

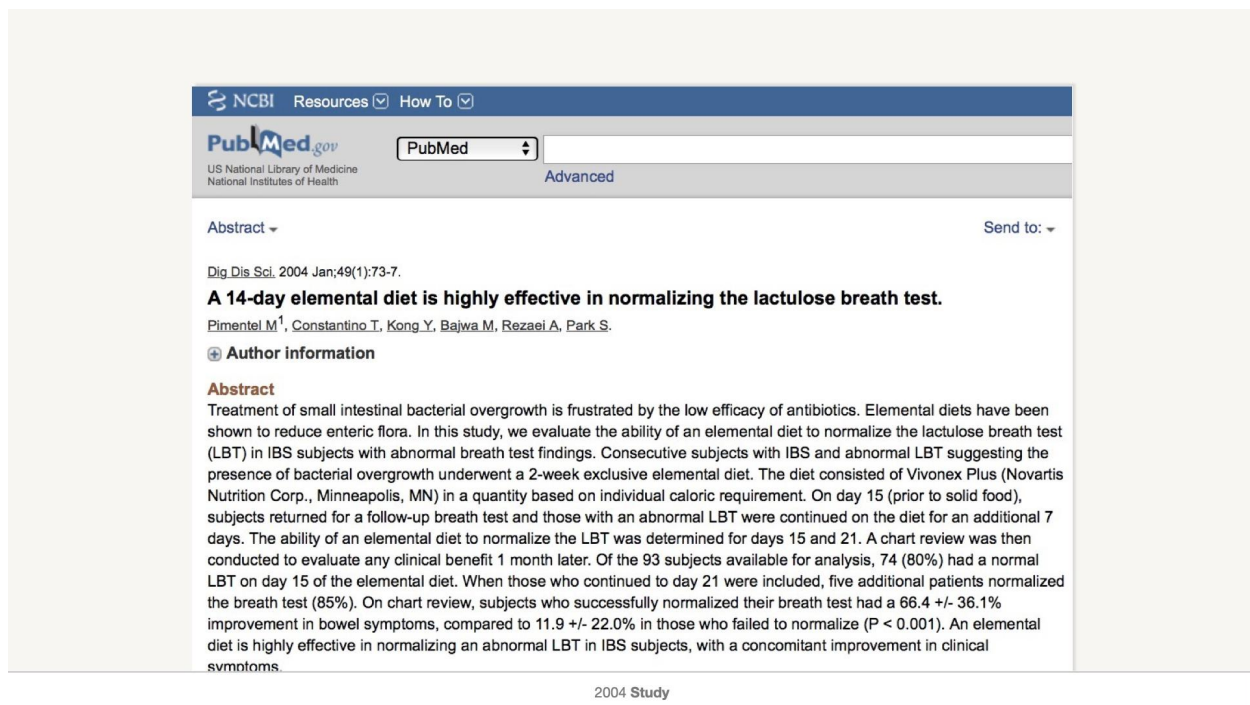
Gut Treatment Protocols: SIBO, Part 8

Pharmaceutical prokinetics

Prokinetic	Dose
Low-dose erythromycin	Gastroparesis: 250 mg TID, 30 min before meals (ac) SIBO relapse prevention: 50 or 62.5 mg nightly Symptom management: 50 or 62.5–100 mg 30 min ac Pediatrics: 25 mg (liquid Rx) or cut 150 mg into 1/4 (37.5 mg in an older child)
Prucalopride	Constipation: 2 mg QHS (at night) range 0.5–4 mg SIBO relapse prevention (low dose): 0.5 mg QHS (range 0.25–1 mg) Pediatrics: 0.01 mg/kg
Low-dose naltrexone (LDN)	IBS: 0.5 mg once daily IBD: 4.5 mg daily SIBO relapse prevention: 2.5 mg QHS (diarrhea)/2.5 mg BID or 4.5 mg QHS (constipation) Symptom management: 0.5–5 mg daily Pediatrics: 0.01 mg/kg

