

Clinical manifestations and diagnosis of irritable bowel syndrome in adults

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INTRODUCTION

Irritable bowel syndrome (IBS) is a functional disorder of the gastrointestinal tract characterized by chronic abdominal pain and altered bowel habits. However, only a small percentage of those affected seek medical attention [[1-5](#)]. Approximately 40 percent of individuals who meet diagnostic criteria for IBS do not have a formal diagnosis [[6](#)]. IBS is associated with increased health care costs and is the second highest cause of work absenteeism [[7,8](#)]. In the United States, IBS accounts for 25 to 50 percent of all referrals to gastroenterologists [[9](#)]. This topic will review the clinical manifestations and diagnosis of IBS. The pathophysiology and management of IBS are discussed in detail separately. (See "[Pathophysiology of irritable bowel syndrome](#)" and "[Treatment of irritable bowel syndrome in adults](#)".)

EPIDEMIOLOGY

Prevalence — The prevalence of irritable bowel syndrome (IBS) in North America estimated from population-based studies is approximately 10 to 15 percent [[1,2,10-14](#)]. In a meta-analysis that included eight international studies, the pooled prevalence of IBS was estimated to be 11 percent, with wide variation by geographic region [[15](#)]. The prevalence of IBS was 25 percent lower in those aged over 50 years as compared with those who were younger (OR, 0.75; 95% CI, 0.62-0.92) [[14](#)]. The overall prevalence of IBS in women was higher as compared with men (odds ratio 1.67 [95% CI 1.53–1.82]) [[16](#)]. This relative difference reflects an absolute difference in prevalence of approximately 5 percent between the sexes, with a prevalence in women and

men of 14 and 9 percent, respectively. Women may be more likely to have constipation-predominant IBS as compared with men [16].

Associated conditions — IBS is associated with other conditions including fibromyalgia, chronic fatigue syndrome (also known as systemic exertion intolerance disease), gastroesophageal reflux disease, functional dyspepsia, non-cardiac chest pain, and psychiatric disorders including major depression, anxiety, and somatization [17-21]. (See "[Pathophysiology of irritable bowel syndrome](#)", [section on 'Psychosocial dysfunction'](#).)

CLINICAL MANIFESTATIONS

Irritable bowel syndrome (IBS) is characterized by chronic abdominal pain and altered bowel habits [17].

Chronic abdominal pain — Abdominal pain in IBS is usually described as a cramping sensation with variable intensity and periodic exacerbations. The location and character of the pain can vary widely [17,22]. The severity of the pain may range from mild to severe. The pain is frequently related to defecation. While in some patients abdominal pain is relieved with defecation, some patients report worsening of pain with defecation [23]. Emotional stress and meals may exacerbate the pain. Patients with IBS also frequently report abdominal bloating and increased gas production in the form of flatulence or belching.

Altered bowel habits — Symptoms of IBS include diarrhea, constipation, alternating diarrhea and constipation, or normal bowel habits alternating with either diarrhea and/or constipation.

Diarrhea — Diarrhea is usually characterized as frequent loose stools of small to moderate volume. Bowel movements generally occur during waking hours, most often in the morning or after meals. Most bowel movements are preceded by lower abdominal cramping pain, urgency, and a sensation of incomplete evacuation or tenesmus. Approximately one-half of all patients with IBS complain of mucus discharge with stools [24]. Large volume diarrhea, bloody stools, nocturnal diarrhea, and greasy stools are not associated with IBS.

Constipation — Stools are often hard and may be described as pellet-shaped. Patients may also experience tenesmus even when the rectum is empty.

DIAGNOSIS

Overview of diagnostic approach — Irritable bowel syndrome (IBS) should be suspected in

patients with chronic abdominal pain and altered bowel habits (constipation and/or diarrhea). A clinical diagnosis of IBS requires the fulfillment of symptom-based diagnostic criteria and a limited evaluation to exclude underlying organic disease [25,26]. (See '[Diagnostic criteria](#)' below and '[Initial evaluation](#)' below.)

