

SIBO – Everything You Need To Know About The #1 Cause of IBS



Dr. Tomah Phillips, ND

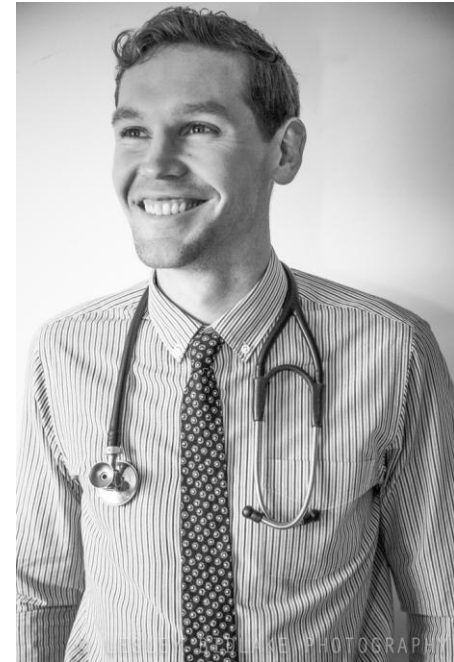


Overview

- ◆ Intro – What is SIBO?
 - ◆ “Tolle causam” - Underlying causes
- ◆ Clinical manifestations
- ◆ Pathophysiology
- ◆ Diagnosis
 - ◆ Best options, and test interpretation
- ◆ Treatment
 - ◆ Pharmaceutical, herbal and dietary considerations
- ◆ Tips for preventing relapse

Bio

- ◆ Graduated from Boucher Institute of Naturopathic Medicine
- ◆ Instructor of Biomedical Sciences at Boucher
- ◆ Instructor of Physiology and Pathology at the Canadian School of Natural Nutrition
- ◆ Practice at Evoke Integrative Medicine in downtown Vancouver
- ◆ Medical advisor for Vita Aid Professional Therapeutics





Meeting



Help



Share



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Video

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Q & A

Chat (Everyone)

Everyone

Attendees (3)

Active Speakers

Hosts (1)

Joseph Cheng 2

Presenters (1)

Tomah Phillips

Participants (1)

Amy Rolfsen

Presenter Chat (Ev...

Everyone

Meeting 🔊 🎤 👤 👤 Help 📶

Share

- 👤 Raise Hand
- ✅ Agree
- ❌ Disagree
- 🛑 Step Away

🔊 Speak Louder

🔊 Speak Softer

🏃 Speed Up

🐢 Slow Down

😄 Laughter

👏 Applause

❌ Clear Status

📁 PPT

📄 PDF

🖥️

🎵

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Video

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Q & A

Chat (Everyone)

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- 🔊 Active Speakers
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- ▼ Presenters (1)
 - 👤 Tomah Phillips
- ▼ Participants (1)
 - 👤 Amy Rolfsen

Presenter Chat (Ev...)

Everyone

What IS SIBO?

- ◆ Overgrowth of bacteria in the small intestine that normally should not reside there in significant quantities
- ◆ Bacteria interfere with normal digestion and nutrient absorption, and produce gases that lead to common IBS symptoms, such as gas, bloating, diarrhea/constipation
- ◆ A number of causes can lead to development of SIBO, and SIBO is associated with a variety of conditions



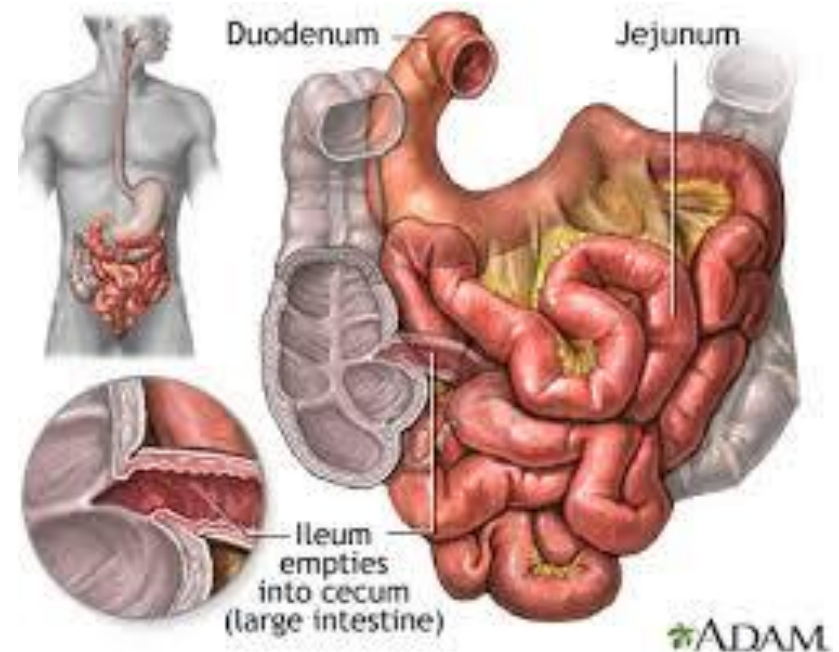
SIBO Defined



- ◆ No single accepted definition
- ◆ Previous gold standard = presence of $\geq 1 \times 10^5$ bacteria per mL of proximal SI aspiration
 - ◆ Others estimate normal subjects rarely exceed 1×10^3 cfu/mL
- ◆ In research and clinical practice, diagnosis often made indirectly through hydrogen/methane breath testing

Anatomy Review

- ◆ Normal SI has low bacteria counts
 - ◆ Above SI → HCl in stomach prevents overgrowth
 - ◆ Below SI → Ileocecal valve separates colon from SI
 - ◆ Migrating motor complex (MMC) periodically sweeps through the 'cleanse' SI of bacteria
- ◆ SIBO characterized by high levels of *normal* colonic bacteria that ferment carbs → produce gas
 - ◆ Bacteria are not pathogenic!