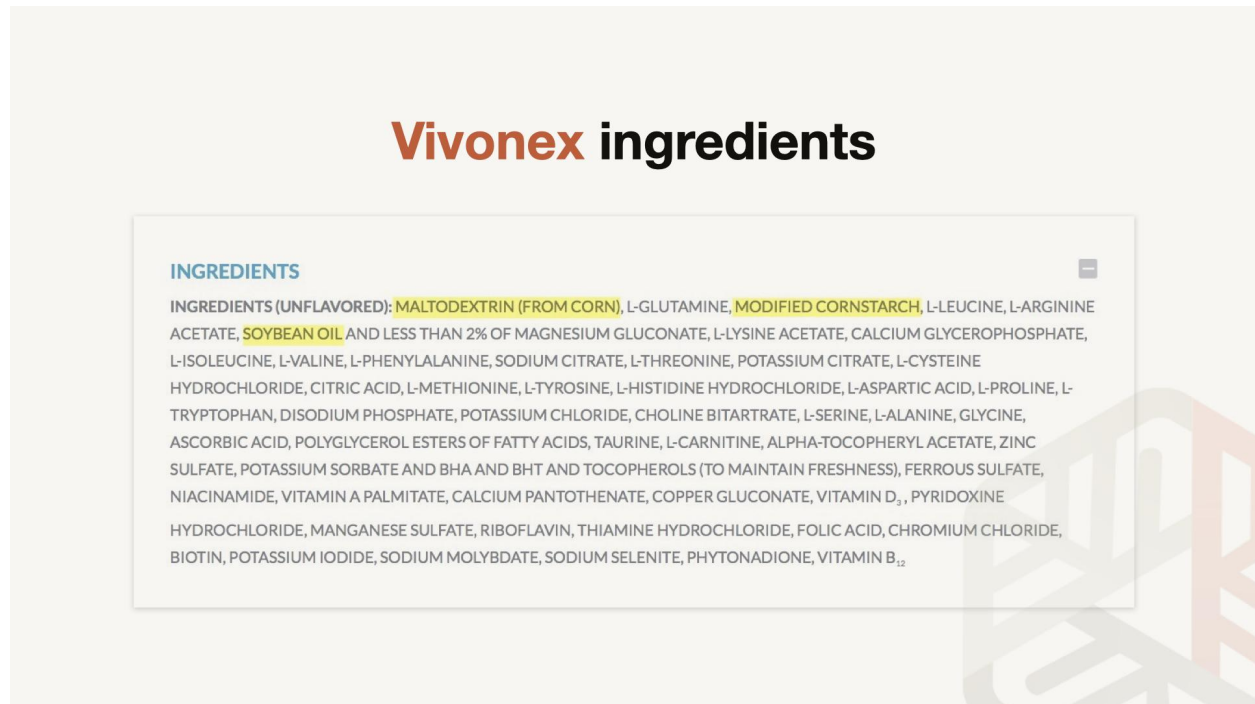
Here is a reminder of the dosing. [For] low-dose erythromycin, we have gastroparesis dosing at 250 milligrams three times daily, generally 30 minutes before your meals. SIBO relapse prevention is 50 or 62.5 milligrams nightly. Remember, the 50 milligrams is for compounded pharmacy and the 62.5 milligrams is a 250 milligram tablet cut into quarters if you're trying to go through insurance. For symptom management, [the dose is] 50 or 62.5 to 100 milligrams 30 minutes before meals. Pediatric dosing is 25 milligrams with the liquid Rx or cutting 150 milligrams into quarters in the older child. For prucalopride, constipation dosing is 2 milligrams at night, ranging from 0.5 to 4 milligrams. [The] SIBO relapse prevention low dose is 0.5 milligrams at night, and that [can] range from 0.25 to 1 milligram. For pediatric[s], the dosing for prucalopride is 0.01 milligram[s] per kilogram per day. [For] low-dose naltrexone, [there's] quite a wide range of dosing. For IBS, [it's] 0.5 milligram[s] once daily. [For] IBD, [it's] 4.5 milligrams daily. For SIBO relapse prevention, you could do 2.5 milligrams nightly if you tend toward diarrhea, or 2.5 milligrams twice daily or 4.5 milligrams at night if you tend toward constipation. Symptom management dosing can range from 0.5 to 5 milligrams, and then the dosing for pediatrics is 0.01 milligrams per kilogram. One last reminder that the timing of the prokinetic may change depending on what your therapeutic goal is. For relapse prevention, generally, we're having that

person [take] the prokinetic at bed. For gastroparesis, we may be doing it during the day, 30 minutes before meals. For using it for symptoms associated with meals like postprandial bloating, distension, and discomfort, you can maybe do this one to two hours after a meal or just need it after meals. If you're trying to do a little bit of both, you may be able to combine efforts and do both bedtime dosing and daytime dosing around meals. Once you get more comfortable with the use of these products, you may find yourself using a combination of prucalopride at night, low-dose erythromycin upon waking, and/or Iberogast or [low-dose naltrexone] with meals and [low-dose naltrexone] at night. So there [are] lots of different combinations, and I would say do a little bit more research and feel what's comfortable for you.