Diagnostic criteria — In the absence of a biologic disease marker, several symptom-based criteria have been proposed to standardize the diagnosis of IBS. The most widely used among them are the Rome IV criteria.

- **Rome IV criteria for IBS** – According to the Rome IV criteria, IBS is defined as recurrent abdominal pain, on average, at least one day per week in the last three months, associated with two or more of the following criteria [17,25]:
 - Related to defecation
 - Associated with a change in stool frequency
 - Associated with a change in stool form (appearance)
- **IBS subtypes** – Subtypes of IBS are recognized based on the patient's reported predominant bowel habit on days with abnormal bowel movements. The Bristol stool form scale (BSFS) should be used to record stool consistency [27]. Subtypes can only confidently be established when the patient is evaluated off medications used to treat bowel habit abnormalities. IBS subtypes are defined for clinical practice as follows:
 - **IBS with predominant constipation** – Patient reports that abnormal bowel movements are usually constipation (type 1 and 2 in the BSFS)
 - **IBS with predominant diarrhea** – Patient reports that abnormal bowel movements are usually diarrhea (type 6 and 7 in the BSFS)
 - **IBS with mixed bowel habits** – Patient reports that abnormal bowel movements are usually both constipation and diarrhea (more than one-fourth of all the abnormal bowel movements were constipation and more than one-fourth were diarrhea)
 - **IBS unclassified** – Patients who meet diagnostic criteria for IBS but cannot be accurately categorized into one of the other three subtypes.
- **Other criteria** – The Manning criteria include relief of pain with bowel movements, looser and more frequent stools with onset of pain, passage of mucus, and a sense of incomplete emptying ([table 1](#)) [24]. There have been conflicting data regarding the predictive ability of the Manning criteria [28-30]. The Kruis criteria are less frequently used in clinical practice [31,32]. A number of studies have assessed the accuracy of the Rome and Manning criteria

in a variety of practice settings [33-36]. As a result, some investigators continue to use the Manning criteria or a combination of both. No symptom-based criteria have ideal accuracy for diagnosing IBS; however, the Manning and Kruijs criteria perform at least as well as the Rome I criteria [10].

Initial evaluation

History and physical examination — The medical history serves to identify clinical manifestations of IBS as well as identify other possible causes of similar symptoms. The BSFS should be used to record stool consistency [27]. We perform a thorough history with particular attention to the symptoms that are concerning for organic disease. The history should include exposure to a variety of medications that can cause similar symptoms (table 2 and table 3). A subgroup of patients report an acute viral or bacterial gastroenteritis prior to the onset of IBS symptoms. Family history assessment should include the presence of inflammatory bowel disease, colorectal cancer, and celiac disease. The physical examination is usually normal in patients with IBS. However, patients may have mild abdominal tenderness to palpation. In patients with constipation a rectal examination may be useful in identifying dyssynergic defecation [37]. (See "[Etiology and evaluation of chronic constipation in adults](#)", [section on 'Physical examination'](#) and ['Additional evaluation based on the presence of alarm features'](#) below.)

Laboratory testing — There is no definitive diagnostic laboratory test for IBS. The purpose of laboratory testing is primarily to exclude an alternative diagnosis.

- In all patients with suspected IBS, we perform a complete blood count.
- In patients with diarrhea, we perform the following [26]:
 - Fecal calprotectin or fecal lactoferrin
 - Stool testing for giardia (antigen detection or nucleic acid amplification assay)
 - Serologic testing for celiac disease
 - C-reactive protein levels, only if fecal calprotectin and fecal lactoferrin cannot be performed

A fecal calprotectin above a threshold level of 50 mcg/g had a pooled sensitivity and specificity for IBD of 81 and 87 percent, respectively [26]. Lactoferrin threshold values above the threshold range of 4.0 to 7.25 mg/g have a sensitivity and specificity for IBD of 79 and 93 percent, respectively. In a meta-analysis, patients with IBS symptoms and a CRP level of ≤ 0.5 or calprotectin level of $\leq 40\mu\text{g/g}$, there was a ≤ 1 percent probability of IBD [26,38].

