclavicular line. Use a light to moderate percussion strike. Starting at a level below the umbilicus in the right lower quadrant, in an area of tympany, percuss up toward the liver. Identify the lower border of dullness in the midclavicular line.

Next, identify the upper border of liver dullness. Starting at the nipple line, lightly percuss from lung resonance down toward liver dullness. Measure the span of liver dullness between those two points.

The normal liver span in men is shown here. And it is generally greater in men than in women.

To palpate the liver, place your left hand behind the lower thorax, lifting up the 11th and 12th ribs overlying soft tissues. Place your right hand just below the right upper quadrant lateral to the rectus abdominus muscles and well below the lower border of liver dullness.

Breathe deeply for me, please.

Press gently into the abdomen and, as the patient breathes in deeply, try to feel for the liver edge as it moves down to meet your fingertips. If possible, let the liver slip under your finger pads as you feel its anterior surface.
You often need to try again, moving your fingertips closer to the costal margin. The hooking technique may also be helpful.

Standing to the right of the patient’s chest, place the fingers of both hands below the border of liver dullness and press in and up toward the costal margin.

Ask the patient to take another deep breath.

Take another deep breath for me, please.

To assess for tenderness when the liver is not palpable, place your left hand flat on the right lower rib cage and gently strike it with the ulnar surface of your right fist.

Ask the patient to compare the sensation.

Compared to this side.

**Examining the Spleen**

When a spleen enlarges, it expands anteriorly, downward and medially, often replacing the tympany of stomach and colon with the dullness of a solid organ.

It then becomes palpable below the costal margin.

To palpate the spleen to assess its size, reach over and around the patient with your left hand to support the left lower posterior rib cage and overlying structures.

Place your right hand below the left costal margin and press in with your fingers toward the spleen.

Take another deep breath.

When the patient takes a deep breath, try to feel the spleen as it comes down to meet your fingertips. The tip of the spleen is palpable in only 5% of normal adults.

Alternatively, ask the patient to turn onto the right side, with the legs somewhat flexed at the hips. In that position, gravity may bring the spleen forward and to the right into a palpable location.

To help detect splenomegaly, an enlarged spleen, percuss the left lower anterior chest wall roughly from the border of cardiac dullness at the 6th rib to the anterior axillary line and down to the costal margin. This is an area called Traube’s space.

As you percuss along this route, note the lateral extent of tympany. If tympany is prominent, especially laterally, splenomegaly is not likely.

Then ask the patient to take a deep breath and percuss again. When spleen size is normal, the percussion note usually remains tympanitic.

When the spleen is enlarged, tympany often changes to dullness. Dullness is a positive sign. It may be falsely positive, but its presence means you should perform careful palpation.
Examining the Kidneys

Normally kidneys are not often palpable. But learning the techniques for examination helps you distinguish enlarged kidneys from other enlarged organs and abdominal masses.

To palpate the left kidney, move to the patient’s left side and place your right hand behind the patient, just below and parallel to the right 12th rib with your fingertips just reaching the costovertebral angle. Lift trying to displace the kidney anteriorly.

Place your left hand gently in the left upper quadrant, lateral and parallel to the rectus muscle.

Now ask the patient to take a deep breath. At the peak of inspiration, press your left hand firmly and deeply into the left upper quadrant, just below the costal margin and try to capture the kidney between your hands.

Ask the patient to breathe out and then stop breathing. Slowly release the pressure of your left hand feeling at the same time for the kidney to slide back into its expiratory position.

If the kidney is palpable, assess its size, contour, and any tenderness.

To capture the patient’s right kidney, return to the patient’s right side, and use your left hand to lift up from the back and your right hand to feel deep in the right upper quadrant. Proceed as before.

A normal right kidney may be palpable, especially when the patient is thin and the abdominal muscles are relaxed.

Okay, I’m going to examine the aorta. Can you take a deep breath in, slowly, and let it out for me?

To assess the aorta, press the upper abdomen slightly left of mid line and feel for the aorta’s pulsations.

Now, try to assess the width of the aorta, especially in older smokers at risk for abdominal aortic aneurysm. Pressing gently with a hand on each side of the aorta, try to estimate its width. Normally it should be less than 3 centimeters.

Okay, we’re almost done. Now if I can get you to sit up for me, please.

With the patient sitting up, assess for costovertebral angle tenderness (or CVAT), seen in pyelonephritis. Place the ball of your left hand on each costovertebral angle in turn and strike it with the ulnar surface of your fist. Normally there is no tenderness over normal kidneys.

Special Techniques

With practice you will also be able to utilize special techniques for assessing possible ascites, including percussing outward in several directions from the central area of tympany.
Two additional techniques are testing for shifting dullness... percussing the border of tympany and dullness with the patient supine...then turning the patient onto one side and percussing again.

And testing for a fluid wave, by tapping one flank sharply with your fingertips while you feel on the opposite flank for an impulse transmitted through the fat. Individuals with more body fat will need two sets of hands for this test.

You should also be able to assess for possible appendicitis by searching carefully for an area of local tenderness called McBurney's point, which lies two centimeters from the anterior superior spinous process of ilium on a line drawn down from the umbilicus.

**Recording Your Findings**

For all your findings, a clear, well-organized clinical record—employing language that is neutral, professional, and succinct—is one of the most important adjuncts to patient care.

[TYPING] The abdomen is protuberant with active bowel sounds. It is soft and nontender; no masses or hepatosplenomegaly. The liver span is 7 cm and in the right MCL; the edge is smooth and palpable 1 cm below the right costal margin.

After practice and further review of this video, make sure you have mastered the learning objectives for examining the abdomen.