The final specific SIBO treatment that I want to discuss is the elemental diet. This is a liquid diet consisting of a powdered nutrient in predigested, easily absorbed form. The main ingredients are amino acids, some types of carbohydrate, typically maltodextrin or commercial formulas and fat, which is typically industrial seed oils and commercial formulas, and then vitamins and minerals. And studies show [an] 80 to 84 percent success rate in eradicating SIBO. It's arguably the most effective treatment and shown to be safe without risking complications. However, there are some downsides to the elemental formulas. They're pretty expensive. They're gross, to put it bluntly. They're high in sugar like maltodextrin and fats. The commercial formulas have been made by companies like Nestlé. So they have those industrial seed oils that we often try to avoid. They taste pretty terrible. The patient can't eat solid foods for two or three weeks, and that can lead to

significant weight loss if the patients are already underweight going into it. And everyone I've seen do an elemental diet for a significant period of time has developed some sort of white coating on their tongue, which can be indicative of oral thrush or *Candida* overgrowth. I'm not sure about that. I don't think that's consistently what's happening because it's not a great sign, but there does seem to be some sort of physiological shift.



The main formula used in some of these studies is Vivonex Plus. You can see the ingredients here. It's made by Nestlé. The main ingredients are maltodextrin, amino acids, [and] soybean oil. So [it's] not as good. And only 6 percent of the fat is here and [it's] very high in carbohydrates.

Fortunately, there are some alternatives. The alternative package product is called Absorb Plus. This is formulated by a woman called [Jini] Patel Thompson, who's a nutritionist who suffered from severe IBD and healed herself with an elemental diet.



Image credits: <http://shoppe.listen toyourgut.com/shop-by-absorb-plus/>

It uses whey protein in addition to free amino acids. The carb source is maltodextrin, as well, but it's derived from tapioca, so it's a tapioca dextrin, which is from a cassava plant instead of corn. I think it's less of an allergen, and it's relatively low in fructose, which can cause GI issues in people with IBD and IBS. It also does not contain any fat. So you can add your own fat using coconut oil, medium-chain triglyceride [MCT] oil, [Udo's] oil, flax oil, [or] something like that. One thing to keep in mind is that Absorb Plus has never been tested in a study, and it's not technically a pure elemental formula because whey protein is not the amino acid form, so it may not be as easily digested as amino acids. Absorb Plus does contain amino acids, but it also contains whey. Having said that, I have seen some pretty good results with it, and I think it's a vastly better choice than Vivonex.



Another brand we use in practice is Physicians' Elemental Diet. It also contains maltodextrin, but again, from tapioca. They have a dextrose-free option, as well. It's free of coloring, corn, fructose, soy, and many other typical things we're looking for from a quality product.

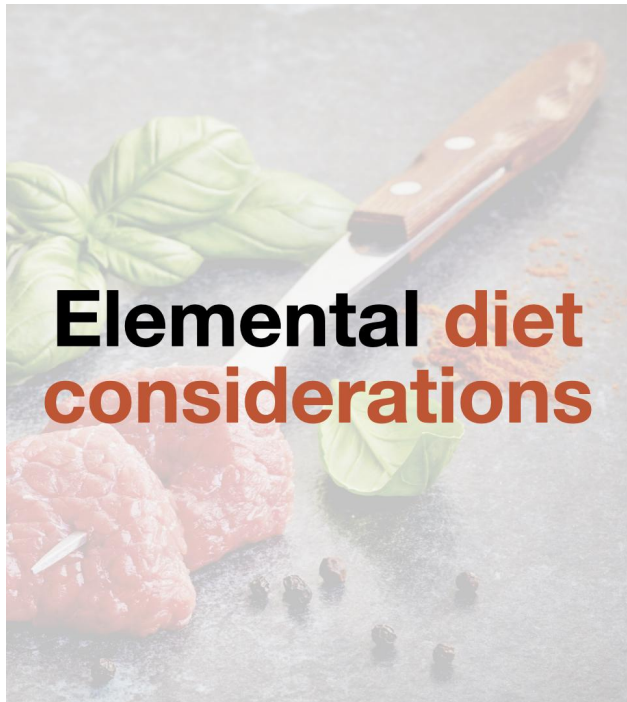
Finally, Dr. Allison Siebecker, who's a naturopathic physician in Oregon who specializes in treating SIBO and has worked with Dr. Pimentel, has a do-it-yourself elemental formula recipe on her website. It's freely available. It's also never been tested in a study, so keep that in mind, and the recipe does consist of a protein source, which would be an amino acid powder.