Data to support testing for celiac disease are conflicting. In a meta-analysis of 14 studies that included 4204 individuals, of whom 2278 (54 percent) met diagnostic criteria for IBS, 4 percent of patients had celiac disease [39]. However, almost all the studies included in this analysis were conducted outside the United States. A prospective multicenter study performed in the United States compared the prevalence of abnormal celiac antibodies and biopsy proven celiac disease in patients with non-constipated IBS to that of healthy controls. Although more than 7 percent of non-constipated IBS patients had celiac disease associated antibodies suggesting gluten sensitivity, the prevalence of biopsy proven celiac disease was similar to controls [40]. (See "[Epidemiology, pathogenesis, and clinical manifestations of celiac disease in adults](#)" and "[Diagnosis of celiac disease in adults](#)", section on 'Serologic evaluation'.)

The diagnostic role of antibodies to cytolethal distending toxin B (CdtB) and vinculin requires confirmation before they can be used in the evaluation of patients with suspected IBS [41-43]. One study that evaluated anti-CdtB and anti-vinculin titers in 2375 patients with IBS diarrhea, found that patients anti-CdtB were significantly higher in IBS diarrhea as compared to patients with IBD, healthy controls, celiac disease, and IBS constipation [42]. The specificity of anti-CdtB for IBS diarrhea was 92 percent but the sensitivity was only 44 percent. Anti-vinculin had a sensitivity and specificity of 33 and 84 percent, respectively.

Other tests — In addition, we perform a limited number of studies guided by the clinical presentation. These include the following:

- Age-appropriate colorectal cancer screening in all patients.
- In IBS patients with constipation, abdominal radiograph to assess for stool accumulation and determine the severity.
- We perform physiologic testing (anorectal manometry and balloon expulsion testing) to rule out dyssynergic defecation in patients with severe constipation that is refractory to management with dietary changes and osmotic laxative therapy. (See "[Etiology and evaluation of chronic constipation in adults](#)", section on 'Dyssynergic defecation' and "[Etiology and evaluation of chronic constipation in adults](#)", section on 'Motility studies' and "[Treatment of irritable bowel syndrome in adults](#)", section on 'Constipation'.)

Additional evaluation based on the presence of alarm features — The extent of additional testing depends on the presence of alarm features. Although the presence of concerning features may identify patients more likely to have an organic disease, most patients will ultimately have a negative evaluation.

- **Alarm features** – Alarm features include [10]:

- Age of onset after age 50 years
 - Rectal bleeding or melena
 - Nocturnal diarrhea
 - Progressive abdominal pain
 - Unexplained weight loss
 - Laboratory abnormalities (iron deficiency anemia, elevated C-reactive protein or fecal calprotectin/lactoferrin)
 - Family history of IBD or colorectal cancer
- **Patients without alarm features** – In patients who meet diagnostic criteria for IBS and have no alarm features, we do not routinely perform any additional testing beyond the initial evaluation. This limited diagnostic approach rules out organic disease in over 95 percent of patients [\[44,45\]](#).
 - **Patients with alarm features** – In patients with alarm features, we perform additional evaluation to exclude other causes of similar symptoms [\[46\]](#). The diagnostic evaluation is based on the clinical presentation and usually includes endoscopic evaluation in all patients and imaging in selected cases. In patients with diarrhea, we perform colonoscopy to evaluate for the presence of IBD and perform biopsies to exclude microscopic colitis [\[47-49\]](#). We reserve colonic imaging (eg, abdominal computed tomography scan) if there is a clinical suspicion for a structural lesion [\[46\]](#). The imaging modality is guided by the clinical presentation. As an example, if pain, bloating, early satiety and constipation are of recent onset in a postmenopausal woman, then we perform a pelvic imaging with an ultrasound and/or abdominal CT scan [\[50\]](#). (See ["Etiology and evaluation of chronic constipation in adults"](#), [section on 'Endoscopy'](#) and ["Colorectal cancer: Epidemiology, risk factors, and protective factors"](#), [section on 'Incidence'](#).)