Disease or Symptoms?

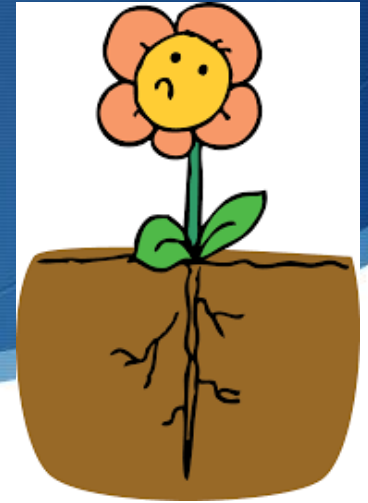
- ◆ For a long time patients with abdominal pain, gas, bloating, and diarrhea/constipation were diagnosed with IBS
- ◆ ND's have many tools for helping with IBS
 - ◆ Food allergy/sensitivity testing or elimination diet
 - ◆ Enzymes, probiotics, omega-3s, etc
 - ◆ Stress reduction
- ◆ Many would get better – but what about those that don't improve with the basics...?



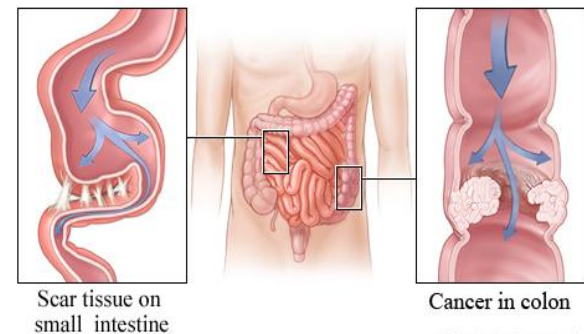
SIBO – Why Should You Care?

- ◆ GI complaints are one of the most common reasons for doctors visits (both MD and ND)
 - ◆ IBS is the most common of all GI disorders
- ◆ Some studies estimate SIBO to be the underlying cause **in 84% of IBS cases**
 - ◆ Other estimates as low as 30% of IBS cases – likely somewhere in between (50-75% of cases)
- ◆ Related to MANY other common conditions
 - ◆ Prevalence in celiac disease estimated at 50%
- ◆ Elderly may be more susceptible
 - ◆ Low HCl, polypharmacy

Tolle Causam Treat the Cause



- ◆ Bacterial overgrowth occurs when intestinal stasis gives bacteria the opportunity to proliferate locally, such as due to mechanical stasis following bowel surgery
 - ◆ Other prominent causes of stasis include diabetes, scleroderma, intestinal diverticulosis, and intestinal obstruction caused by strictures, adhesions, cancer
- ◆ Certain medications may also predispose to SIBO, such as PPIs and opiates

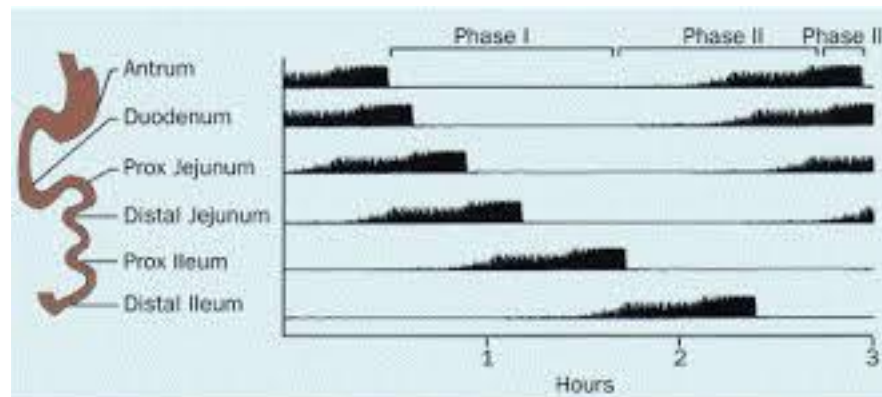


Scar tissue on small intestine

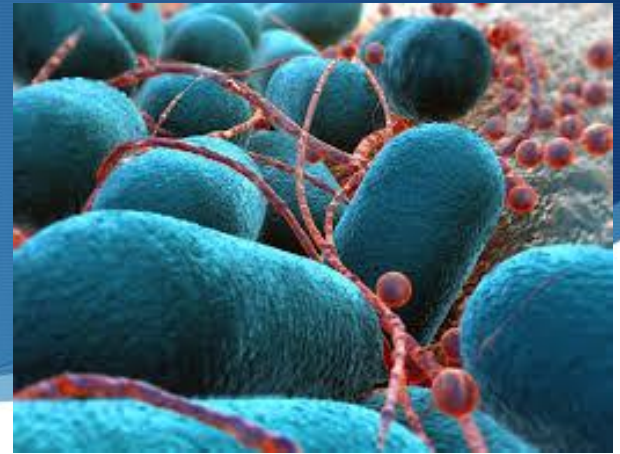
Cancer in colon

Other Underlying Causes

- ◆ Dysfunction of the Migrating Motor Complex (MMC)!
 - ◆ Due to **gastroenteritis**, diabetic neuropathy, hypothyroidism, sclerosis, nerve damage, opiates, surgery, stress