Dr. Siebecker's **DIY elemental diet formula**

Nutrient	Ingredient	Notes
Protein	Amino acid powder	Should contain full range of amino acids; dose at 15-20% of total calories per day
Carbohydrate	Honey, dextrose, glucose-flavored liquid, or grape syrup	Should comprise 20-50% of total calories per day
Fat	MCT, coconut oil, Udo's oil, flax oil, avocado oil, macadamia oil	Should comprise 30-65% of calories per day
Vitamins & minerals	Must not contain fiber, food, or anything other than synthetic nutrients	Options: Freeda SCD Multi, Klaire VitaSpectrum Powder, Pure Encapsulations Nutrient 950
Sodium	Sea salt; 1,500 mg/d is adequate daily intake	Can mix with formulas or take separately in water

It should contain the full range of amino acids, and it should be dosed at about 15 to 20 percent of total calories per day. Then you'd want to use a carbohydrate. It has to be a rapidly digested carbohydrate in keeping with the nature of an elemental formula. The whole idea, I should mention, of an elemental formula is that it contains food ingredients or nutrients that are absorbed extremely high up in the digestive tract, so there's nothing left over to feed the bacteria in the small intestine. You basically are starving those bacteria out, so you have to use rapidly absorbable carbohydrates with a very high glycemic index like honey, dextrose powder (which is like pure glucose), glucose-flavored liquid, or grape syrup. And that should comprise about 20 to 50 percent of total calories per day. Then you would use a fat source, and this could be MCT oil; [it could be] coconut oil, Udo's, flax, avocado, macadamia oil, [or] something like that. And that would comprise 30 to 65 percent of calories per day. You'd also want to add vitamins and minerals, and they must not contain any fiber, food, or anything other than just the synthetic nutrients themselves. Options would be Freeda SCD Multi, which is used [by] the specific carbohydrate diet community, [and] Klaire VitaSpectrum Powder or Pure Encapsulations Nutrient 950, which I like. And then you want to do a little bit of sea salt, 1,500 milligrams per day is a minimum adequate daily intake, and you can either mix that with formulas or you can take it separately in water. Make sure to avoid any fiber gums, thickeners, food items, or prebiotics because those are not rapidly digested. And note that meal replacement powders like MediClear, ClearVite, UltraClear, etc., are not elemental formulas. Those are meal replacement powders but

not elemental formulas. We'll provide this as a handout for you, [and] the full recipe is also available [on] Dr. Siebecker's site, which we will include in the link to the resources section.



Standard duration **2 weeks**;
can go up to 3 weeks
(under supervision)

Don't combine with other
treatments

Best used as **last resort**

May require **periodic re-
treatment**

Some considerations about the elemental diet: two weeks is [the] standard duration; you can go as long as three weeks. Patients should be closely supervised. I don't believe this is a good DIY approach. It's really best not to combine it with other treatments, typically, and I'll typically consider it as a last resort if botanical and rifaximin treatments have failed and the test results have continued to be unequivocally positive. These patients will also often relapse, unfortunately, and often require periodic retreatment. So you could do occasional re-treatments with elemental diet or botanical or drug protocols, but if you have a patient [who's] continuously experienced recurrence, then you'd want to make sure to continue looking for the underlying cause or mechanism that's leading to the recurrent SIBO, as we discussed a lot earlier in this lesson.