DIFFERENTIAL DIAGNOSIS

The differential diagnosis of irritable bowel syndrome (IBS) is broad. In patients with diarrhea-predominant symptoms, other important causes of chronic diarrhea include celiac disease, microscopic colitis, small intestinal bacterial overgrowth, and inflammatory bowel disease. Constipation may be secondary to organic disease, dyssynergic defecation, or slow colonic transit. While some of these alternative diagnoses are excluded during the course of evaluation in patients with suspected IBS, other diagnoses require additional diagnostic testing and need only be performed in selected patients with alarm features. Other causes of chronic diarrhea and constipation are discussed in detail separately. (See ["Initial evaluation"](#) above and ["Approach to the adult with chronic diarrhea in resource-rich settings"](#) and ["Etiology and](#)

[evaluation of chronic constipation in adults"](#) and ['Additional evaluation based on the presence of alarm features'](#) above.)

DISEASE COURSE

Most patients with irritable bowel syndrome (IBS) have chronic symptoms that vary in severity over time. In a systematic review that included clinic-based IBS patients with variable long term follow-up (six months to six years), 2 to 5 percent of patients were diagnosed with an alternate gastrointestinal disease. Symptoms remained unchanged or progressed in 30 to 50 percent and 2 to 18 percent, respectively [51]. An improvement in symptoms was reported in 12 to 38 percent of patients. Patients may also experience a change in IBS subtype over time with the most frequent change being from predominant constipation or diarrhea to mixed bowel habits.

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: Irritable bowel syndrome"](#).)

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 5th to 6th 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 10th to 12th 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 topics (see ["Patient education: Irritable bowel syndrome \(The Basics\)"](#))
- Beyond the Basics topics (see ["Patient education: Irritable bowel syndrome \(Beyond the](#)

SUMMARY AND RECOMMENDATIONS

- Irritable bowel syndrome (IBS) is a functional disorder of the gastrointestinal tract characterized by chronic abdominal pain and altered bowel habits. The estimated prevalence of IBS globally is approximately 11 percent with a higher prevalence in younger individuals and in women. (See '[Epidemiology](#)' above.)
- Abdominal pain in IBS is usually described as a cramping sensation with variable intensity and periodic exacerbations. The pain is frequently related to defecation. While in some patients abdominal pain is relieved with defecation, a substantial portion of patients report worsening of pain with defecation. (See '[Chronic abdominal pain](#)' above.)
- Symptoms of IBS include diarrhea, constipation, alternating diarrhea and constipation, or normal bowel habits alternating with either diarrhea and/or constipation. Diarrhea is usually characterized as frequent loose stools of small to moderate volume. Bowel movements generally occur during waking hours, most often in the morning or after meals. Patients may have constipation with interludes of diarrhea or normal bowel function. (See '[Altered bowel habits](#)' above.)
- IBS should be suspected in patients with chronic abdominal pain and altered bowel habits (constipation and/or diarrhea). A clinical diagnosis of IBS requires the fulfillment of symptom-based diagnostic criteria and a limited evaluation to exclude underlying organic disease. (See '[Overview of diagnostic approach](#)' above.)

According to the Rome IV criteria, IBS is defined as recurrent abdominal pain, on average, at least one day per week in the last three months, associated with two or more of the following criteria (see '[Diagnostic criteria](#)' above):

- Related to defecation
 - Associated with a change in stool frequency
 - Associated with a change in stool form (appearance)
- Initial evaluation in all patients with suspected IBS includes a history and physical examination, and limited testing to evaluate for the presence of alarm features concerning for organic disease. (See '[Initial evaluation](#)' above.)
 - In all patients with suspected IBS, we perform a complete blood count and age

appropriate colorectal cancer screening.

- In patients with diarrhea, we perform the following:
 - Fecal calprotectin or fecal lactoferrin
 - Stool testing for giardia
 - Serologic testing for celiac disease
 - C-reactive protein levels only if fecal calprotectin and fecal lactoferrin cannot be performed
- Alarm features concerning for underlying organic disease include:
 - Age of onset after age 50 years
 - Rectal bleeding or melena
 - Nocturnal diarrhea
 - Progressive abdominal pain
 - Unexplained weight loss
 - Laboratory abnormalities (eg, iron deficiency anemia, elevated C-reactive protein or fecal calprotectin/lactoferrin)
 - Family history of inflammatory bowel disease or colorectal cancer

In patients who meet diagnostic criteria for IBS and have no alarm features, we do not routinely perform any additional testing beyond the initial evaluation.

