

# Small Intestinal Bacterial Overgrowth



## What is SIBO?

Small intestinal bacterial overgrowth, or SIBO, is characterized as a disorder of excessive bacteria in the small intestine. Our gastrointestinal tract hosts over 100 trillion bacteria, where the vast majority being housed in the large bowel.

A healthy small bowel has about 10,000 organisms/mL whereas in the bacterial population of a patient with SIBO has over 1-10 million organisms/mL (1).

The type of microbial flora in the small intestine also plays an important role in the manifestation of signs and symptoms of an overgrowth. An example of this imbalance is when there is a predominance of bacteria that destroys bile salts fat malabsorption occurs, or if gram negative coliforms, such as Klebsiella overgrow it can produce a toxin that destroys the cellular wall of the gut (2).

As populations of dysfunctional bacterial increase in the small intestine it disturbs gut immune function, leading to a reduced resistance to infection, and further inflammation of the gut wall.

## Symptoms

Common manifestation of SIBO are nonspecific GI issues which include:

- Bloating and flatulence
- Abdominal distension and/or pain
- Chronic diarrhea
- Chronic constipation
- Fatigue and malaise
- Brain fog

Later symptoms or complications of untreated SIBO may include:

- Fat malabsorption
- Nutritional deficiencies, particularly fat soluble vitamins
- Weight loss
- Protein deficiency
- Osteoporosis

## Causes & Risk Factors

There are many causes that can lead to SIBO, but it is based on the foundation that anything that changes the normal balance of the GI system may be a contributing factor. The most common risk factors include:

- Low stomach acid
- Impaired gut motility. This can be due to a primary disorder affecting the nervous tissue of the intestinal tract, or secondary to long-standing diabetes, connective tissue disorders, prior viral infections, or poor blood circulation.
- Structural abnormalities either due to congenital defects, disease complications, or surgery.
- Compromised immune function. Patients who are immunocompromised are prone to SIBO
- IBS
- Metabolic disorders such as poorly controlled diabetes
- Aging
- Inflammatory bowel diseases such as Crohn's or Ulcerative Colitis
- Chronic diarrhea or constipation

For a comprehensive list of other symptoms and risk factors you can visit:

<http://www.siboinfo.com/symptoms.html>

## Diagnosis

Clinical diagnosis of SIBO can be challenging and usually requires a detailed history taken by a physician and further testing. Here, at INMC, we offer a SIBO lactulose breath test. This test is performed at home, and involves a 24 hour preparation period. This is followed by ingestion of lactulose which feeds bacteria in the small intestine, and then produces certain gases.

These gases can be detected in the breath which is collected and analyzed in our lab. The variability of the types and amounts of gases help aide in the diagnosis of SIBO.



## Treatment

Once identified the goal of treatment is threefold (3), to correct the underlying cause, provide nutritional support, and treat the overgrowth. Sometimes targeting the underlying cause may be to address an original pathology, like structural abnormalities with surgery, or diabetes management.

Providing nutritional support to establish gut health then treating the overgrowth with antibiotics to finalize the treatment.

### 4 'Rs' Guideline

To treat SIBO, follow the 4 'Rs' Guideline:

**Remove** foods and bacteria causing inflammation and creating an environment for pathologic bacteria to thrive. This is normally done with diet and antibiotic therapy.

**Replace** the nutrients that are required for optimal digestion. This may include nutritional vitamins and supplements, but also digestive aids such as betaine hydrochloric acid and digestive enzymes.

**Repairing** the gut mucosa is next. This is particularly important with long standing SIBO. After a while the pathogenic bacteria eats away at the gut lining and needs repair over time.

**Reinoculate** with the right bacteria is the last step. Many practitioners do a combination of probiotics with dietary regimens to implement this, and some implement fecal transplants.

## Sources

1. Bouhnik Y, Alain S, Attar A, et al. Bacterial populations contaminating the upper gut in patients with small intestinal bacterial overgrowth syndrome. *Am J Gastroenterol.* 1999;94:1327-1331
2. Saltzman JR, Kowdley KV, Pedrosa MC, et al. Bacterial overgrowth without clinical malabsorption in elderly hypochlorhydric subjects. *Gastroenterology.* 1994;106:615-623
3. Riordan SM, McIver CJ, Wakefield D, et al. Small intestinal mucosal immunity and morphometry in luminal overgrowth of indigenous gut flora. *Am J Gastroenterol.* 2001;96:494-500.

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