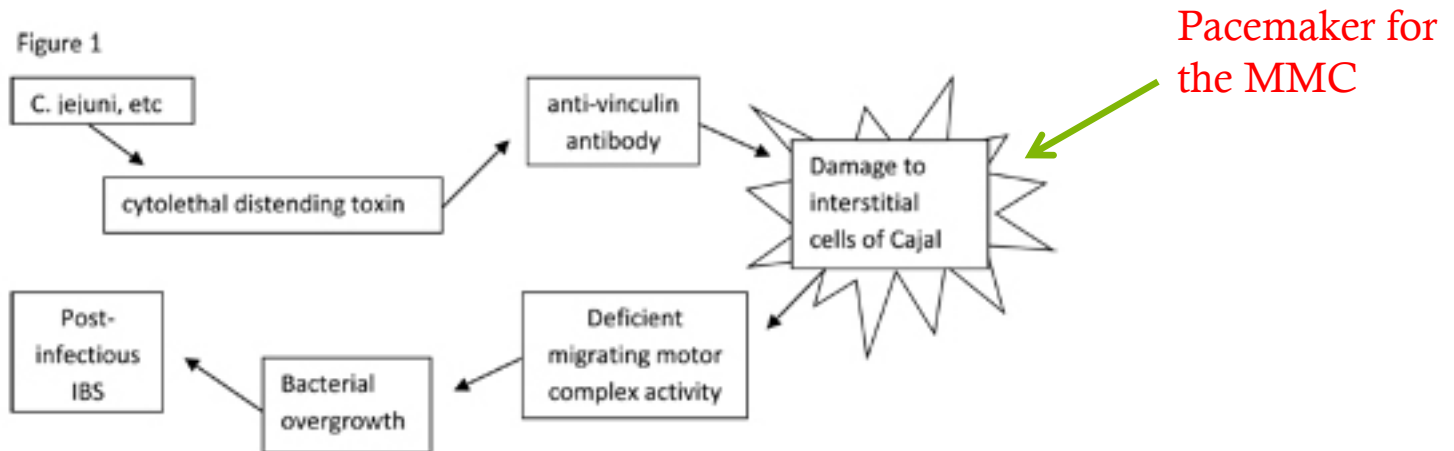
‘Post-Infectious IBS’



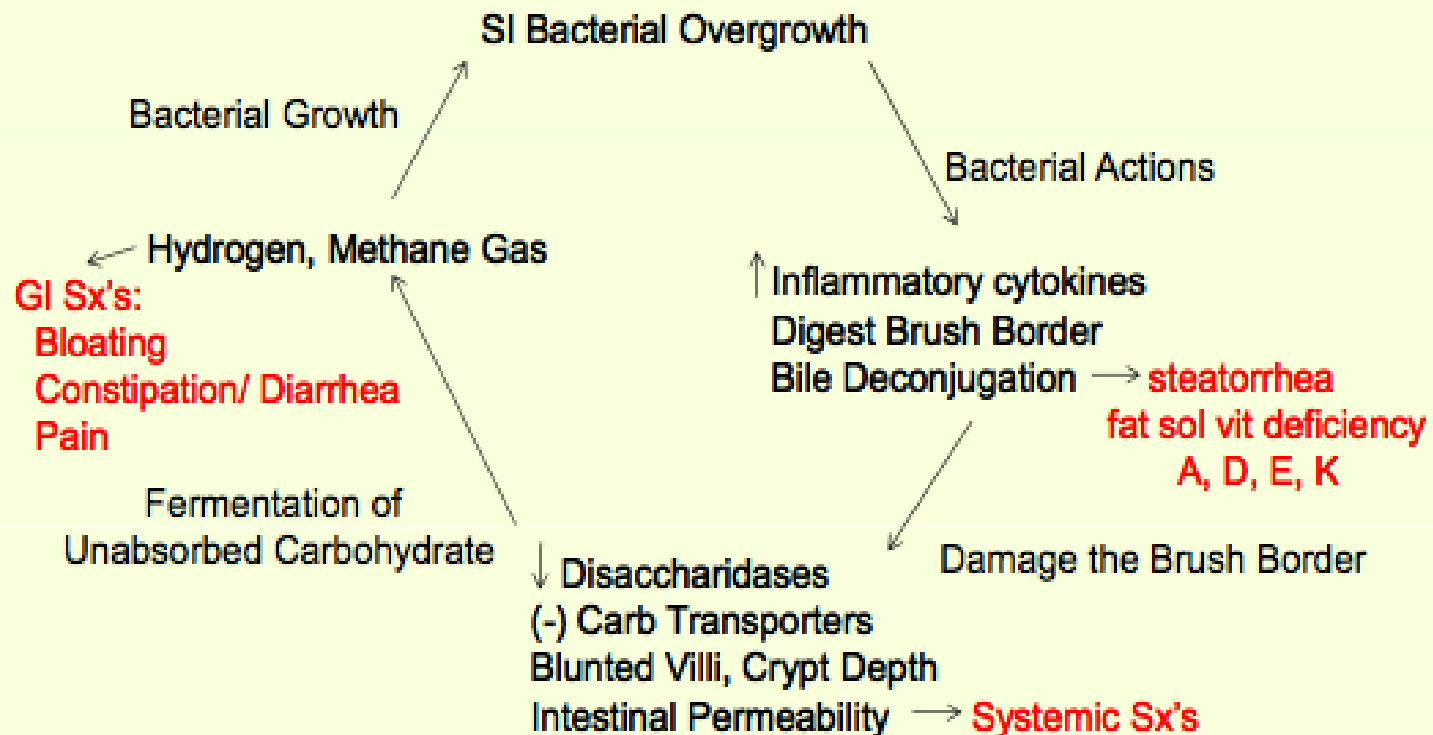
- ◆ SIBO often develops following bout of gastroenteritis
 - ◆ Estimated 7-31% of GI infxn will develop PI-IBS (SIBO)
- ◆ Bacteria (i.e. *Campylobacteri jejuni*) secrete cytolethal distending toxins (CDTs) that impair muscle & nerve connections and inactivate the MMC
- ◆ CDTb through molecular mimicry forms Abs to a cytoskeletal protein called vinculin → our immune system damages SI nerves and pacemaker cells while trying to attack the CDTb