In patients with alarm features, we perform additional evaluation to exclude other causes of similar symptoms. The diagnostic evaluation is based on the clinical presentation and usually includes endoscopic evaluation in all patients and imaging in selected cases. (See ['Additional evaluation based on the presence of alarm features'](#) above.)

- Most patients with IBS have chronic symptoms that vary in severity over time. Patients may also experience a change in IBS subtype over time with the most frequent change being from predominant constipation or diarrhea to mixed bowel habits. (See ['Disease course'](#) above.)

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REFERENCES

1. [Talley NJ, Zinsmeister AR, Van Dyke C, Melton LJ 3rd. Epidemiology of colonic symptoms](#)

- [and the irritable bowel syndrome. Gastroenterology 1991; 101:927.](#)
2. [Drossman DA, Li Z, Andruzzi E, et al. U.S. householder survey of functional gastrointestinal disorders. Prevalence, sociodemography, and health impact. Dig Dis Sci 1993; 38:1569.](#)
 3. [Jones R, Lydeard S. Irritable bowel syndrome in the general population. BMJ 1992; 304:87.](#)
 4. [Heaton KW, O'Donnell LJ, Braddon FE, et al. Symptoms of irritable bowel syndrome in a British urban community: consulters and nonconsulters. Gastroenterology 1992; 102:1962.](#)
 5. [Ford AC, Forman D, Bailey AG, et al. Irritable bowel syndrome: a 10-yr natural history of symptoms and factors that influence consultation behavior. Am J Gastroenterol 2008; 103:1229.](#)
 6. [Sayuk GS, Wolf R, Chang L. Comparison of Symptoms, Healthcare Utilization, and Treatment in Diagnosed and Undiagnosed Individuals With Diarrhea-Predominant Irritable Bowel Syndrome. Am J Gastroenterol 2017; 112:892.](#)
 7. [Schuster MM. Diagnostic evaluation of the irritable bowel syndrome. Gastroenterol Clin North Am 1991; 20:269.](#)
 8. [Sandler RS, Everhart JE, Donowitz M, et al. The burden of selected digestive diseases in the United States. Gastroenterology 2002; 122:1500.](#)
 9. [Everhart JE, Renault PF. Irritable bowel syndrome in office-based practice in the United States. Gastroenterology 1991; 100:998.](#)
 10. [American College of Gastroenterology Task Force on Irritable Bowel Syndrome, Brandt LJ, Chey WD, et al. An evidence-based position statement on the management of irritable bowel syndrome. Am J Gastroenterol 2009; 104 Suppl 1:S1.](#)
 11. [Hahn BA, Saunders WB, Maier WC. Differences between individuals with self-reported irritable bowel syndrome \(IBS\) and IBS-like symptoms. Dig Dis Sci 1997; 42:2585.](#)
 12. [Saito YA, Locke GR, Talley NJ, et al. A comparison of the Rome and Manning criteria for case identification in epidemiological investigations of irritable bowel syndrome. Am J Gastroenterol 2000; 95:2816.](#)
 13. [Thompson WG, Irvine EJ, Pare P, et al. Functional gastrointestinal disorders in Canada:](#)

