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## INTRODUCTION

The evaluation of abdominal pain requires an understanding of the possible mechanisms responsible for pain, a broad differential of common causes, and recognition of typical patterns and clinical presentations. This topic reviews the etiologies of abdominal pain in adults. The emergency and non-urgent evaluation of abdominal pain of adults discussed elsewhere. (See ["Evaluation of the adult with abdominal pain in the emergency department"](#) and ["Evaluation of the adult with abdominal pain"](#).)

Abdominal pain in pregnant and postpartum women and patients with HIV is discussed elsewhere. (See ["Approach to acute abdominal pain in pregnant and postpartum women"](#).)

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## PATHOPHYSIOLOGY OF ABDOMINAL PAIN

- **Neurologic basis for abdominal pain** – Pain receptors in the abdomen respond to mechanical and chemical stimuli. Stretch is the principal mechanical stimulus involved in visceral nociception, although distention, contraction, traction, compression, and torsion are also perceived [1]. Visceral receptors responsible for these sensations are located on serosal surfaces, within the mesentery, and within the walls of hollow viscera. Visceral mucosal receptors respond primarily to chemical stimuli, while other visceral nociceptors respond to chemical or mechanical stimuli.

The events responsible for the perception of abdominal pain are not completely understood, but depend upon the type of stimulus and the interpretation of visceral nociceptive inputs in the central nervous system. As an example, the gastric mucosa is insensitive to pressure or chemical stimuli. However, in the presence of inflammation, these same stimuli can cause pain [2]. The threshold for perceiving pain may vary among

individuals and in certain diseases. (See "[Evaluation of chronic non-cancer pain in adults](#)", section on 'Pathophysiology of pain'.)

- **Localization** – The type and density of visceral afferent nerves makes the localization of visceral pain imprecise. However, a few general rules are useful:
  - Most digestive tract pain is perceived in the midline because of bilaterally symmetric innervation [1,3]. Pain that is clearly lateralized most likely arises from the ipsilateral kidney, ureter, ovary, or somatically innervated structures, which have predominantly unilateral innervation. Exceptions to this rule include the gallbladder and ascending and descending colons which, although bilaterally innervated, have predominant innervation located on their ipsilateral sides.
  - Visceral pain is perceived in the spinal segment at which the visceral afferent nerves enter the spinal cord [4]. As an example, afferent nerves mediating pain arising from the small intestine enter the spinal cord between T8 to L1. Thus, distension of the small intestine is usually perceived in the periumbilical region.
- **Referred pain** – Pain originating in the viscera may sometimes be perceived as originating from a site distant from the affected organ ([figure 1](#)) [5-7]. Referred pain is usually located in the cutaneous dermatomes sharing the same spinal cord level as the visceral inputs. As an example, nociceptive inputs from the gallbladder enter the spinal cord at T5 to T10. Thus, pain from an inflamed gallbladder may be perceived in the scapula ([figure 1](#)).

The quality of referred pain is aching and perceived to be near the surface of the body. In addition to pain, two other correlates of referred pain can be detected: skin hyperalgesia and increased muscle tone of the abdominal wall (which accounts for the abdominal wall rigidity sometimes observed in patients with an acute abdomen).

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## UPPER ABDOMINAL PAIN SYNDROMES

Upper abdominal pain syndromes typically have characteristic locations: right upper quadrant pain ([table 1](#)), epigastric pain ([table 2](#)), or left upper quadrant pain ([table 3](#)).

**Right upper quadrant pain** — Biliary and hepatic etiologies cause right upper quadrant pain syndromes.

Biliary etiologies include ([table 1](#)):

- **Gallstones** – Symptoms of biliary colic classically include an intense, dull discomfort located in the right upper quadrant, epigastrium, or (less often) substernal area that may radiate to the back (particularly the right shoulder blade). Patients may have associated nausea, vomiting, and diaphoresis. The pain generally lasts at least 30 minutes, plateauing within an hour. Patients have an unremarkable abdominal examination. (See ["Overview of gallstone disease in adults", section on 'Biliary colic'.](#))
- **Acute cholecystitis** – The clinical manifestations of acute cholecystitis include prolonged (more than four to six hours), steady, severe right upper quadrant or epigastric pain, fever, abdominal guarding, a positive Murphy's sign, and leukocytosis. (See ["Acute calculous cholecystitis: Clinical features and diagnosis", section on 'Clinical manifestations'.](#))
- **Acute cholangitis** – Acute cholangitis occurs when a stone becomes impacted in the biliary or hepatic ducts, causing dilation of the obstructed duct and bacterial superinfection. It is characterized by fever, jaundice, and abdominal pain, although this classic triad (known as Charcot's triad) occurs in only 50 to 75 percent of cases [8]. The abdominal pain is typically vague and located in the right upper quadrant. (See ["Acute cholangitis: Clinical manifestations, diagnosis, and management", section on 'Clinical manifestations'.](#))
- **Sphincter of Oddi dysfunction** – Sphincter of Oddi dysfunction can be a cause of biliary pain in the absence of gallstones or biliary inflammation. Typically the pain is located in the right upper quadrant or epigastrium and lasts from 30 minutes to several hours. (See ["Clinical manifestations and diagnosis of sphincter of Oddi dysfunction".](#))

Hepatic etiologies include ([table 1](#)):

- **Hepatitis** – Patients with acute hepatitis (eg, from hepatitis A, alcohol, or medications) may have fatigue, malaise, nausea, vomiting, and anorexia in addition to right upper quadrant pain. Other symptoms include jaundice, dark urine, and light colored stools. (See ["Hepatitis A virus infection in adults: Epidemiology, clinical manifestations, and diagnosis", section on 'Clinical manifestations'](#) and ["Alcoholic hepatitis: Clinical manifestations and diagnosis", section on 'Signs and symptoms'](#) and ["Drug-induced liver injury", section on 'Clinical manifestations'.](#))
- **Perihepatitis** – The Fitz-Hugh-Curtis syndrome, or perihepatitis, is a cause of right upper quadrant pain in young women with pelvic inflammatory disease (PID). It occurs in approximately 10 percent of patients with acute PID. It is characterized by right upper

quadrant pain with a distinct pleuritic component, sometimes referred to the right shoulder. (See "[Pelvic inflammatory disease: Clinical manifestations and diagnosis](#)", [section on 'Perihepatitis'](#).)

