

Small intestinal bacterial overgrowth (SIBO)

Small intestinal bacterial overgrowth (SIBO) is a chronic intestinal disorder characterized by excessive amounts of bacteria in the small intestine. Bacterial overgrowth in SIBO may contribute to increased intestinal permeability, often referred to as leaky gut, and inflammation.

Signs, symptoms, and complications

Symptoms of SIBO, which may vary between individuals, are non-specific and often overlap with a number of other associated disorders, making the condition difficult to recognize and diagnose.

SIBO symptoms can include:

- Abdominal distension
- Abdominal pain
- Bloating
- Chronic diarrhea
- [Fatigue](#)
- Flatulence



SIBO may also result in malabsorption of [macronutrients and micronutrients](#), certain [nutrient deficiencies](#), and other complications.

SIBO may be associated with complications and additional symptoms outside of the gastrointestinal (GI) tract, such as:

- Anemia
- Arthralgia (joint pain without swelling)
- Bladder pain syndrome
- Chronic prostatitis (prostate gland inflammation)
- Hypoproteinemia/hypoalbuminemia (low blood protein levels)
- Neuropathies (nerve dysfunction associated with numbness)
- Osteoporosis
- Restless leg syndrome
- Rosacea (an inflammatory skin condition)
- Steatorrhea (increased fat excretion in stools)
- Weight loss

Causes and risk factors

A disruption in the body's mechanisms that regulate the intestinal [microbiota](#) can contribute to SIBO. For example, inadequate secretion of digestive juices and impaired motility in the small intestine are the two most common factors that predispose individuals to bacterial overgrowth.

Other factors that have been shown to increase the risk of developing SIBO include:

- [Alcohol use disorder](#)
- Alterations or abnormalities of the GI tract (e.g., pouches called diverticula, intestinal narrowing, strictures, abnormal connections called fistulas)
- Certain medications (e.g., antibiotics, antimotility agents, proton pump inhibitors)
- Certain metabolic conditions (e.g., [diabetes](#), hypochlorhydria)
- Dysfunction of certain organs (e.g., Crohn's disease, cirrhosis, pancreatitis, renal failure, scleroderma)
- Impaired immune function
- Increasing age
- [Irritable bowel syndrome \(IBS\)](#)
- Motility disorders (e.g., [celiac disease](#), intestine dysmotility)
- Vagotomy (surgery that affects or removes part of the vagus nerve)

Intake of [fiber](#), [prebiotics](#), some [probiotics](#), and a specific group of carbohydrates known as [FODMAPs](#) have also been shown to alter the intestinal microbiota and may, therefore, increase the risk of developing SIBO or exacerbate its symptoms.

Preventing and addressing SIBO

Treating SIBO should be done with the help of an integrative healthcare practitioner, who may order testing such as bacterial cultures and hydrogen/methane breath tests. Treatment typically involves the following steps:

1. Identifying any underlying causes
2. Treating the bacterial overgrowth with antibiotics or antimicrobial dietary supplements
3. Correcting nutrient deficiencies common in cases of SIBO (e.g., calcium, magnesium, vitamin B12, and fat-soluble vitamins A, D, E, and K)
4. Preventing recurrence by minimizing lifestyle risk factors and addressing related health conditions such as poor gut motility

Diet

In cases of SIBO, carbohydrates, such as fructose, lactose, and fermentable oligo-, di-, monosaccharides and polyols (FODMAPs), may be fermented by bacteria in the small intestine, leading to increased digestive symptoms, such as abdominal pain, bloating, and flatulence.

Some individuals may experience improvements in bacterial overgrowth and associated symptoms by following a carbohydrate-restricting diet, such as the elemental diet, the [low-FODMAP diet](#), the Specific Carbohydrate Diet (SCD), and the Gut and Psychology Syndrome (GAPS) diet.

Stress management

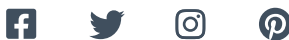
Intestinal bacteria may be influenced by psychological factors such as stress. There is limited research on the effects of stress management techniques in individuals with SIBO. However, there is evidence that techniques such as massage, [meditation](#), psychotherapy, and yoga have beneficial effects in cases of IBS, which commonly co-occurs in individuals with SIBO.

References

1. Bohm, M., Siwiec, R. M., & Wo, J. M. (2013). Diagnosis and management of small intestinal bacterial overgrowth. *Nutrition in Clinical Practice*, 28(3), 289–299.
2. Chedid, V., Dhalla, S., Clarke, J. O., Roland, B. C., Dunbar, K. B., Koh, J., ... & Mullin, G. E. (2014). Herbal therapy is equivalent to rifaximin for the treatment of small intestinal bacterial overgrowth. *Global Advances in Health and Medicine*, 3(3), 16–24.
3. Dukowicz, A. C., Lacy, B. E., & Levine, G. M. (2007). Small intestinal bacterial overgrowth: A comprehensive review. *Gastroenterology & Hepatology*, 3(2), 112–122.
4. Ghoshal, U. C., Shukla, R., & Ghoshal, U. (2017). Small Intestinal bacterial overgrowth and irritable bowel syndrome: A bridge between functional organic dichotomy. *Gut and Liver*, 11(2), 196–208.
5. Ring, M., & Namboodiri, S. (2018). Clinical roundup: Selected treatment options for small intestinal bacterial overgrowth. (2018). *Focus on Alternative and Complementary Therapies*, 24(3), 140–142.
6. Sachdev, A. H., & Pimentel, M. (2013). Gastrointestinal bacterial overgrowth: Pathogenesis and clinical significance. *Therapeutic Advances in Chronic Disease*, 4(5), 223–231.



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