- [first population-based survey using Rome II criteria with suggestions for improving the questionnaire. Dig Dis Sci 2002; 47:225.](#)
14. [Lovell RM, Ford AC. Global prevalence of and risk factors for irritable bowel syndrome: a meta-analysis. Clin Gastroenterol Hepatol 2012; 10:712.](#)
 15. [Hungin AP, Whorwell PJ, Tack J, Mearin F. The prevalence, patterns and impact of irritable bowel syndrome: an international survey of 40,000 subjects. Aliment Pharmacol Ther 2003; 17:643.](#)
 16. [Lovell RM, Ford AC. Effect of gender on prevalence of irritable bowel syndrome in the community: systematic review and meta-analysis. Am J Gastroenterol 2012; 107:991.](#)
 17. [Longstreth GF, Thompson WG, Chey WD, et al. Functional bowel disorders. Gastroenterology 2006; 130:1480.](#)
 18. [Lovell RM, Ford AC. Prevalence of gastro-esophageal reflux-type symptoms in individuals with irritable bowel syndrome in the community: a meta-analysis. Am J Gastroenterol 2012; 107:1793.](#)
 19. [Whorwell PJ, McCallum M, Creed FH, Roberts CT. Non-colonic features of irritable bowel syndrome. Gut 1986; 27:37.](#)
 20. [Hershfield NB. Nongastrointestinal symptoms of irritable bowel syndrome: an office-based clinical survey. Can J Gastroenterol 2005; 19:231.](#)
 21. [Chey WD, Kurlander J, Eswaran S. Irritable bowel syndrome: a clinical review. JAMA 2015; 313:949.](#)
 22. [Swarbrick ET, Hegarty JE, Bat L, et al. Site of pain from the irritable bowel. Lancet 1980; 2:443.](#)
 23. [Simren M, Palsson OS, Whitehead WE. Update on Rome IV Criteria for Colorectal Disorders: Implications for Clinical Practice. Curr Gastroenterol Rep 2017; 19:15.](#)
 24. [Manning AP, Thompson WG, Heaton KW, Morris AF. Towards positive diagnosis of the irritable bowel. Br Med J 1978; 2:653.](#)
 25. [Mearin F, Lacy BE, Chang L, et al. Bowel Disorders. Gastroenterology 2016.](#)
 26. [Smalley W, Falck-Ytter C, Carrasco-Labra A, et al. AGA Clinical Practice Guidelines on the Laboratory Evaluation of Functional Diarrhea and Diarrhea-Predominant Irritable](#)

[Bowel Syndrome in Adults \(IBS-D\). Gastroenterology 2019; 157:851.](#)

27. [Blake MR, Raker JM, Whelan K. Validity and reliability of the Bristol Stool Form Scale in healthy adults and patients with diarrhoea-predominant irritable bowel syndrome. Aliment Pharmacol Ther 2016; 44:693.](#)
28. [Talley NJ, Phillips SF, Melton LJ, et al. Diagnostic value of the Manning criteria in irritable bowel syndrome. Gut 1990; 31:77.](#)
29. [Smith RC, Greenbaum DS, Vancouver JB, et al. Gender differences in Manning criteria in the irritable bowel syndrome. Gastroenterology 1991; 100:591.](#)
30. [Taub E, Cuevas JL, Cook EW 3rd, et al. Irritable bowel syndrome defined by factor analysis. Gender and race comparisons. Dig Dis Sci 1995; 40:2647.](#)
31. [Kruis W, Thieme C, Weinzierl M, et al. A diagnostic score for the irritable bowel syndrome. Its value in the exclusion of organic disease. Gastroenterology 1984; 87:1.](#)
32. [Frigerio G, Beretta A, Orsenigo G, et al. Irritable bowel syndrome. Still far from a positive diagnosis. Dig Dis Sci 1992; 37:164.](#)
33. [Hammer J, Talley NJ. Diagnostic criteria for the irritable bowel syndrome. Am J Med 1999; 107:5S.](#)
34. [Fass R, Longstreth GF, Pimentel M, et al. Evidence- and consensus-based practice guidelines for the diagnosis of irritable bowel syndrome. Arch Intern Med 2001; 161:2081.](#)
35. [Vanner SJ, Depew WT, Paterson WG, et al. Predictive value of the Rome criteria for diagnosing the irritable bowel syndrome. Am J Gastroenterol 1999; 94:2912.](#)
36. [Ford AC, Bercik P, Morgan DG, et al. Validation of the Rome III criteria for the diagnosis of irritable bowel syndrome in secondary care. Gastroenterology 2013; 145:1262.](#)
37. [Talley NJ. How to do and interpret a rectal examination in gastroenterology. Am J Gastroenterol 2008; 103:820.](#)
38. [Menees SB, Powell C, Kurlander J, et al. A meta-analysis of the utility of C-reactive protein, erythrocyte sedimentation rate, fecal calprotectin, and fecal lactoferrin to exclude inflammatory bowel disease in adults with IBS. Am J Gastroenterol 2015; 110:444.](#)
39. [Ford AC, Chey WD, Talley NJ, et al. Yield of diagnostic tests for celiac disease in individuals with symptoms suggestive of irritable bowel syndrome: systematic review and](#)