- **Liver abscess** – Liver abscess is the most common type of visceral abscess. Patients generally present with fever and abdominal pain. Risk factors include diabetes, underlying hepatobiliary or pancreatic disease, or liver transplant. (See "[Pyogenic liver abscess](#)", [section on 'Epidemiology'](#) and "[Pyogenic liver abscess](#)", [section on 'Clinical manifestations'](#).)
- **Budd-Chiari syndrome** – Budd-Chiari syndrome is defined as hepatic venous outflow tract obstruction, independent of the level or mechanism of obstruction, provided the obstruction is not due to cardiac disease, pericardial disease, or sinusoidal obstruction syndrome (veno-occlusive disease). Symptoms include fever, abdominal pain, abdominal distention (from ascites), lower extremity edema, jaundice, gastrointestinal bleeding, and/or hepatic encephalopathy. There are a variety of causes ([table 4](#)). (See "[Budd-Chiari syndrome: Epidemiology, clinical manifestations, and diagnosis](#)", [section on 'Clinical manifestations'](#) and "[Etiology of the Budd-Chiari syndrome](#)", [section on 'Etiology'](#).)
- **Portal vein thrombosis** – Clinical manifestations of portal vein thrombosis vary depending on the extent of obstruction as well as the speed of development (acute or chronic). It is common in patients with cirrhosis and is associated with the severity of liver disease. Patients may be asymptomatic or have abdominal pain, dyspepsia, or gastrointestinal bleeding. (See "[Acute portal vein thrombosis in adults: Clinical manifestations, diagnosis, and management](#)", [section on 'Clinical manifestations'](#) and "[Chronic portal vein thrombosis in adults: Clinical manifestations, diagnosis, and management](#)", [section on 'Clinical manifestations'](#).)

**Epigastric pain** — Pancreatic and gastric etiologies often cause epigastric pain ([table 2](#)).

- **Acute myocardial infarction** – Epigastric pain can be the presenting symptom of an acute myocardial infarction. Patients may have associated shortness of breath or exertional symptoms. (See "[Angina pectoris: Chest pain caused by fixed epicardial coronary artery obstruction](#)", [section on 'History'](#).)
- **Pancreatitis** – Both acute and chronic pancreatitis are associated with abdominal pain that often radiates to the back. Most patients with acute pancreatitis have acute onset of persistent, severe epigastric pain. The pain is steady and may be in the mid-epigastrium, right upper quadrant, diffuse, or, infrequently, confined to the left side. (See "[Clinical](#)

[manifestations and diagnosis of acute pancreatitis", section on 'Clinical features'.\)](#)

The two primary clinical manifestations of chronic pancreatitis are epigastric pain and pancreatic insufficiency. The pain is typically epigastric, is occasionally associated with nausea and vomiting, and may be partially relieved by sitting upright or leaning forward. (See ["Chronic pancreatitis: Clinical manifestations and diagnosis in adults", section on 'Abdominal pain'.](#))

- **Peptic ulcer disease** – Upper abdominal pain or discomfort is the most prominent symptom in patients with peptic ulcers. Patients most often have epigastric pain, but occasionally the discomfort localizes to one side. (See ["Peptic ulcer disease: Clinical manifestations and diagnosis", section on 'Clinical manifestations'.](#))
- **Gastroesophageal reflux disease** – Most patients with gastroesophageal reflux disease (GERD) complain of heartburn, regurgitation, and dysphagia. However, some patients may also complain of epigastric and/or chest pain. (See ["Clinical manifestations and diagnosis of gastroesophageal reflux in adults", section on 'Clinical features'.](#))
- **Gastritis/gastropathy** – Gastritis refers to inflammation in the lining of the stomach. Gastritis is predominantly an inflammatory process, while the term gastropathy denotes a gastric mucosal disorder with minimal to no inflammation. Acute gastropathy often presents with abdominal discomfort/pain, heartburn, nausea, vomiting, and hematemesis. Gastropathy may be caused by a variety of etiologies including alcohol and nonsteroidal antiinflammatory drugs (NSAIDs). (See ["Acute hemorrhagic erosive gastropathy and reactive gastropathy", section on 'Acute hemorrhagic erosive gastropathy'](#) and ["NSAIDs \(including aspirin\): Pathogenesis of gastroduodenal toxicity", section on 'Gastric damage'.](#))
- **Functional dyspepsia** – Functional dyspepsia is defined as the presence of one or more of the following symptoms: postprandial fullness, early satiation, and epigastric pain or burning, with no evidence of structural disease (including at upper endoscopy) to explain the symptoms. (See ["Functional dyspepsia in adults".](#))
- **Gastroparesis** – Patients with gastroparesis can present with nausea, vomiting, abdominal pain, early satiety, postprandial fullness, bloating, and, in severe cases, weight loss. The most common causes are idiopathic, diabetic, or postsurgical ([figure 2](#)). (See ["Gastroparesis: Etiology, clinical manifestations, and diagnosis", section on 'Clinical manifestations'.](#))