Post-Infectious SIBO

- Organisms that can trigger PI-IBS include *Campylobacter*, *Salmonella*, *Shigella*, *E. coli*, *Giardia*, and certain viruses



SIBO Pathophysiology



Clinical Manifestations

◆ **Non-specific/IBS Sx:**

- ◆ Distension, flatulence, abd pain/discomfort, diarrhea, constipation

◆ **Malabsorption**

- ◆ More in severe cases
- ◆ Def. of fat soluble vits, B12, iron

◆ **Systemic Sx:**

- ◆ Can result from increased intestinal permeability (“leaky gut”)

Note: Symptoms can be distorted by underlying cause (i.e. scleroderma, diabetes, hypothyroid)

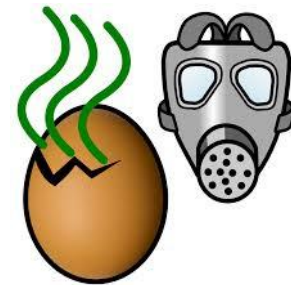
Passing Gas



- ◆ Hydrogen and methane gases are not normally produced by human cells
 - ◆ Hydrogen → diarrhea
 - ◆ Methane (produced by archaea) → constipation
- ◆ Treatment will differ depending on presence and levels of gases

A Third Gas...?

- Hydrogen sulfide gas can also be produced by sulfate-reducing bacteria → convert H_2 to H_2S
- Not as well characterized as Hydrogen and Methane gas, as it is not detected on standard breath tests
- Clues for H_2S overgrowth:
 - “rotten egg” smelling flatulence
 - sensitivity to sulfur containing foods
 - SIBO sx but “flat-line” hydrogen and methane levels on breath test



Associated Conditions

- ◆ **Acne Rosacea**
- ◆ Acne Vulgaris
- ◆ Acromegaly
- ◆ Age
- ◆ Alcohol Consumption (moderate intake),
- ◆ Anemia
- ◆ Atrophic Gastritis
- ◆ Autism
- ◆ **Celiac Disease**
- ◆ Cystic Fibrosis
- ◆ Chronic Fatigue Syndrome
- ◆ Diabetes
- ◆ Diverticulitis
- ◆ Dyspepsia
- ◆ Fibromyalgia
- ◆ Fructose Malabsorption
- ◆ Gallstones
- ◆ Gastroparesis
- ◆ **GERD**
- ◆ HIV
- ◆ Hepatic Encephalopathy
- ◆ Hepatic Injury
- ◆ H pylori Infection
- ◆ Hypochlorhydria
- ◆ Hypothyroid/Hashimoto's Thyroiditis
- ◆ **IBD (Inflammatory Bowel Disease)**
- ◆ **-Crohn's**
- ◆ **-Ulcerative Colitis**
- ◆ **IBS (Irritable Bowel Syndrome)**
- ◆ Interstitial Cystitis
- ◆ Lactose Intolerance
- ◆ **Leaky Gut (Intestinal Permeability)**
- ◆ Liver Cirrhosis
- ◆ Lyme
- ◆ Malabsorption Syndrome
- ◆ Medications: **Proton Pump Inhibitors**, Narcotics/Opioids, NSAIDS
- ◆ Muscular Dystrophy (myotonic Type 1)
- ◆ Myelomeningocele (spina bifida)
- ◆ NASH/ NAFLD (non-alcoholic steatohepatitis/non-alcoholic fatty liver)
- ◆ Obesity
- ◆ Pancreatitis
- ◆ Parasites
- ◆ **Parkinson's**
- ◆ Pernicious Anemia
- ◆ Prostatitis (chronic)
- ◆ Radiation Enteropathy
- ◆ **Restless Leg Syndrome**
- ◆ Rheumatoid Arthritis
- ◆ Scleroderma (Systemic Sclerosis)
- ◆ Short Bowel Syndrome
- ◆ Surgery: Abdominal, Post Gastrectomy, Post Esophageal and Gastric Cancer, Post-Cholecystectomy
- ◆ Tropical Sprue
- ◆ Whipple's Disease

SIBO 'Clues'



- ◆ IBS develops following acute infectious gastroenteritis
- ◆ IBS sx improve with antibiotic use
- ◆ Worsening of IBS sx with prebiotics (FOS) or fiber intake
 - ◆ *Constipation that is worse with fiber*
- ◆ Celiac pt that does not improve on gluten-free diet
- ◆ IBS sx and chronic low ferritin with no other known cause

SIBO Diagnosis

- ◆ Stool testing is of little/no value
- ◆ Endoscopy/aspiration expensive and invasive, only samples proximal SI, contamination
- ◆ Best and most widely used test is hydrogen/methane breath test
 - ◆ Detects presence of hydrogen and/or methane gas produced in response to lactulose solution



Diagnosis – Breath Test

- ◆ Lactulose vs Glucose
 - ◆ Glucose rapidly absorbed in duodenum so may not detect distal SIBO
 - ◆ Avg transit through SI is ~120 minutes, so lactulose gives indication of distal SI
- ◆ Samples taken q20 minutes after baseline
- ◆ 3 Hour time should show second peak when lactulose reaches the LI and is fermented



Breath Test - Preparation

Prep Diet

- ◆ Meat/fish/poultry
- ◆ White rice
- ◆ Eggs
- ◆ Hard Cheese
- ◆ Clear beef or chicken broth
- ◆ Oil
- ◆ Salt and pepper

