ACG Clinical Guidelines: Small Intestinal Bacterial Overgrowth

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The Emoroid Digest
@EmoryGastroHep

Small Intestinal Bacterial Overgrowth (SIBO)

- Presence of **excessive numbers of bacteria** in the small bowel causing GI symptoms
  - Predominantly **gram negative** bacteria that ferment carbohydrates to produce gas
- Symptoms:
  - Most common symptom = **bloating**
  - Other symptoms: nausea, flatulence, abdominal distension/cramping/pain, or constipation
  - Some severe symptoms associated with iatrogenic conditions (scleroderma or postsurgical blind loop): steatorrhea, weight loss, fat soluble vitamin deficiencies, mucosal inflammation

Intestinal Methanogen Overgrowth (IMO)

- Methanogens are not bacteria but belong to the Archae domain
- Methanogens overgrow in **small intestine & colon**, hence the intestinal methanogen designation
- Methanobrevibacter smithii is the key methanogen
- Most common symptom: **constipation**
- Targeting methanogens may reduce methane production and improve constipation

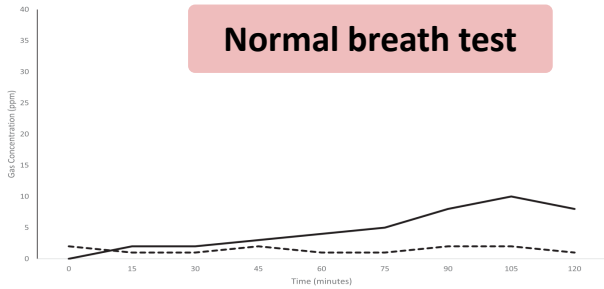
Diagnostic Testing

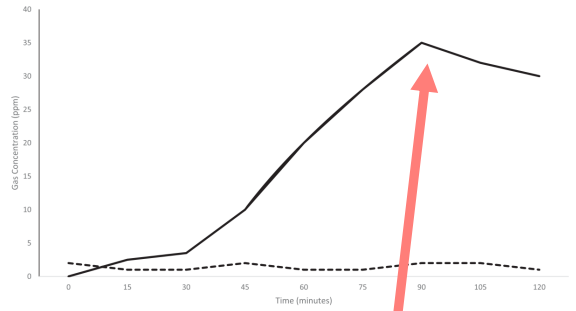
Breath Testing

----- = methane
——— = hydrogen

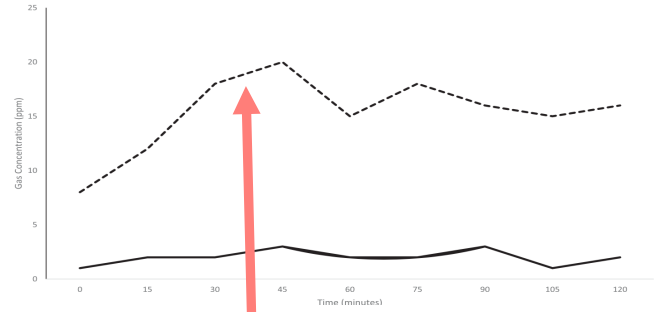
- **Preferred test** since it is noninvasive
- Ingest 75g of glucose or 10g lactulose (favor lactulose in patients with DM) followed by 1 cup of water then measure hydrogen or methanogen for 90 minutes

Normal breath test





Positive hydrogen test = exhaling hydrogen ≥ 20 ppm above baseline



Positive methane test = presence of methane levels ≥ 10 ppm

Key methods to ensure accurate results:

- Avoid antibiotics for 4 weeks before the test
- Avoid promotility agents and laxatives for 1 week before the test
- Avoid fermentable foods for 1 day before the test and fast for 8-12 hours prior
- During the test: avoid smoking and minimize physical exertion

Pimentel M, Saad RJ, Long MD, Rao SSC. ACG Clinical Guideline: Small Intestinal Bacterial Overgrowth. Am J Gastroenterol. 2020 Feb;115(2):165-178. doi: 10.14309/ajg.0000000000000501. PMID: 32023228.

Diagnostic Testing (continued)

Small bowel aspiration & culture

- Considered the **gold standard** but it is invasive and no standardized technique for collection of culture
- Positive result = bacterial colony count of ≥ 10^3 CFU/mL in a duodenal/jejunal aspirate

Newer Techniques

- Ongoing research for orally ingested capsule and some with capabilities for sampling small bowel bacteria

Diagnostic Considerations

- Testing to diagnose SIBO is based on symptoms & risk factors
- It is recommended to **avoid empiric treatment without testing** but current testing methods are limited in sensitivity/specificity
- Use breath testing to diagnose in patients with:

1) IBS - some studies suggest up to 78% of patients with IBS suffer with SIBO
2) Symptomatic patients with suspected motility disorders
3) Symptomatic patients with prior luminal abdominal surgeries (post gastric and colon surgeries, especially with those with loss of ileocecal valve

- Avoid breath testing in asymptomatic patients on PPIs

- **Antibiotics are the cornerstone** of therapy
- No clear evidence for retreatment with antibiotics
- Dietary manipulation with low FODMAP may be helpful
- No clear evidence for probiotics or fecal microbiota transplant

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Conditions Associated with SIBO

Mechanical Causes
- Small bowel tumor
- Volvulus
- Intussusception
- Post surgical causes

Immune-related
- HIV
- CVID
- IgA deficiency

Other
- Aging (the elderly)
- Small bowel diverticulosis
- Female

Systemic Disease
- Diabetes
- Scleroderma
- Amyloidosis
- Hypothyroidism
- Autoimmune gastritis
- Parkinson's disease
- IBD
- Alcoholism
- Crohn's disease
- Celiac disease

Motility
- IBS
- Pseudo-obstruction
- Visceral myopathies
- Mitochondrial disease

Malabsorption
- Pancreatic insufficiency
- Cirrhosis (altered bile acid composition)

Medications
- Opiates
- Potent antisecretory agents

Treatment

Antibiotic	Dose	Efficacy
Rifaximin (**ONLY non-systemic antibiotic)	500mg TID	61-78%
Amoxicillin-clavulanic acid	875mg BID	50%
Ciprofloxacin	500mg BID	43-100%
Doxycycline	100mg QD to BID	---
Metronidazole	250mg TID	43-87%
Neomycin	500mg BID	33-55%
Norfloxacin	400mg QD	30-100%
Tetracycline	250mg QID	87.5%
Trimethoprim-sulfamethoxazole	160mg/800mg BID	95%