**Left upper quadrant pain** — Left upper quadrant pain is often related to the spleen ([table 3](#)).

- **Splenomegaly** – Splenomegaly can cause left upper quadrant pain or discomfort, referred pain to the left shoulder, and/or early satiety. Splenomegaly has multiple causes ([table 5](#)). (See "[Evaluation of splenomegaly and other splenic disorders in adults](#)", [section on 'Splenomegaly'](#).)
- **Splenic infarction** – Patients with splenic infarction classically present with severe left upper quadrant pain, though atypical presentations are common. Splenic infarction is associated with a variety of underlying conditions (eg, hypercoagulable state, embolic disease from atrial fibrillation, conditions associated with splenomegaly). (See "[Evaluation of splenomegaly and other splenic disorders in adults](#)", [section on 'Abscess and infarction'](#).)
- **Splenic abscess** – Splenic abscesses are uncommon and typically are associated with fever and tenderness in the left upper quadrant. They may also be associated with splenic infarction. (See "[Evaluation of splenomegaly and other splenic disorders in adults](#)", [section on 'Abscess and infarction'](#).)
- **Splenic rupture** – Splenic rupture is most often associated with trauma. The patient may complain of left upper abdominal, left chest wall, or left shoulder pain (ie, Kehr's sign). Kehr's sign is pain referred to the left shoulder that worsens with inspiration and is due to irritation of the phrenic nerve from blood adjacent to the left hemidiaphragm. (See "[Management of splenic injury in the adult trauma patient](#)", [section on 'History and physical examination'](#) and "[Evaluation of splenomegaly and other splenic disorders in adults](#)", [section on 'Trauma/rupture'](#).)

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## LOWER ABDOMINAL PAIN SYNDROMES

Lower abdominal pain syndromes ([table 6](#)) often cause pain in either or both lower quadrants. Women may have lower abdominal pain from disorders of the internal female reproductive organs ([table 7](#)). (See "[Women](#)" below.)

Lower abdominal pain syndromes that are generally localized to one side include ([table 6](#)):

- **Acute appendicitis** – Acute appendicitis typically presents with periumbilical pain initially that radiates to the right lower quadrant. It is associated with anorexia, nausea, and vomiting. However, occasionally patients present with epigastric or generalized abdominal pain. The pain localizes to the right lower quadrant when the appendiceal inflammation begins to involve the peritoneal surface. (See "[Acute appendicitis in adults: Clinical manifestations and differential diagnosis](#)", [section on 'Clinical manifestations'](#).)

- **Diverticulitis** – The clinical presentation of diverticulitis depends upon the severity of the underlying inflammatory process and whether or not complications are present. Left lower quadrant pain is the most common complaint in Western countries, occurring in 70 percent of patients. Right-sided diverticulitis is more common in Asian patients. The pain is usually constant and is often present for several days prior to presentation. Patients may also have nausea and vomiting. (See "[Clinical manifestations and diagnosis of acute diverticulitis in adults](#)", [section on 'Clinical manifestations'](#).)

Abdominal pain from some genitourinary etiologies may be localized to either side ([table 6](#)):

- **Kidney stones** – Kidney stones usually cause symptoms when the stone passes from the renal pelvis into the ureter. Pain is the most common symptom and varies from a mild to severe. Patients may have flank pain, back pain, or abdominal pain. (See "[Diagnosis and acute management of suspected nephrolithiasis in adults](#)", [section on 'Clinical manifestations'](#).)
- **Pyelonephritis** – Patients with pyelonephritis may or may not have symptoms of cystitis (dysuria, frequency, urgency, and/or hematuria). These patients also have fever, chills, flank pain, and costovertebral angle tenderness. (See "[Acute simple cystitis in women](#)", [section on 'Clinical manifestations'](#) and "[Acute simple cystitis in men](#)", [section on 'Clinical manifestations'](#).)

Other etiologies of lower abdominal pain may not always be localized to one side ([table 6](#)):

- **Cystitis** – Patients with cystitis may complain of suprapubic pain as well as dysuria, frequency, urgency, and/or hematuria. (See "[Acute simple cystitis in women](#)", [section on 'Clinical manifestations'](#) and "[Acute simple cystitis in men](#)", [section on 'Clinical manifestations'](#).)
- **Acute urinary retention** – Patients with bladder outlet obstruction leading to acute urinary retention present with the inability to pass urine. They may have associated lower abdominal and/or suprapubic pain or discomfort. (See "[Acute urinary retention](#)", [section on 'Clinical presentation'](#).)
- **Infectious colitis** – Patients with infectious colitis generally have diarrhea as the predominant symptom but may also have associated abdominal pain, which may be severe. Patients with *Clostridioides* (formerly *Clostridium*) *difficile* infection can present with an acute abdomen and peritoneal signs in the setting of perforation and fulminant colitis ([table 8](#)). (See "[Clostridioides \(formerly Clostridium\) difficile infection in adults: Clinical manifestations and diagnosis](#)", [section on 'Clinical manifestations'](#) and "[Approach](#)

[to the adult with acute diarrhea in resource-rich settings](#)", [section on 'Stool tests for bacterial pathogens'](#).)

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## DIFFUSE ABDOMINAL PAIN SYNDROMES

Abdominal pain syndromes may have diffuse, nonspecific, or variable patterns of pain ([table 9](#)).