- [meta-analysis. Arch Intern Med 2009; 169:651.](#)
40. [Cash BD, Rubenstein JH, Young PE, et al. The prevalence of celiac disease among patients with nonconstipated irritable bowel syndrome is similar to controls. Gastroenterology 2011; 141:1187.](#)
 41. [Rezaie A, Park SC, Morales W, et al. Assessment of Anti-vinculin and Anti-cytolethal Distending Toxin B Antibodies in Subtypes of Irritable Bowel Syndrome. Dig Dis Sci 2017; 62:1480.](#)
 42. [Pimentel M, Morales W, Rezaie A, et al. Development and validation of a biomarker for diarrhea-predominant irritable bowel syndrome in human subjects. PLoS One 2015; 10:e0126438.](#)
 43. [Schmulson M, Balbuena R, Corona de Law C. Clinical experience with the use of anti-CdtB and anti-vinculin antibodies in patients with diarrhea in Mexico. Rev Gastroenterol Mex 2016; 81:236.](#)
 44. [Schmulson MW, Chang L. Diagnostic approach to the patient with irritable bowel syndrome. Am J Med 1999; 107:20S.](#)
 45. [Svendsen JH, Munck LK, Andersen JR. Irritable bowel syndrome--prognosis and diagnostic safety. A 5-year follow-up study. Scand J Gastroenterol 1985; 20:415.](#)
 46. [O'Connor OJ, McSweeney SE, McWilliams S, et al. Role of radiologic imaging in irritable bowel syndrome: evidence-based review. Radiology 2012; 262:485.](#)
 47. [Guagnozzi D, Arias Á, Lucendo AJ. Systematic review with meta-analysis: diagnostic overlap of microscopic colitis and functional bowel disorders. Aliment Pharmacol Ther 2016; 43:851.](#)
 48. [Kamp EJ, Kane JS, Ford AC. Irritable Bowel Syndrome and Microscopic Colitis: A Systematic Review and Meta-analysis. Clin Gastroenterol Hepatol 2016; 14:659.](#)
 49. [Gudsoorkar VS, Quigley EM. Distinguishing Microscopic Colitis From Irritable Bowel Syndrome. Clin Gastroenterol Hepatol 2016; 14:669.](#)
 50. [Goff B. Symptoms associated with ovarian cancer. Clin Obstet Gynecol 2012; 55:36.](#)
 51. [El-Serag HB, Pilgrim P, Schoenfeld P. Systemic review: Natural history of irritable bowel syndrome. Aliment Pharmacol Ther 2004; 19:861.](#)

GRAPHICS

Manning criteria for the diagnosis of irritable bowel syndrome*

Pain relieved with defecation
More frequent stools at the onset of pain
Looser stools at the onset of pain
Visible abdominal distention
Passage of mucus
Sensation of incomplete evacuation

* The likelihood of irritable bowel syndrome is proportional to the number of Manning criteria that are present.

