

# Hydrogen Breath Tests (mid-morning appointment)

Information and advice for patients

## GI Physiology

### What is a Hydrogen Breath test?

A hydrogen breath test is a non-invasive and safe investigative test used to look into intestinal disorders. It provides information about the digestion of certain sugars or carbohydrates, such as milk sugar (lactose). This will help determine if you are intolerant to these sugars. The test can also be used for detecting abnormal growth of bacteria within the small bowel by having you ingest either lactulose or glucose. Bacterial overgrowth can cause a variety of symptoms including diarrhoea, bloating, gas, and abdominal cramps

You will be asked to blow into a handheld machine which measures the concentration of hydrogen (measured in parts per million) in your breath after you have fasted (not eaten) overnight to obtain a baseline reading. You will then be given a test solution to drink and further breath samples will be taken. If the amount of hydrogen in your breath increases more than 20 parts per million above your baseline it will be a positive test.

### Why do I need a Hydrogen Breath Test?

Your doctor has decided that you should be tested for one of two reasons (described below and the exact test will be stated in your appointment letter):

#### 1. To Test for Small Bowel Bacterial Overgrowth

It is normal for bacteria to live in your large intestine as they aid digestion. However, the small intestine does not usually contain bacteria. Sometimes bacteria can grow in the small intestine and interfere with the digestion of food; this is a condition known as 'small bowel bacterial overgrowth'.

When bacteria digest sugar they produce hydrogen, which escapes from the gut via the lungs. By measuring the hydrogen in your breath over a period of time (after a drink of lactulose or glucose) we can see if small bowel bacterial overgrowth may be the cause of your symptoms. Bacterial overgrowth can cause a variety of symptoms including diarrhoea, bloating, gas, and abdominal cramps.

#### 2. To Test for Lactose Intolerance

Lactose is a natural sugar found in milk. Lactose intolerance is the inability of your body to breakdown lactose. The problem is usually caused by a lack of a substance known as lactase. Lactase is an enzyme (a protein that causes a chemical reaction to occur) that is normally produced in your small intestine.

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If your body produces very little or no lactase it will be unable to break down the lactose in your digestive system. The unabsorbed lactose passes through your stomach and small bowel into your large bowel. Bacteria in your large bowel ferments (react to) the lactose producing fatty acids such as acetate and gases hydrogen and methane. This can cause symptoms like stomach bloating and flatulence (wind). By measuring the hydrogen in your breath over a period of time (after a drink of lactose) we can see if lactose intolerance may be the cause of your symptoms.

### What are the benefits?

The tests investigate how your body digests certain sugars which can be the cause of your symptoms.

### What are the risks?

The test substance is a sugar solution e.g. lactose, glucose or lactulose. The test in some cases (although rare) has been known to cause some of the symptoms you are currently experiencing such as stomach bloating, flatulence (wind) and diarrhoea.

### Are there any alternatives to the Hydrogen Breath test?

Unfortunately these tests are the only tests used to investigate these problems.

### Preparing for the test

Please read this information leaflet. Share the information it contains with your partner and family (if you wish) so that they can help and support you.

- **For 4 weeks before your test:** You should not take any antibiotics.
- **For 1 week before you test:** You should also not undergo any test that requires bowel preparation, such as colonoscopy or barium enema. Do not take any laxatives, stool softeners or stool bulking agents.

### The day before your test:

You may consume a low fibre diet only. Examples of foods include:

- Baked or grilled seafood, chicken, turkey, lean beef, or pork
- Eggs
- White bread
- Plain white rice

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- Plain coffee or tea or water
- Minimal oils for cooking, salt and pepper

Specifically, avoid foods such as, but not limited to: alcohol, dairy, pasta, cereals, beans, wheat, grains, fruits and vegetables, and high-fibre containing foods.