***12 hour fasting before test**

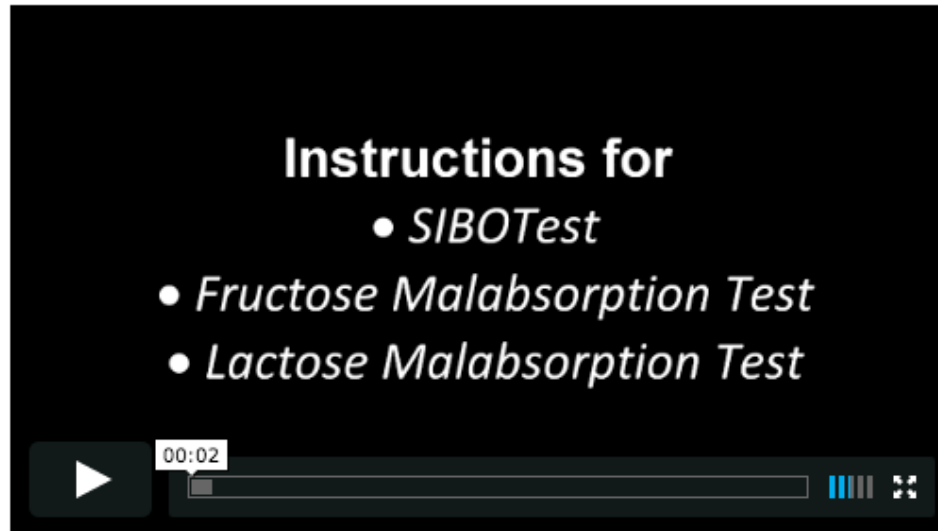
*What about
vegetarian/vegan
patients?*



Breath Test

🟢 <https://sibocenter.com/faqs/>

Instructions for taking the test.



Instructions for

- *SIBOTest*
- *Fructose Malabsorption Test*
- *Lactose Malabsorption Test*

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Breath Test - Interpretation

Positive test considered:

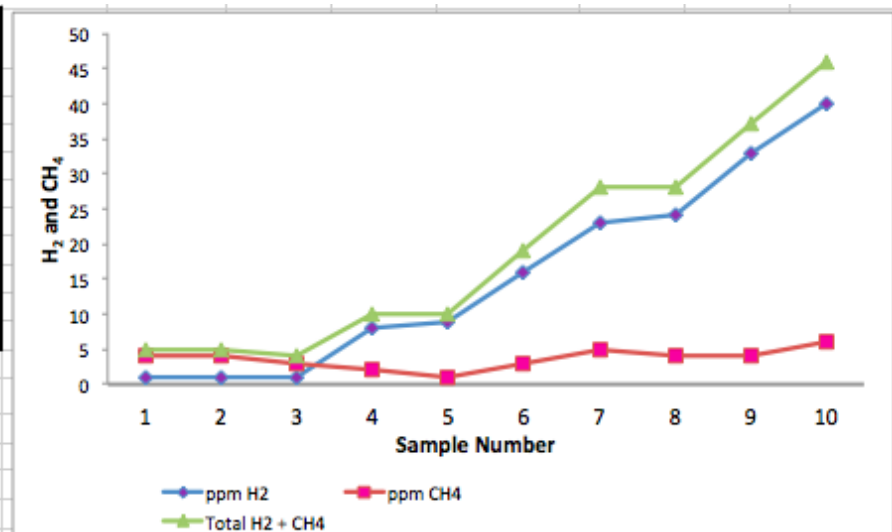
- ◆ a rise over baseline in hydrogen production of **20 parts per million** (PPM) or greater within 120 minutes after ingesting the test substrate
- ◆ a rise over baseline in methane production of 12 ppm or greater within 120 minutes after ingesting the test substrate
- ◆ a rise over baseline in the sum of hydrogen and methane production of 15 ppm or greater within 120 minutes after ingesting the test substrate

Breath Test Example

Sample	Time	ppm H ₂	ppm CH ₄	Total H ₂ + CH ₄	CO ₂ Check
1. Baseline	10:30	1	4	5	OK
2. 20 min	10:52	1	4	5	OK
3. 40 min	11:12	1	3	4	OK
4. 60 min	11:32	8	2	10	OK
5. 80 min	11:52	9	1	10	OK
6. 100 min	12:12	16	3	19	OK
7. 120 min	12:32	23	5	28	OK
8. 140 min	12:52	24	4	28	OK
9. 160 min	13:12	33	4	37	OK
10. 180min	13:32	40	6	46	OK

Notes

11:47 mild stomach pain and diarrhea
 12:24 mild stomach pain and normal stool
 13:07 mild stomach pain and normal stool



	Result	Flag	Normal
Combined baseline total =	5		<20PPM
Greatest H ₂ increase within first 120 minutes =	22	H	<20PPM
Greatest H ₂ level within first 120 minutes =	23	H	<20PPM
Greatest CH ₄ increase within first 120 minutes =	4		<12PPM
Greatest CH ₄ level within first 120 minutes =	5		<12PPM
Greatest combined H ₂ & CH ₄ increase within first 120 mins =	24	H	<15PPM
Methane Producer =	6	H	<2PPM

Breath Test Example #2

Small Intestinal Bacterial Overgrowth (Lactulose) Analytical Record

Patient: Doe.Jane
Patient ID: SAMPLE-1
DOB: 02/04/1995
Weight (at collection):
Substrate given: Lactulose
Samples collected: 03/04/2016
Samples analyzed: 03/07/2016
Nurse/Technician:
Referring physician:

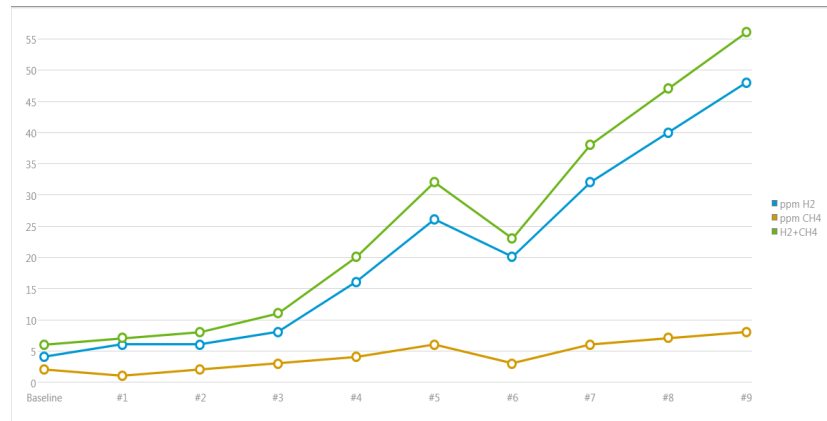
Notes

Pre-test notes:
 SAMPLEREPORT 1
Pre-test symptoms:
 Nausea, Vomiting, Weight Loss, Diarrhea, Bloating
In-test notes:

Diagnosis/recommendation:

Physician Signature:

Date:



Sample	Time	ppm H2	ppm CH4	ppm H2 + CH4	%CO2	Correction	Symptoms
#0 - 0	8:00 AM	4	2	6	32	1.71	
#1 - 20	8:20 AM	6	1	7	33	1.66	
#2 - 40	8:40 AM	6	2	8	31	1.77	
#3 - 60	9:00 AM	8	3	11	34	1.61	
#4 - 80	9:20 AM	16	4	20	31	1.77	
#5 - 100	9:40 AM	26	6	32	29	1.89	
#6 - 120	10:00 AM	20	3	23	41	1.34	
#7 - 140	10:20 AM	32	6	38	35	1.57	
#8 - 160	10:40 AM	40	7	47	39	1.41	
#9 - 180	11:00 AM	48	8	56	43	1.27	

Breath Test Example #3

Small Intestinal Bacterial Overgrowth (Lactulose) Analytical Record

Patient: John Doe
Patient ID: SAMPLE2
DOB: 01/10/1970
Weight (at collection):
Substrate given: Lactulose
Samples collected: 03/02/2016
Samples analyzed: 03/07/2016
Nurse/Technician:
Referring physician:

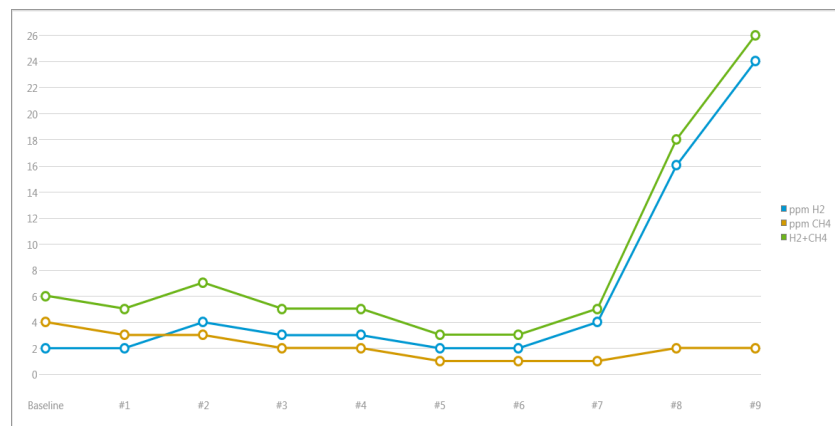
Notes

Pre-test notes
 SAMPLEREPORT2
Pre-test symptoms
 Nausea, Weight Gain, Constipation, Bloating
In-test notes

Diagnosis/recommendation:

Physician Signature:

Date:



Sample	Time	ppm H2	ppm CH4	ppm H2 + CH4	%CO2	Correction	Symptoms
#0 - 0	7:20 AM	2	4	6	3.9	1.41	
#1 - 20	7:40 AM	2	3	5	4.5	1.22	
#2 - 40	8:00 AM	4	3	7	4.7	1.17	
#3 - 60	8:20 AM	3	2	5	3.4	1.61	
#4 - 80	8:40 AM	3	2	5	4.8	1.14	
#5 - 100	9:00 AM	2	1	3	4.6	1.19	
#6 - 120	9:20 AM	2	1	3	3.8	1.44	
#7 - 140	9:40 AM	4	1	5	4.5	1.22	
#8 - 160	10:00 AM	16	2	18	4.4	1.25	
#9 - 180	10:20 AM	24	2	26	2.7	2.03	

Treatment Steps

- ◆ Important to first identify if hydrogen and/or methane gases present
- ◆ May include liver support preparation stage (1-2 weeks) to reduce die-off reaction
- ◆ Then begin eradication phase (2-4 weeks) using pharmaceutical/herbal antimicrobials
- ◆ Then SIBO diet following eradication
 - ◆ Also include prokinetic agents

1. Eradication Phase – Rifaximin (Xifaxan)

- ◆ Most commonly used antibiotic
 - ◆ 550mg bid/tid x 14 days
- ◆ **Pros:**
 - ◆ Effective at eradicating SIBO
 - ◆ Not absorbed, so little/no s/e
 - ◆ Can be used on it's own for hydrogen(+)
- ◆ **Cons:**
 - ◆ Needs to be combined with Neomycin (or other a/b, or allicin) for Methane(+) SIBO (constipation)
 - ◆ Expensive, may be difficult to find



1. Eradication Phase – Herbal



- Many consider herbal antimicrobials as effective as Rifaximin
- However, needs to be used for longer time (4 weeks vs. 2 weeks)
- And may see longer or more severe die-off reaction

Options include:

- Berberine-containing herbs (**Coptis chinensis**, Berberis sp., Hydrastis)
- Allium sativum*
- Oregano
- Clove
- Neem
- Cinnamon