Paleo Reset works well for SIBO diet

Combination of **Low FODMAP** and low fermentation potential **(FP)** may help with **symptoms** during the antimicrobial treatment

Bi-Phasic Diet

Finally, let's talk about what to eat during SIBO treatments. As we've mentioned before, SIBO treatment is not always straightforward. Clinical experience and recommendations shift with time as they should. We're constantly learning, I hope. And we should be constantly updating our treatment protocols as we learn new things, both in terms of our experience with patients and the research, and make recommendations that are patient- and client-specific. For instance, [if] someone comes to you on a Standard American Diet, then a Paleo Reset diet makes the most sense and may be enough to help with symptoms during treatment.

A reminder that other than the elemental diet, we find that these diets we use during treatment are often most helpful with symptom management. Initially, when we started to treat patients with SIBO, we transitioned to recommending a low-FODMAP and a low fermentation potential diet. These diets are low in carbohydrates that can be metabolized by bacteria in the small intestine. And then we shifted away from that because the research [showed] the added [PHGG] increased the efficacy of rifaximin, as we've talked about in previous studies in this lecture. The idea there is, as I mentioned, you have to feed them to kill them.

There are conversations with Dr. Mark Pimentel and others. We started to suggest that patients don't restrict these fermentable carbohydrates too much during treatment because the idea was that if they did that, then the bacteria would go into a dormant state and they would be easier to kill by the antimicrobials. However, I found that with including PHGG, having patients eat, not

restrict FODMAPs, or not reduce the fermentation potential of the diet actually led to worse results, both in terms of the symptoms patients experienced during the treatment and afterward, and also [in] terms of the follow-up test results. So now I've settled on a bit of a variety of recommendations. For my patients [who] are pretty symptomatic and have never been on a low-FODMAP diet, I end up recommending a low-FODMAP [diet] with or without the combination of a low fermentation potential diet. It would just depend on how capable they are of doing that restrictive of a diet.

I want to briefly mention the bi-phasic diet from Dr. [Nirala] Jacobi for SIBO. This is based on the low-FODMAP and specific carbohydrate diet that uses a phased approach to the diet and treatment, which limits side effects. The first phase of the diet eliminates all grains, legumes, dairy, sugar, and certain vegetables; canned, processed, and fermented foods are to be avoided in phase one, but some will be introduced again in phase two. You can time the phases with your treatments. Phase one would be diet only, and then phase two would be combined with the treatment protocol. I haven't used this much in practice, but I have heard some positive feedback from various patients. So again, I don't have a lot [of] experience [with] it, but I felt it was important to mention just in case a patient or client brings it up to you and you want to look a little bit more into it.



Re-testing is **crucial to success** of treatment

Symptom **improvement** occurs before normalization of breath test

If patient doesn't improve from treatment, doesn't mean treatment didn't work

Ask patient to **stop** antimicrobials for at least **2 to 4 weeks before re-test**

We talked about specific treatment for SIBO as well as what to eat during treatment, and the next step is to retest. This is crucial, as I've mentioned earlier, and we can't know if the treatment was successful without it. And you need to remember that symptom improvement occurs before the breath test normalizes. If you have the patient stop the treatment when symptoms improve, there's a very high likelihood of recurrence. Also, if the patient doesn't improve from treatment, it doesn't mean that the treatment didn't work. It could mean it did work with the symptoms they were experiencing, despite being symptoms consistent with SIBO, [and] were not actually related to SIBO itself.

We know that 20 percent or more of the controls that don't have symptoms have SIBO, so it's possible that if someone has SIBO, it may not actually be causing their symptoms. The key principle, which we've talked about before, is test, don't guess, and this is what separates a good practitioner from a mediocre practitioner. In general, we recommend retesting two to four weeks after the end of treatment. And during that period, patients should not take any antimicrobials or any antibiotics. Some sources say don't take any probiotics during that period of time. I'm not exactly sure about that, and in some cases, we've recommended people continue, especially if they're finally tolerating probiotics. And I just don't want to pull them off. But if you really want to be safe and you're not sure, [it's] probably a good idea to stop those, as well, at least for two weeks before the test.

Another point is often we're also retesting [the] stool, and I like to see what their stool look[s] like on the probiotics the second time around. So I'm not always stopping probiotics in preparation for my SIBO test, although it's advised.