### From 10pm the Night before your test:

- You must stop eating, drinking and smoking from 10pm the night before the test.
- You may continue to take your usual prescription medicines with water until 12 hours before the test.
- Take no medications the morning of your test.
- Please bring all prescription medications to your appointment.

### The day of your test:

- You should not eat or drink anything in the morning. If you are diabetic requiring insulin or diabetic pills, ask your physician if you should change your morning dose.
- On the morning of the test please brush your teeth.

### **DO NOT EAT, DRINK, CHEW GUM OR TOBACCO, SMOKE CIGARETTES, EAT BREATH MINTS OR SWEETS BEFORE OR DURING THE TEST.**

- Do not sleep or exercise while the test is being done.
- Your test may last for two to four hours. Please allow yourself sufficient time to complete you test.

## Where do I go?

The department is located at Sandwell Hospital in Clinic 6B of the Outpatients building on the 1st floor. On your arrival please check in at the **Endoscopy Unit Reception desk**. You will be asked to take a seat in the Clinic 6B waiting area. The physiologist or scientist doing the test will then take you into a private room and discuss the test with you.

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### During the test

#### What should I expect?

- We will explain the test in full and obtain your consent to proceed. This is important as we must seek your consent for any procedure beforehand. The physiologist or scientist will explain the risks, benefits and alternatives before they ask for your consent. If you are unsure about any aspect of the tests proposed please ask for more information and the physiologist or scientist will be happy to provide this.
- The test is very easily performed. You will be required to breathe down a mouthpiece into a hand held machine that measures hydrogen (you will do this 2 times to take a baseline reading). The breath samples are collected whilst you are blowing at your normal rate, therefore this should not make you short of breath.
- Providing you have fasted correctly, the first readings should be very low. If this reading is excessively high, we may have to abort the test and rebook it for another day.
- You will drink the test solution (either lactulose, glucose or lactose)
- You will then breathe into the machine at regular intervals for up to 3 hours, so you may want to bring some reading material along with you
- After the test has finished you may go back to work or home..

### After the test

Following the test you will be able to go home. You do not need to be accompanied and your ability to drive will not be affected. You will be able to go straight back to your normal routine. You may eat and drink as normal and restart any medication that was stopped for the test.

The results of the test will be sent to the consultant in charge of your care. They will then decide on your best treatment plan.

### Contact details

If you have any questions about the tests please contact the

GI Physiology Department: **0121 507 2490**

The department is open Monday – Wednesday and Friday  
8.00am to 4.00pm.

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### Further information

- WebMD (No date) Small Bowel Bacterial Overgrowth. Available at: <https://www.webmd.com/digestive-disorders/sibo-overview-what-is-it#1> (Accessed: 20 April 2020).
- NHS (2019) Lactose Intolerance. Available at: <http://www.nhs.uk/Conditions/lactose-intolerance/Pages/Introduction.aspx> (Accessed: 20 April 2020).
- NHS (2017) Irritable Bowel Syndrome. Available at: <http://www.nhs.uk/Conditions/irritable-bowel-syndrome/Pages/Symptoms.aspx> (Accessed: 20 April 2020).

For more information about our hospitals and services please see our website [www.swbh.nhs.uk](http://www.swbh.nhs.uk), follow us on Twitter @SWBHnhs and like us on Facebook [www.facebook.com/SWBHnhs](http://www.facebook.com/SWBHnhs).

### Sources used for the information in this leaflet

- Association of Gastrointestinal physiologists (AGIP) (2019). Association of Gastrointestinal Physiologists (AGIP) Proposed Standardised Testing Protocol for Hydrogen/Methane Breath Testing (HMBT) to Assess Small Intestinal Bacterial Overgrowth (SIBO) and Carbohydrate Malabsorption. *New Wave*, February 2019, pp. 7-10.
- Rezaie, A, et al. (2017). Hydrogen and Methane-Based Breath Testing in Gastrointestinal Disorders: The North American Consensus. *The American Journal of Gastroenterology*, 112(5), pp775-784.

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