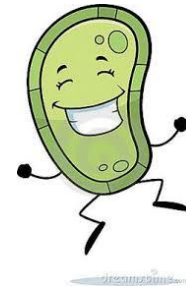
May be best to rotate (i.e. herb combo for 2 weeks, then switch to different herbs for 2 weeks)

2. Dietary Phase



- ◆ Pearl: Do **NOT** start SCD/SIBO diet during the eradication phase!
- ◆ Research shows that SIBO eradication is improved when a/b tx combined with fiber in diet

“Happy bacteria as easier to kill”

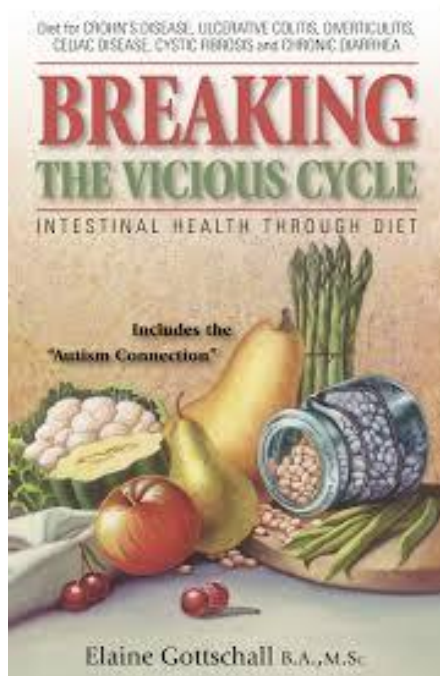


- ◆ Wait until *after* eradication phase (2-4 weeks) to begin diet

Tx – Diet Options

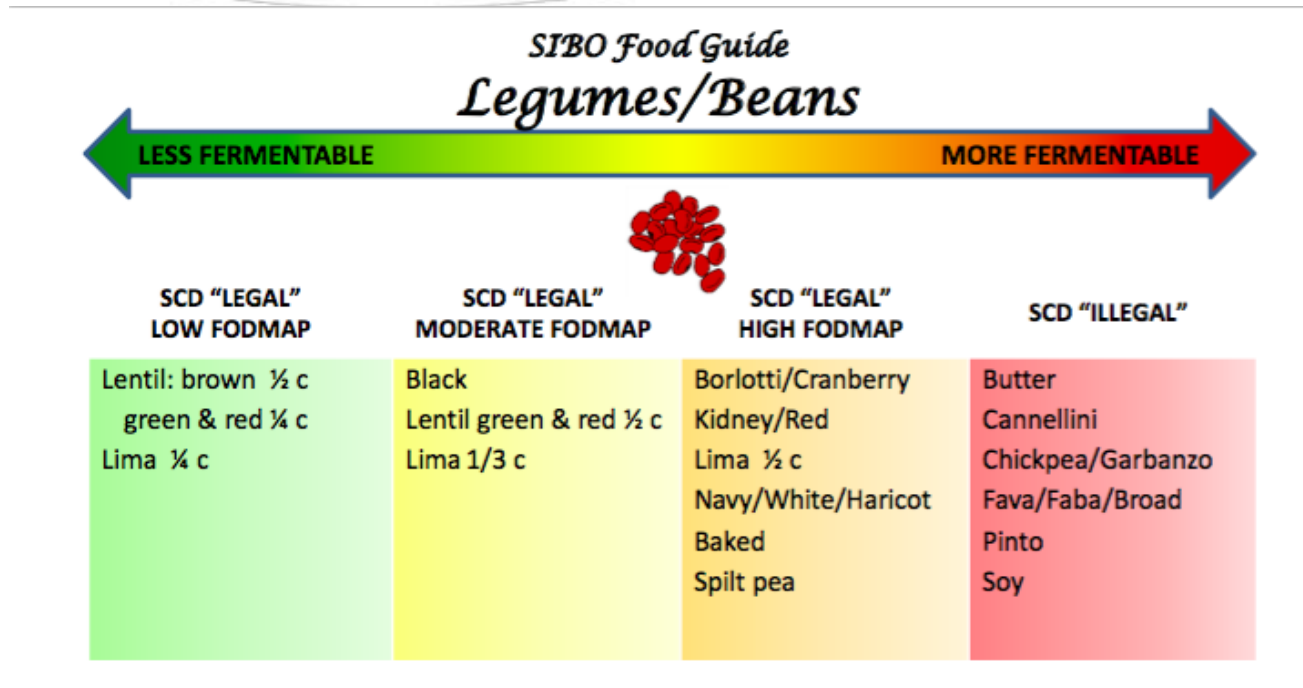
- ◆ There is no one-size fits all diet for SIBO
- ◆ Most common are SCD, GAPS, low fodmap, or combination diet
- ◆ May be able to introduce foods after a period of time (i.e. 2-3 months) and see how patient reacts
- ◆ Elemental diet
 - ◆ Effective, but costly and poor taste

Specific Carbohydrate Diet



- ◆ Developed by Elaine Gottschall
 - ◆ “Breaking the Vicious Cycle” book and website are good resources
- ◆ Aim is to cut out specific carbs (disaccharides) to starve bacteria
- ◆ Avoids grains, starches, dairy

SIBO Diet



www.siboinfo.com/diet.html

Tx - Prokinetics

- ◆ Pearl: Key to preventing recurrence is stimulating migrating motor complex (MMC)
 - ◆ Begin after eradication phase (use along with diet)
- ◆ Pharma options include:
 - ◆ Low dose erythromycin (50mg QD hs)
 - ◆ Low dose naltrexone (2.5 mg q.h.s. for IBS-D or 2.5 mg b.i.d. for IBS-C)
 - ◆ Prucalopride – *may be better for constipation than diarrhea*
- ◆ Other options:
 - ◆ 5-HTP
 - ◆ D-limonene (consider if GERD also present)
 - ◆ Probiotics: *Bifidobacterium lactis*, *Lactobacillus rhamnosus*
 - ◆ Iberogast
 - ◆ *Fasting in between meals/overnight stimulates MMC*