Graphic 63034 Version 1.0

Medications associated with diarrhea

System targeted by drug	Type of agent	Examples
Cardiovascular	Antiarrhythmics	Digoxin Procainamide Quinidine
	Antihypertensives	ACE inhibitors Angiotensin II receptor blockers* Beta blockers Hydralazine Methyldopa
	Cholesterol-lowering agents	Clofibrate Gemfibrozil Statins
	Diuretics	Acetazolamide Ethacrynic acid Furosemide
Central nervous system	Antianxiety drugs	Alprazolam Meprobamate
	Antiparkinsonian drugs	Levodopa
	Other agents	Anticholinergic agents Fluoxetine Lithium Tacrine
Endocrine	Oral hypoglycemic agents	Metformin
	Thyroid replacement therapy	Synthroid
Gastrointestinal	Antiulcer/antacid drugs	H ₂ RAs Magnesium-containing antacids Misoprostol Proton pump inhibitors
	Bile acids	Chenodeoxycholic acid Ursodeoxycholic acid
	Laxatives	Cathartics Lactulose Sorbitol
	Treatments for inflammatory bowel disease	5-aminosalicylates (particularly olsalazine)
Musculoskeletal	Gold salts	Auranofin
	Nonsteroidal antiinflammatory drugs	Ibuprofen Mefenamic acid Naproxen Phenylbutazone
	Treatments for periodic fever syndrome or gout	Colchicine
Other	Antibiotics [†]	Amoxicillin Ampicillin Cephalosporins Clindamycin

	Neomycin Tetracycline
Antineoplastic agents	Many
Dietary	Alcohol Sugar substitutes (eg, sorbitol)
Vitamins	Magnesium Vitamin C

ACE: angiotensin-converting enzyme; H2RA: histamine-2 receptor antagonist.

* Olmesartan has been associated with sprue-like enteropathy.

¶ Most antibiotics have been associated with diarrhea.

Data from:

1. Holt PR. Diarrhea and malabsorption in the elderly. *Gastroenterol Clin North Am* 2001; 30:427.
2. Ratnaik RN, Jones TE. Mechanisms of drug-induced diarrhoea in the elderly. *Drugs Aging* 1998; 13:245.

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Drugs associated with constipation

Analgesics
Anticholinergics
Antihistamines
Antispasmodics
Antidepressants
Antipsychotics
Cation-containing agents
Iron supplements
Aluminum (antacids, sucralfate)
Barium
Neurally active agents
Opiates
Antihypertensives
Ganglionic blockers
Vinca alkaloids
Calcium channel blockers
5HT3 antagonists

Contributor Disclosures

Arnold Wald, MD Nothing to disclose **Nicholas J Talley, MD, PhD** Employment: University of Newcastle [PVC Global Research]; John Hunter Hospital [Senior Staff Specialist in gastroenterology]; Medical Journal of Australia [Editor-In-Chief]. Patent Holder: Biomarkers of irritable bowel syndrome [Irritable bowel syndrome]; Licensing Questionnaires [Mayo Clinic Talley Bowel Disease Questionnaire - Mayo Dysphagia Questionnaire (Nepean Dyspepsia Index)]; Nestec European Patent [Application 127353589; Nanotechnology]; Singapore 'Provisional' Patent [NTU Ref TD/129/17 "Microbiota Modulation Of BDNF Tissue Repair Pathway"]. Grant/Research/Clinical Trial Support: Commonwealth Labs [IBS (diagnostic blood test)]; VN National Science Challenge [Research funding for IBS]. Consultant/Advisory Boards: Adelphi Values [Functional dyspepsia (Patient-reported outcome measures)]; Viscera Labs [Bile acid sequestrant]; twoXAR [IBS]; Anantara Lifesciences [IBS, IBD (Dietary supplement)]; Avrio [Gastroenterology (OTC drugs)]; Censa [Diabetic gastroparesis epidemiology]; Sanofi [Probiotic product (Bacillus clausii)]; Pfizer [IBS (OTC drugs in gastroenterology)]; Planet Innovation [Gastroenterology (Gas capsule)]; Takeda [Gastroparesis (TAK906)]; Allakos [Gastric eosinophilic disease (AK002)]; Progenity Inc, San Diego [SIBO (Intestinal capsule device)]; IM HealthScience [IBS, FD (Peppermint oil)]. Other Financial Interest: IM Health Science [Medicine, clinical skills]. **Shilpa Grover, MD, MPH, AGAF** Nothing to disclose

Contributor disclosures are reviewed for conflicts of interest by the editorial group. When found, these are addressed by vetting through a multi-level review process, and through requirements for references to be provided to support the content. Appropriately referenced content is required of all authors and must conform to UpToDate standards of evidence.

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