- **Obstruction** – Severe, acute diffuse abdominal pain can be caused by either partial or complete obstruction of the intestines. Intestinal obstruction should be considered when the patient complains of pain, vomiting, and obstipation. Physical findings include abdominal distention, tenderness to palpation, high-pitched or absent bowel sounds, and a tympanic abdomen. There are many etiologies of obstruction ([table 10](#)), with the most common etiologies in adults being postoperative adhesions, malignancy related (eg, from colorectal cancer), and complicated hernias. Other less common etiologies include Crohn disease, gallstones, volvulus, and intussusception. (See "[Etiologies, clinical manifestations, and diagnosis of mechanical small bowel obstruction in adults](#)" and "[Clinical presentation, diagnosis, and staging of colorectal cancer](#)", [section on 'Clinical presentation'](#) and "[Intestinal malrotation in children](#)" and "[Gastric volvulus in adults](#)" and "[Cecal volvulus](#)" and "[Sigmoid volvulus](#)".)
- **Perforation of gastrointestinal tract** – Perforation of the gastrointestinal tract can present acutely or in an indolent manner. Patients complain of chest or abdominal pain to some degree. Sudden, severe chest or abdominal pain following instrumentation or surgery is very concerning for perforation. Patients on immunosuppressive or antiinflammatory agents may have an impaired inflammatory response, and some may have little or no pain and tenderness. Many patients will seek medical attention with the onset or worsening of significant chest or abdominal pain, but a subset of patients will present in a delayed fashion. (See "[Overview of gastrointestinal tract perforation](#)", [section on 'Clinical features'](#).)
- **Mesenteric ischemia** – Acute mesenteric ischemia presents with the acute and severe onset of diffuse and persistent abdominal pain, often described as pain out of proportion to examination. Several features of the pain and its presentation may provide clues to the etiology of the ischemia and help distinguish small intestinal from colonic ischemia ([table 11](#)). Chronic mesenteric ischemia may be manifested by a variety of symptoms including abdominal pain after eating ("intestinal angina"), weight loss, nausea, vomiting, and diarrhea. Ischemia that involves the celiac territory causes epigastric or right upper



quadrant pain. Ischemia may be from either arterial or venous disease. (See "[Overview of intestinal ischemia in adults](#)" and "[Chronic mesenteric ischemia](#)" and "[Mesenteric venous thrombosis in adults](#)", section on 'Clinical presentations' and "[Colonic ischemia](#)", section on 'Clinical features'.)

Patients with aortic dissection may have abdominal pain from mesenteric ischemia ([table 12](#)). (See "[Clinical features and diagnosis of acute aortic dissection](#)", section on 'Clinical features'.)

- **Inflammatory bowel disease**– Inflammatory bowel disease (IBD) is comprised of two major disorders: ulcerative colitis and Crohn disease. IBD is also associated with a number of extraintestinal manifestations ([table 13](#)). (See "[Definitions, epidemiology, and risk factors for inflammatory bowel disease in adults](#)".)
  - **Ulcerative colitis** – Patients with ulcerative colitis usually present with diarrhea which may be associated with blood. Bowel movements are frequent and small in volume as a result of rectal inflammation. Associated symptoms include colicky abdominal pain, urgency, tenesmus, and incontinence. (See "[Clinical manifestations, diagnosis, and prognosis of ulcerative colitis in adults](#)", section on 'Clinical manifestations'.)
  - **Crohn disease** – The clinical manifestations of Crohn disease are more variable than those of ulcerative colitis. Patients can have symptoms for many years prior to diagnosis. Fatigue, prolonged diarrhea with abdominal pain, weight loss, and fever, with or without gross bleeding, are the hallmarks of Crohn disease. (See "[Clinical manifestations, diagnosis, and prognosis of Crohn disease in adults](#)", section on 'Clinical features'.)
- **Viral gastroenteritis** – Patients with viral gastroenteritis often have diarrhea accompanied by nausea, vomiting, and abdominal pain. (See "[Acute viral gastroenteritis in adults](#)", section on 'Clinical manifestations'.)
- **Spontaneous bacterial peritonitis** – Spontaneous bacterial peritonitis most often occurs in cirrhotics with advanced liver disease with ascites. Patients present with fever, abdominal pain, and/or altered mental status. (See "[Spontaneous bacterial peritonitis in adults: Clinical manifestations](#)", section on 'Clinical manifestations'.)
- **Peritonitis in peritoneal dialysis patients** – Peritonitis may develop in patients on peritoneal dialysis either from contamination during dialysis or catheter related infection. The most common symptoms and signs are abdominal pain and cloudy peritoneal

effluent. Other symptoms and signs include fever, nausea, diarrhea, abdominal tenderness, rebound tenderness, and occasionally systemic signs (eg, hypotension). (See ["Clinical manifestations and diagnosis of peritonitis in peritoneal dialysis", section on 'Clinical presentation'.](#))

- **Malignancy** – Gastrointestinal malignancies may be associated with abdominal discomfort. These are discussed in detail in specific topics. As examples:
  - **Colorectal cancer** – Patients with colorectal cancer may present with abdominal pain from partial obstruction, peritoneal dissemination, or perforation. (See ["Clinical presentation, diagnosis, and staging of colorectal cancer", section on 'Clinical presentation'.](#))
  - **Gastric cancer** – Patients with gastric cancer may have abdominal pain that is often epigastric pain. (See ["Clinical features, diagnosis, and staging of gastric cancer", section on 'Clinical features'.](#))
  - **Pancreatic cancer** – The most common symptoms in patients with pancreatic cancer are pain, jaundice, and weight loss. (See ["Clinical manifestations, diagnosis, and staging of exocrine pancreatic cancer", section on 'Clinical presentation'.](#))

