

# Patient Information on Esophageal pH Monitoring

Esophageal pH monitoring is a test used to evaluate for gastroesophageal reflux disease and to determine the effectiveness of medications that prevent acid reflux. This test measures the amount of acid refluxing or backing up from the stomach into the esophagus (food pipe).

Esophageal pH monitoring is used in several situations to assess for gastroesophageal reflux disease (GERD). The first is to evaluate typical symptoms of GERD such as heartburn and regurgitation that do not respond to treatment with medications. In this situation, there may be a question whether the patient has gastroesophageal reflux disease or whether antacid medications are adequate to suppress acid production. The second is when there are atypical symptoms of GERD such as chest pain, coughing, wheezing, hoarseness, sore throat. In this situation, it is not clear if the symptoms are due to gastroesophageal reflux. Occasionally, this test can be used to monitor the effectiveness of medications used to treat GERD. The test is often used as part of a pre-operative evaluation before anti-reflux surgery.

## PREPARATION FOR THE TEST:

- This test can be performed on or off acid suppressive therapy. Please check with your referring physician as to whether you should stop any medications prior to the study. If you are told to stop acid suppressive medications before the study then the following medications should be stopped as follows:
  - Stop 7 days before the study: Prilosec (omeprazole), Nexium (esomeprazole), Aciphex (rabeprazole), Prevacid (lansoprazole), Protonix (pantoprazole), Zegerid (immediate release omeprazole), Kapidex (dexlansoprazole).
  - Stop 2 days before the study: Zantac (Ranitidine), Tagamet (Cimetidine), Axid (Nizatidine), Pepcid (Famotidine).

If you were asked to obtain the study on your current regimen then do not stop any of your medications.

- Do not eat or drink anything for 6 hours before the study if undergoing pH/impedance and 8 hours before the study if undergoing wireless pH monitoring.

## PROCEDURE:

There are two types of pH monitoring. One might be better for you and will be decided by your doctor. Each type uses pH sensors that register the reflux of acid from the stomach into the esophagus. Combined pH/impedance monitoring also allows detection of non-acid reflux; however, it requires a catheter and a return visit in 24 hours. For each type of monitoring, you should try to perform your regular activities during the day, including the ones that may bring on your symptoms. Regular meals should be eaten during the test. Follow your doctor's instructions regarding medication use or avoidance during the test.

### Combined pH/impedance Monitoring

In order to determine the correct placement of the pH/impedance probe, it may be necessary to perform a short test called esophageal manometry (see additional instructions).

The nose is numbed for a short time. A thin wire-sized plastic catheter is passed into one nostril, down the back of the throat, and into the esophagus as the patient swallows. The tip of the catheter contains a sensor that senses acid. The sensor is positioned in the esophagus so that it is just above the lower esophageal sphincter, a specialized area of esophageal muscle that lies at the junction of the esophagus and

stomach and prevents acid from refluxing back up into the esophagus. In addition, the catheter has other sensors (impedance rings) that measure flow across the esophagus – allowing the detection of non-acid reflux and determination of how far up the reflux goes (which may be important for atypical symptoms such as cough). Placing the probe takes approximately 10 minutes and no sedation is necessary. The other end of the small catheter comes out the nose and is connected to a small battery-powered recorder that is worn on a strap over the shoulder. The patient is sent home with the catheter and recorder in place. During the 24 hours that the catheter is in place, the patient goes about his/her usual activities, for example, eating, sleeping, and working. Meals, periods of sleep, and symptoms are recorded by the patient in a diary and by pushing buttons on the recorder. The diary helps the doctor to interpret the results. The patient returns the next day for removal of the catheter. After the catheter is removed, the recorder is attached to a computer so that the data recorded can be downloaded into the computer where it is then analyzed.

There are very few side effects of esophageal pH monitoring. There may be mild discomfort in the back of the throat while the catheter is in place. The vast majority of patients have no difficulty eating, sleeping, or going about their daily activities. Most patients, however, prefer not to go to work because they feel self-conscious about the catheter protruding from their nose.

#### Wireless, capsule esophageal pH monitoring

Monitoring esophageal pH can also be performed with Bravo pH monitoring which uses a capsule that is attached to the esophageal lining. The capsule is approximately the size of an eraser on a pencil. The capsule contains an acid sensing probe, a battery, and a transmitter. During an upper endoscopy using anesthesia, the capsule is introduced into the esophagus on a catheter through the mouth and is attached to the lining of the esophagus with a clip. The catheter then is detached from the capsule and removed. The probe monitors the acid in the esophagus and transmits the information to a recorder that is worn by the patient on a belt. With this method, there is no catheter protruding from the nose for the recording. For this test, the monitoring period is longer, 48 hours (2 days), which allows more symptom events to be captured; however, the study only looks at acid and does not detect non-acid reflux. During the recording, the patient goes about his or her usual activities, for example, eating, sleeping, and working. Meals, periods of sleep, and symptoms are recorded by the patient in a diary and by pushing buttons on the recorder. The diary helps the doctor to interpret the results. The patient returns 48 hours after placement (or sends the recorder back after 48 hours) and the recorder is attached to a computer so that the data recorded can be downloaded into the computer where it is then analyzed. The capsule will eventually fall off the esophageal lining, usually after five to several days, and is passed in the stool. The capsule is not reusable. The advantages of the capsule device are related to the absence of a catheter connecting the probe to the recorder and the longer duration of the study. There is greater comfort without a catheter in the back of the throat, and patients are more likely to go to work and do more normal activities. Disadvantages of the capsule are that it only measures the pH at one level, it does not allow measurement of how high the reflux is going, and it cannot detect non-acid reflux. Since the device is placed with anesthesia, you will need to bring someone to drive you home after the procedure is complete.

The capsule device may cause a vague sensation in the chest or discomfort when swallowing. This may be due to food tugging on the capsule as the food passes, although discomfort occasionally can be felt when swallowing only saliva. In rare instances, the Bravo capsule can cause chest pain requiring removal of the capsule with an endoscopy. Patients cannot have an MRI (Magnetic Resonance Imaging) during the test and for 30 days afterwards. Some patients cannot have this type of monitoring. Patients with pacemakers, implantable defibrillators or neurostimulators cannot use Bravo. Patients with a history of bleeding diatheses, strictures, severe esophagitis, varices, obstruction, and prior esophageal resection are not candidates for Bravo pH monitoring.