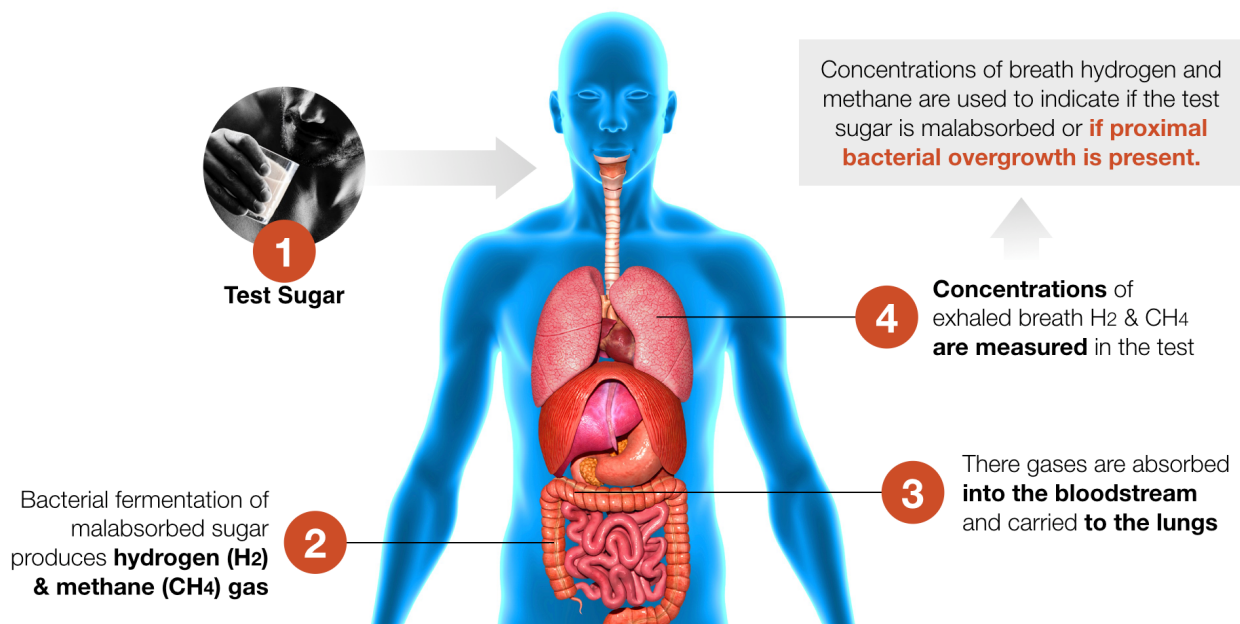


Gut Pathology - Part Three

Diagnosis of SIBO, as you'll find later when we really dive into this, is controversial and fraught with problems. We're going to talk a lot about breath tests in particular, and the pros and cons of breath testing and the special considerations you need to keep in mind when you're interpreting breath test results. But the two primary methods that are used currently are the breath test and then also aspiration of the small bowel using an endoscope. The small bowel endoscopy has several disadvantages: it's invasive, expensive, not widely available, can only sample aerobic bacteria, and only samples one small area. It's been established that SIBO can be patchy, so if you sample where there's not bacterial overgrowth and conclude that there isn't anywhere else in the intestine, that could be a false negative. You can't sample the jejunum or the ileum, which are the middle and distal parts of the small intestine and actually the most likely place for SIBO to occur, which is obviously problematic. And then there's also some risk with an endoscopic procedure, it's possible for contamination of the endoscope. So it's really not an ideal test for a number of reasons, and that's good news because it's not widely available and in most cases I'm sure people listening to this won't be able to order them anyways. So, breath testing is a much better option, although it's not perfect.



So with a breath test, a patient blows into a tube to collect a baseline reading and then consumes a substrate, which is usually glucose or lactulose, and then continues blowing into the tube at 20-minute intervals for three hours. Breath testing is far safer, cheaper, more convenient, and less invasive than small bowel aspiration, but there are several issues. First, there's no consensus yet on how to interpret the results, which is kind of amazing given how widely used these tests are. Different clinicians use different guidelines. If you look in the scientific literature, you'll see different guidelines used in different studies, which of course complicates the interpretation of the literature itself in terms of establishing these associations

between SIBO and other diseases. You have to look at the fine print and see how they even define SIBO in the study in the first place, so it's really heterogeneous, and it does raise a lot of question marks in terms of the literature on SIBO.

Second, each substrate that you can use with the breath test has its own pros and cons, so for example, glucose is more specific but it's less sensitive, whereas lactulose is more sensitive but less specific, and we'll be going into a lot more detail about that later. Third, breath testing assumes that orocecal transit time is 120 minutes or more, so in other words the time that it takes for lactulose that's consumed during the test to go from the mouth to the colon is assumed to be 120 minutes, but studies have clearly established that that's not true even in healthy people or so-called healthy people with no digestive issues. Orocecal transit time can be much lower than 120 minutes, maybe even as low as 70 to 80 minutes, and that presents some challenges in terms of test interpretation. Fourth, differences in bacterial flora determine the response to the breath test, so for example, 10 to 15 percent of people may be colonized with bacteria that produce gases other than hydrogen or methane, which are the two gases that are typically tested for on this test, hydrogen sulfide is one example, so if you have a patient that has a lot of bacteria that's producing hydrogen sulfide, methane and hydrogen will be low or even flatline on the test, but that doesn't necessarily mean it's a normal result.

So as you can see, there are a lot of issues, but despite them the breath test is still the best test to run for SIBO, and hopefully in the years to come we'll have more alternatives. I talk about some of the emerging tests when we go into more detail on this subject later, but for now it's the best we have and there are ways of mitigating some of the shortcomings that we'll discuss. I just want to mention here that you cannot diagnose SIBO with a stool or a urine test, so you can see changes in bacterial counts and types in a stool test, but that doesn't tell you, that's mainly looking at what's going on in the colon since that's where most bacteria are, and in a urine test you can see organic acids that are produced by bacteria in the intestine, but it doesn't tell you where those bacteria are, so the breath test is more specific in terms of determining the location of where the overgrowth is occurring.

Okay, the next pathology to discuss is gut infections, and there are three basic categories here: viruses, parasites, and bacteria. We're going to focus on parasites and bacteria here; viral infections are typically self-limiting and they're not easy to test for. Having said that, it's important to know that viral gastroenteritis is considered to be a risk factor for IBS, IBD, SIBO, and other gut conditions, so it's just something to look for when you're working up a new patient. If they mention that their symptoms started after a bout of flu, or stomach flu, then that certainly can be a red flag and can signal a significant change in the GI tract that led to some of the problems that they're having.