Additionally, patients may have pain as part of pain syndromes related to malignancy ([table 14](#)). (See ["Overview of cancer pain syndromes", section on 'Tumor-related visceral pain syndromes'.](#))

- **Celiac disease** – Patients with celiac disease may complain of abdominal pain in addition to diarrhea with bulky, foul-smelling, floating stools due to steatorrhea and flatulence. (See ["Epidemiology, pathogenesis, and clinical manifestations of celiac disease in adults", section on 'Clinical manifestations'.](#))
- **Ketoacidosis** – Patients with ketoacidosis (eg, from diabetes or alcohol) may have diffuse abdominal pain as well as nausea and vomiting. (See ["Diabetic ketoacidosis and hyperosmolar hyperglycemic state in adults: Clinical features, evaluation, and diagnosis", section on 'Abdominal pain in DKA'](#) and ["Fasting ketosis and alcoholic ketoacidosis", section on 'Clinical presentation'.](#))
- **Adrenal insufficiency** – Patients with adrenal insufficiency may have diffuse abdominal pain as well as nausea and vomiting. Patients with adrenal crisis may present with shock and hypotension. Patients with chronic adrenal deficiency may also complain of malaise, fatigue, anorexia, and weight loss. (See ["Clinical manifestations of adrenal insufficiency in](#)

[adults](#)", [section on 'Autoimmune primary adrenal insufficiency'](#) and ["Clinical manifestations of adrenal insufficiency in adults"](#), [section on 'Gastrointestinal complaints'](#).)

- **Foodborne disease** – A foodborne disease will typically manifest as a mixture of nausea, vomiting, fever, abdominal pain, and diarrhea. Toxin-mediated illnesses can occur within hours of ingestion, but bacterial colitis generally requires 24 to 48 hours to develop. Certain foods may be linked to particular pathogens ([table 15](#)). (See ["Causes of acute infectious diarrhea and other foodborne illnesses in resource-rich settings"](#), [section on 'Clinical clues to the microbial cause'](#).)
- **Irritable bowel syndrome** – Patients with irritable bowel syndrome (IBS) can present with a wide array of symptoms which include both gastrointestinal and extraintestinal complaints. However, the symptom complex of chronic abdominal pain and altered bowel habits remains the nonspecific yet primary characteristic of IBS. (See ["Clinical manifestations and diagnosis of irritable bowel syndrome in adults"](#), [section on 'Clinical manifestations'](#).)
- **Constipation** – Constipation may be associated with abdominal pain. Diseases associated with constipation include neurologic and metabolic disorders; obstructing lesions of the gastrointestinal tract, including colorectal cancer; endocrine disorders such as diabetes mellitus; and psychiatric disorders such as anorexia nervosa ([table 16](#)). Constipation may also be due to a side effect of drugs ([table 17](#)). (See ["Etiology and evaluation of chronic constipation in adults"](#).)
- **Diverticulosis** – Uncomplicated diverticulosis is often asymptomatic and an incidental finding on colonoscopy or sigmoidoscopy. However, these patients may have symptoms of abdominal pain and constipation. (See ["Colonic diverticulosis and diverticular disease: Epidemiology, risk factors, and pathogenesis"](#), [section on 'Symptomatic uncomplicated diverticular disease'](#).)
- **Lactose intolerance** – Symptoms of lactose intolerance include abdominal pain, bloating, flatulence, and diarrhea. The abdominal pain may be cramping in nature and is often localized to the periumbilical area or lower quadrants. (See ["Lactose intolerance: Clinical manifestations, diagnosis, and management"](#), [section on 'Clinical features'](#).)

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## LESS COMMON CAUSES

Less common causes of abdominal pain include ([table 18](#)):

- **Abdominal aortic aneurysm** – Most patients with abdominal aortic aneurysm (AAA) have no symptoms. When patients with a nonruptured AAA do have symptoms, abdominal, back, or flank pain is the most common clinical manifestation. Classically, ruptured AAA is associated with severe pain, hypotension, and a pulsatile abdominal mass, but patients may have variable presentations. (See ["Clinical features and diagnosis of abdominal aortic aneurysm", section on 'Asymptomatic AAA'](#) and ["Clinical features and diagnosis of abdominal aortic aneurysm", section on 'Symptomatic \(nonruptured\) AAA'](#).)
- **Abdominal compartment syndrome** – Abdominal compartment syndrome generally occurs in patients who are critically ill. Patients have a tensely distended abdomen. (See ["Abdominal compartment syndrome in adults"](#).)
- **Abdominal migraine** – Recurrent abdominal pain may occur in patients with abdominal migraine [9]. These patients usually also suffer from typical migraine headaches, although occasional patients present with gastrointestinal symptoms only [10]. Abdominal migraines have also been linked to cyclic vomiting syndrome. (See ["Pathophysiology, clinical manifestations, and diagnosis of migraine in adults"](#) and ["Cyclic vomiting syndrome", section on 'Association with migraines'](#).)
- **Acute intermittent porphyria** – Acute intermittent porphyria is a rare cause of abdominal pain. The presentation of acute intermittent porphyria is highly variable and patients have nonspecific symptoms. Abdominal pain is the most common and often earliest symptom. (See ["Acute intermittent porphyria: Pathogenesis, clinical features, and diagnosis", section on 'Acute attacks'](#).)
- **Angioedema** – Angioedema with abdominal pain may be caused by hereditary angioedema or related to angiotensin-converting enzyme (ACE) inhibitor therapy. It can present with recurrent episodes of abdominal pain, accompanied by nausea, vomiting, colicky pain, and diarrhea. (See ["Hereditary angioedema: Epidemiology, clinical manifestations, exacerbating factors, and prognosis"](#) and ["ACE inhibitor-induced angioedema", section on 'Intestine'](#).)
- **Celiac artery compression syndrome** – Celiac artery compression syndrome (also referred to as celiac axis syndrome, median arcuate ligament syndrome, and Dunbar syndrome) is defined as chronic, recurrent abdominal pain related to compression of the celiac artery by the median arcuate ligament. (See ["Celiac artery compression syndrome"](#).)
- **Chronic abdominal wall pain** – Chronic abdominal wall pain usually refers to anterior