Preventing Relapse

Be sure to **treat the cause** (i.e. stimulate MMC, HCl, dec stress, etc)

- ◆ Betaine HCl
 - ◆ If hypochlorhydria suspected as part of underlying cause
 - ◆ Careful if methane(+) though
- ◆ Gut healing
 - ◆ L-Glutamine
 - ◆ Zinc carnosine
- ◆ Probiotics
 - ◆ Make sure without FOS

Thank You

This concludes the CE portion of the webinar

Protocol and Q&A

- ◆ **Prep Phase**
- ◆ **Eradication Phase**
- ◆ **Maintenance Phase: Prokinetics & Recurrence Prevention**
- ◆ **Product Information**
- ◆ **Q&A**

Protocol

- ◆ **Prep Phase** (1-2 weeks prior to Eradication Phase)
 - ◆ **Hepasylin**
 - ◆ Liver Support to minimize die-off reaction
 - ◆ Take 2 capsules QD AC
 - ◆ Glass of lemon water in the morning
 - ◆ Castor oil packs daily

Protocol

- ◆ **Eradication Phase (4 weeks)**
 - ◆ **Microcidin** – 1 capsule TID with food.
 - ◆ **Supreme-PB30+ DF (without FOS)** – Start with 1 capsule HS for 1 week.
 - ◆ If tolerated well, increase to 2 capsules HS from Weeks 2-4.
 - ◆ If NOT tolerated well, use **S. boulardii**, 2 capsules HS
 - ◆ **Hepasylin** (Liver Support to alleviate die-off reaction):
 - ◆ Weeks 1-2 of protocol – take 3 capsules QD AC
 - ◆ Weeks 3-4 of protocol – take 2 capsules QD AC

Protocol

- ◆ **Maintenance Phase:**
Prokinetic & Recurrence Prevention (3 months +)
 - ◆ **Diet:**
 - ◆ If diet compliance is an issue, incorporate digestive enzymes.
 - ◆ **Zyme-Aid Carbo Fort** – 1 capsule CC, TID.
 - ◆ **5-HTP** – 1 cap (100 mg) 1 hour after each meal, and 1 cap hs
 - ◆ **D-Limonene** for patients with GERD – 12 drops on empty stomach BID or 24 drops HS.
 - ◆ **L-Glutamine Plus** – 1 teaspoon QD (3 g L-glutamine + Vitamins A/C/E)
 - ◆ **Supreme-PB30+ DF (without FOS)** – 1 capsule 2 hours after lunch, 1 capsule HS.

Q & A



Questions
are
guaranteed in
life;
Answers
aren't.

Product Info

◆ Microcidin

- ◆ Contains **multiple antimicrobial ingredients** with different mechanisms to inhibit and destroy the pathogenic microbials, such as bacteria, virus, fungi (eg. Candida albican) and parasites.
- ◆ **Coptis** (Huang Lian) contains high berberine. **Coptis is the king herb for detoxification in Traditional Chinese Medicine, especially during infections and Damp Heat.** In modern medicine, coptis itself or combined with **clove extract** have been proven to inhibit fungal growth and candidiasis.
- ◆ Contains lab-standardized high allicin content from freeze-dried garlic concentrate. Allicin is a potent natural antibiotic that does not cause dysbiosis.
- ◆ Synergized with highly concentrated **oregano** extract, **undecylenic acid** and **caprylic acid** for broad spectrum microcidal effect in prevention and eradication of microbial infections.

Product Info

◆ Supreme-PB30+ DF (without FOS)

- ◆ Dairy-Free probiotic formula that contains **55 billion** viable cells comprised of 6 species of **human gut-anchoring probiotics** to ensure successful establishment in each of their particular niche.
- ◆ Includes **Bifidobacterium lactis B1-04 & Lactobacillus rhamnosus Lr-32**
- ◆ Carefully selected strains with complete resistance tests (22 antibiotics)
- ◆ All strains are **acid- and bile-resistant**, ensuring their passage through the entire GI tract while helping inhibit H. pylori infections.
- ◆ Clinically proven to anchor and colonize at the human gut linings to improve dysbiosis-associated symptoms (eg. constipation, diarrhea, bloating, and allergic reactions) caused by antibiotics and other GI disorders.

Product Info

- ◆ **Limonen-E (d-limonene liquid)**

- ◆ D-limonene has been shown to be effective in relieving occasional heartburn and gastroesophageal reflux disorder (GERD).
- ◆ **Ultra-potent D-Limonene (>99.5%)**
- ◆ 1 g of D-limonene (~24 drops) daily or every other day has been clinically shown to achieve complete relief of symptoms

Product Info

◆ Hepasylin

- ◆ Formulated with milk thistle, dandelion, artichoke and alpha lipoic acid to protect the hepatocytes and maintain healthy liver function.
- ◆ Contains **milk thistle extract standardized by not only silymarin (80%) but also silybin (30%) - the most active compound of silymarin group** - to guarantee the maximum liver-protecting effect.
- ◆ Increases the reduced glutathione concentration in the liver, promotes bile flow, provides powerful antioxidants for cell protection, and enhances the liver's ability to detoxify

Webinar Promotion

- ◆ Vita Aid will be offering **10% off** the following products until March 31st 2016:
 - ◆ Microcidin
 - ◆ 5-HTP
 - ◆ Supreme-PB30+ DF (without FOS)
 - ◆ Limonen-E
 - ◆ Hepasylin

Thank You!

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