cutaneous nerve entrapment syndrome. Pain associated with nerve entrapment is characteristically maximal in an area <2 cm in diameter. (See "[Anterior cutaneous nerve entrapment syndrome](#)", section on 'Clinical features'.)

- **Colonic pseudo-obstruction** – Pseudo-obstruction is characterized by signs and symptoms of a mechanical obstruction of the small or large bowel in the absence of a mechanical cause. The main clinical feature is abdominal distention, but patients may have associated abdominal pain, nausea, and vomiting. Acute colonic pseudo-obstruction is also known as Ogilvie's syndrome. (See "[Acute colonic pseudo-obstruction \(Ogilvie's syndrome\)](#)", section on 'Clinical manifestations' and "[Chronic intestinal pseudo-obstruction](#)", section on 'Clinical manifestations'.)
- **Eosinophilic gastroenteritis** – Eosinophilic gastroenteritis belongs to a group of diseases that includes eosinophilic esophagitis, gastritis, enteritis, and colitis. Symptoms depend on what part of the gastrointestinal tract is affected. (See "[Eosinophilic gastroenteritis](#)".)
- **Epiploic appendagitis** – Epiploic appendagitis (also known as appendicitis epiploica, hemorrhagic epiploitis, epiplopericocolitis, or appendagitis) is a benign and self-limited condition of the epiploic appendages. Patients with epiploic appendagitis most commonly present with acute or subacute onset of lower abdominal pain. The pain is on the left side in 60 to 80 percent of patients but has also been reported in the right lower quadrant. (See "[Epiploic appendagitis](#)".)
- **Familial Mediterranean fever** – The typical manifestations of familial Mediterranean fever are recurrent attacks of severe pain (due to serositis at one or more sites) and fever, lasting one to three days and then resolving spontaneously. Most patients have abdominal pain. In between attacks, patients feel entirely well. (See "[Clinical manifestations and diagnosis of familial Mediterranean fever](#)".)
- **Helminthic infections** – Patients with helminthic infections can manifest with gastrointestinal symptoms, including abdominal pain. The clinical manifestations for specific helminth infections are discussed in the appropriate topics.
- **Herpes zoster** – Herpes zoster neuropathic pain may precede the development of skin lesions. Depending on the dermatome involved, this pain can be confused with other etiologies such as cholecystitis or renal colic. (See "[Epidemiology, clinical manifestations, and diagnosis of herpes zoster](#)", section on 'Clinical manifestations'.)
- **Hypercalcemia** – Hypercalcemia can cause abdominal pain, either directly or as an

etiology for pancreatitis or constipation. (See ["Clinical manifestations of hypercalcemia", section on 'Gastrointestinal abnormalities'](#).)

- **Hypothyroidism** – Hypothyroidism can occasionally cause abdominal pain in the setting of constipation and ileus. (See ["Clinical manifestations of hypothyroidism", section on 'Gastrointestinal disorders'](#).)
- **Lead poisoning** – Abdominal pain is associated with acute lead poisoning. (See ["Lead exposure and poisoning in adults", section on 'Clinical manifestations'](#).)
- **Meckel's diverticulum** – Meckel's diverticulum is usually clinically silent and can be found incidentally or can present with a variety of clinical manifestations including gastrointestinal bleeding or other acute abdominal complaints. Acute abdominal pain related to Meckel's diverticulum can be the result of diverticular inflammation, similar to acute appendicitis, related to bowel obstruction or perforation of the Meckel's or adjacent bowel. (See ["Meckel's diverticulum", section on 'Clinical presentations'](#) and ["Meckel's diverticulum", section on 'Acute abdominal pain'](#).)
- **Narcotic bowel syndrome** – The most common side effect of opioids is constipation, but some patients may have associated abdominal pain. (See ["Prevention and management of side effects in patients receiving opioids for chronic pain", section on 'Opioid bowel dysfunction'](#).)
- **Paroxysmal nocturnal hemoglobinuria** – Paroxysmal nocturnal hemoglobinuria is a rare acquired hematopoietic stem cell disorder. Up to 40 percent of patients with paroxysmal nocturnal hemoglobinuria may ultimately develop venous thrombosis, often involving intraabdominal (mesenteric, portal, splenic, hepatic) vessels. Additionally, during acute hemolytic episodes, many patients experience symptoms related to esophageal spasm and also complain of generalized cramping abdominal pain. (See ["Clinical manifestations and diagnosis of paroxysmal nocturnal hemoglobinuria", section on 'Abdominal pain/dysphagia'](#) and ["Clinical manifestations and diagnosis of paroxysmal nocturnal hemoglobinuria", section on 'Thrombosis'](#).)
- **Pseudoappendicitis** – Acute yersiniosis or campylobacter infection can mimic appendicitis presenting with right lower abdominal pain, fever, vomiting, leukocytosis, and mild diarrhea. (See ["Clinical manifestations and diagnosis of Yersinia infections", section on 'Pseudoappendicitis'](#) and ["Clinical manifestations, diagnosis, and treatment of Campylobacter infection", section on 'Pseudoappendicitis'](#).)
- **Pulmonary etiologies** – Lower lobe pulmonary pathologies (eg, pneumonia, pulmonary

embolism) or inflammatory pleural effusions (eg, empyema, pulmonary infarction) can present with what appears to be upper abdominal pain because they occur at the threshold of the abdomen. Some patients with pneumonia (eg, Legionella) may also have abdominal pain and other gastrointestinal symptoms as part of their illness. (See ["Clinical manifestations and diagnosis of Legionella infection", section on 'Clinical features'](#).)

- **Rectus sheath hematoma** – Rectus sheath hematoma is a rare clinical entity that results from accumulation of blood within the rectus sheath. Rectus sheath hematoma most often presents as acute onset of abdominal pain with a palpable abdominal wall mass. (See ["Rectus sheath hematoma", section on 'Clinical presentation'](#).)
- **Renal infarction** – Renal infarction is rare. Patients with acute renal infarction typically complain of the acute onset of flank pain or generalized abdominal pain, frequently accompanied by nausea, vomiting, and, occasionally, fever. (See ["Renal infarction", section on 'Clinical presentation'](#).)
- **Rib pain** – Patients may have upper abdominal pain from lower rib pain syndromes. (See ["Major causes of musculoskeletal chest pain in adults", section on 'Lower rib pain syndromes'](#).)
- **Sclerosing mesenteritis** – Sclerosing mesenteritis is part of a spectrum (including mesenteric lipodystrophy and mesenteric panniculitis) of idiopathic primary inflammatory and fibrotic processes that affect the mesentery. The clinical manifestations of sclerosing mesenteritis are varied but may include abdominal pain and other gastrointestinal symptoms. (See ["Sclerosing mesenteritis", section on 'Clinical presentation'](#).)
- **Somatization** – Patients with somatization may present with a wide array of symptoms including gastrointestinal symptoms. (See ["Somatic symptom disorder: Epidemiology and clinical presentation", section on 'Clinical presentation'](#).)
- **Wandering spleen** – The wandering (or ectopic) spleen is a rare condition where the spleen migrates from its normal site to another location in the abdomen because of laxity or maldevelopment of the supporting ligaments [11]. Wandering spleen may be congenital or acquired from weakened supporting splenic ligaments. Patients may be asymptomatic or present with acute, chronic, or intermittent pain from torsion of the wandering spleen. Adults present with nonspecific abdominal pain associated with a palpable abdominal mass while children most often present with acute abdominal pain.

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## SPECIAL POPULATIONS

In addition to the etiologies listed above, certain etiologies are specific to special populations of patients.

**Women** — Lower abdominal pain and/or pelvic pain in women is frequently caused by disorders of the internal female reproductive organs ([table 7](#)). The etiologies and evaluation of acute and chronic pelvic pain are discussed in detail separately. (See "[Evaluation of acute pelvic pain in nonpregnant adult women](#)" and "[Causes of chronic pelvic pain in nonpregnant women](#)".)

- **Pregnancy/pregnancy complications** – Pregnancy and/or complications of pregnancy can lead to abdominal pain. This is discussed in detail separately. (See "[Approach to acute abdominal pain in pregnant and postpartum women](#)", section on 'General approach'.)
- **Ectopic pregnancy** – The most common clinical presentation of ectopic pregnancy is first trimester vaginal bleeding and/or abdominal pain. Clinical manifestations of ectopic pregnancy typically appear six to eight weeks after the last normal menstrual period but can occur later, especially if the pregnancy is in an extrauterine site other than the fallopian tube. Women with ruptured ectopic pregnancy can present with life-threatening hemorrhage. (See "[Ectopic pregnancy: Clinical manifestations and diagnosis](#)", section on '[Abdominal pain](#)'.)
- **Pelvic inflammatory disease** – Lower abdominal pain is the cardinal presenting symptom in women with pelvic inflammatory disease (PID). Any sexually active female is at risk for PID. There is a wide-spectrum of clinical presentations. Acute symptomatic PID is characterized by the acute onset of lower abdominal or pelvic pain, pelvic organ tenderness, and evidence of inflammation of the genital tract. Women may also develop tuboovarian abscess as a complication. (See "[Pelvic inflammatory disease: Clinical manifestations and diagnosis](#)" and "[Epidemiology, clinical manifestations, and diagnosis of tubo-ovarian abscess](#)", section on '[Clinical presentation](#)'.)
- **Ovarian torsion** – The classic presentation of ovarian torsion is the acute onset of moderate to severe pelvic pain, often with nausea and possibly vomiting, in a woman with an adnexal mass. (See "[Ovarian and fallopian tube torsion](#)", section on '[Clinical presentation](#)'.)
- **Ruptured ovarian cyst** – Rupture of an ovarian cyst may be asymptomatic or associated with a sudden onset of unilateral lower abdominal pain. The classic presentation is sudden onset of severe focal lower quadrant pain following sexual intercourse. (See



["Evaluation and management of ruptured ovarian cyst", section on 'Clinical presentation'.\)](#)

- **Endometriosis** – The classic symptoms of endometriosis are dysmenorrhea, pelvic pain, dyspareunia, and/or infertility, but other symptoms may also be present (eg, bowel or bladder symptoms). Patients may present with one symptom or a combination of symptoms.
- **Endometritis** – Endometritis refers to inflammation of the endometrium, the inner lining of the uterus. Acute endometritis is most often preceded by PID. The diagnosis of acute endometritis is made clinically based upon criteria for the diagnosis of acute PID. (See ["Endometritis unrelated to pregnancy", section on 'Acute endometritis'.\)](#)

Women with symptomatic chronic endometritis usually present with abnormal uterine bleeding, which may consist of intermenstrual bleeding, spotting, postcoital bleeding, menorrhagia, or amenorrhea. Vague, crampy lower abdominal pain accompanies the bleeding or may occur alone. (See ["Endometritis unrelated to pregnancy", section on 'Chronic endometritis'.\)](#)

- **Leiomyomas (fibroids)** – Leiomyomas may cause pelvic pressure or pain. These symptoms may be related to bulk or infrequently fibroids can cause acute pain from degeneration (eg, carneous or red degeneration) or torsion of a pedunculated tumor. Pain may be associated with a low grade fever, uterine tenderness on palpation, elevated white blood cell count, or peritoneal signs.
- **Ovarian hyperstimulation** – Ovarian hyperstimulation syndrome can cause abdominal discomfort from enlarged ovaries in women undergoing fertility treatment ([table 19](#)). (See ["Pathogenesis, clinical manifestations, and diagnosis of ovarian hyperstimulation syndrome", section on 'Clinical manifestations'.\)](#)
- **Ovarian cancer** – Women with ovarian cancer may present with bloating or abdominal or pelvic pain. (See ["Epithelial carcinoma of the ovary, fallopian tube, and peritoneum: Clinical features and diagnosis", section on 'Pelvic and abdominal symptoms'.\)](#)

**Postoperative patients** — A variety of postoperative complications can cause abdominal pain:

- Postoperative ileus (see ["Postoperative ileus", section on 'Clinical features'](#))
- Surgical site infections (see ["Complications of abdominal surgical incisions", section on 'Hematoma and seroma'](#))

- Hematoma/seroma formation and nerve injury (see ["Complications of abdominal surgical incisions", section on 'Hematoma and seroma'](#) and ["Complications of abdominal surgical incisions", section on 'Nerve injury'](#))

**Patients with sickle cell disease** — Severe intermittent episodes of abdominal pain can occur with sickle cell disease, particularly after an acute precipitant such as dehydration. (See ["Evaluation of acute pain in sickle cell disease"](#).)

Patients with sickle cell may also have right upper quadrant pain in the setting of hepatic involvement. The liver can be affected by a number of complications due to the disease itself and its treatment. (See ["Hepatic manifestations of sickle cell disease", section on 'Disorders associated with the sickling process'](#) and ["Hepatic manifestations of sickle cell disease", section on 'Disorders related to coexisting conditions'](#).)

**HIV-infected patients** — Causes of abdominal pain in the HIV-infected patient include common etiologies seen in the general population (eg, appendicitis, diverticulitis) but also opportunistic infections (eg, cytomegalovirus [CMV], *Mycobacterium avium* complex [MAC], cryptosporidium) and neoplasms (eg, Kaposi sarcoma, lymphoma) if there is evidence of advanced immunodeficiency (CD4 cell count <100 cells/microL). (See ["AIDS-related cytomegalovirus gastrointestinal disease"](#) and ["Mycobacterium avium complex \(MAC\) infections in persons with HIV"](#) and ["Cryptosporidiosis: Epidemiology, clinical manifestations, and diagnosis"](#) and ["AIDS-related Kaposi sarcoma: Clinical manifestations and diagnosis"](#) and ["HIV-related lymphomas: Clinical manifestations and diagnosis"](#).)

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## SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See ["Society guideline links: Nontraumatic abdominal pain in adults"](#).)

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## INFORMATION FOR PATIENTS

UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5<sup>th</sup> to 6<sup>th</sup> grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10<sup>th</sup> to 12<sup>th</sup> grade

reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

- Basics topic (see ["Patient education: Severe abdominal pain \(The Basics\)"](#))
- Beyond the Basics topics (see ["Patient education: Upset stomach \(functional dyspepsia\) in adults \(Beyond the Basics\)"](#) and ["Patient education: Chronic pelvic pain in women \(Beyond the Basics\)"](#))

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## SUMMARY

- Pain receptors in the abdomen respond to mechanical and chemical stimuli. The type and density of visceral afferent nerves makes the localization of visceral pain imprecise. Pain originating in the viscera may also be perceived as originating from a site distant from the affected organ (referred pain) ([figure 1](#)). (See ['Pathophysiology of abdominal pain'](#) above.)
- Upper abdominal pain typically has characteristic locations: right upper quadrant pain ([table 1](#)), epigastric pain ([table 2](#)), or left upper quadrant pain ([table 3](#)). (See ['Upper abdominal pain syndromes'](#) above.)
- Lower abdominal pain syndromes ([table 6](#)) often cause pain in either or both lower quadrants. Women may have lower abdominal pain from disorders of the internal female reproductive organs ([table 7](#)). (See ['Lower abdominal pain syndromes'](#) above.)
- Abdominal pain syndromes may have diffuse or nonspecific pain ([table 9](#)). (See ['Diffuse abdominal pain syndromes'](#) above.)
- There are many other less common causes of abdominal pain ([table 18](#)). (See ['Less common causes'](#) above.)
- Certain etiologies are specific to special population of patients (women ([table 7](#)), postoperative patients, sickle cell patients, and HIV patients). (See ['Special populations'](#) above.)

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