

Paediatric Gastroenterology

Impedance study - advice for patients/parents

Brief description:

- Your child is going to be having an impedance study. This information leaflet will provide you with the information you need about this procedure.
- Here, we explain some of the aims, benefits, risks and alternatives to this procedure. We want you to be informed about your choices to help you to be fully involved in making any decisions.
- Please ask about anything you do not fully understand or wish to have explained in more detail.

What is an impedance study?

This test measures the movement of all liquid and air up and down the oesophagus (the food pipe - the tube that takes food from your mouth to your stomach). Gastro-oesophageal reflux (GOR) is when stomach content (acid or non-acid) comes back up from the stomach into your oesophagus. The impedance study provides information on what is actually happening in the oesophagus over 24 hours. It measures all reflux events, whether they are acid or non-acid, liquid or air, or liquid and air combined. It also measures how high the liquid refluxes, for example, into the lower, middle or upper part of the oesophagus. These events are measured using an impedance probe.

Preparation – what to do with medication?

Before booking the study your doctor or specialist nurse will discuss with you whether or not you need to stop any of your child's treatment.

Occasionally the doctor caring for your child may request that you do not stop their medication; they will explain to you why this is important.

If your child needs to stop treatment, then please see the list below for when these should be stopped.

Proton pump inhibitors should be stopped seven days before to test, these include:

- Omeprazole (Losec)
- Lansoprazole (Zoton)
- Esomeprazole (Nexium)

Acid suppressants should be stopped for 72 hours (three days) before to the test. These include:

- Ranitidine (Zantac)
- Cimetidine (Dyspamet, Tagamet)

Antacids/Alginates should be stopped for 24 hours before to test. These include:

- Gaviscon
- Gastrocote
- Peptac
- Rennies
- Maalox
- Mucogel
- Prokinetic (motility agents)
- Domperidone (Motilium)

Before the test

You will receive information regarding the date, time and department where your child will have the test performed.

Your child should not eat or drink for two hours before this appointment to reduce the chance of them being sick at the time of probe insertion.

How is the probe inserted?

Before inserting the probe, the specialist nurse will talk your child through the procedure. The specialist nurse will then pass the tip of very thin flexible plastic tube (called a probe) into your child's nose and down the back of their throat into the lower oesophagus. This is a little uncomfortable and may make your child sneeze, cough or retch. It may tickle the back of their throat for a while once inserted. The probe is held in place with tape attached to your child's cheek and is also secured with tape on the back/chest. The other end of the probe is attached to the recording box, which is the size of a Nintendo DS and held in a small bag. The box will record the severity of acid reflux (ph) and any reflux (impedance) events over 24 hours. The data is later transferred onto a computer for analysis. The test will then be analysed by your child's medical team and appropriate changes made to their treatment plan.

Is the probe in the correct position?

An X-ray will need to be performed to ensure the probe is in the correct place. If necessary the probe can be pushed in slightly or pulled back to the required position. A further X-ray is not needed.

Will my child need to stay in hospital?

In most cases it is possible for your child to go home overnight and return to the ward the following day for the probe to be removed. This will be discussed with you by your

child's team. If your child remains in hospital overnight they will be nursed on a children's ward.

How will the probe stay in?

The probe will be secured to your child's nose/cheek and back or chest with tape to avoid accidental removal. You will be shown how to re-secure the probe if the tape becomes loose.

What happens if the probe falls out?

This is very uncommon. If the probe does fall out, **don't worry!** If you are in hospital tell one of the nursing staff immediately and they can contact the nurse specialist as appropriate. If you are at home and the probe falls out, simply remove it by pulling it out of the nose gently. If it comes out slightly, you can try and return it to its original position. If this is not easily done, either fix the tube in the new position and record the event in the diary you will be given, or simply remove the tube and return to the ward the next day as planned.

What should I do if my child cannot tolerate the presence of the probe?

This is very rare, but children who cannot tolerate the probe are usually identified at the time of insertion. If you find that your child really cannot tolerate the probe when you get home, and that simple pain killers (for example paracetamol) does not help, you can remove the probe yourself by simply removing the tape and pulling out the probe. Return the recorder and probe to the hospital as planned the next day and explain what happened to your nurse specialist.

Will my child feel the probe?

Your child will be aware of the probe in the back of their throat throughout the test but most children/young people report they become less aware of it over the 24 hour period.

Will my child be able to eat and drink as normal?

We want your child to continue eating and drinking as normal, as we need to see what happens during a normal day. However we ask that your child does not have any carbonated / fizzy drinks or fruit juices during the study as these can interfere with the interpretation of reflux events. The probe may move very slightly as your child eats, and this may feel strange initially. This is perfectly normal.

Are there any restrictions to my child's activities?

Your child should not have a bath or shower for the duration of the study to prevent any accidental damage to the recorder by water.

Boisterous play / activity is best avoided to prevent accidental removal of the probe and damage to the recorder.

What is the diary for?

You will be provided with a diary to record your child's symptoms, body position and meals. The diary is extremely important as it allows us to correlate your child's symptoms with the recorded reflux events. You (and your child if they are old enough) must complete the diary carefully and will be shown how to do this before the study. You may also be asked to press certain 'symptom' buttons on the recorder so that the computer can analyse whether or not the 'symptom' occurs as a result of a reflux event. If the diary (or button) is not used correctly it may not be possible to analyse the study and diagnose your child's problem. Further explanation will be given on the day.

How will my child sleep?

Your child will be able to sleep as normal. Place the recorder/ box under your child's pillow to avoid accidental removal. If your child's sleep is disturbed overnight please record it in the diary and press the appropriate buttons as advised.

Can the equipment be damaged?

Yes. The equipment is very fragile and expensive. We therefore ask you and your child to take great care of it. The recorder should be handled carefully and kept in its case to avoid any accidental damage. If the equipment is damaged we will not be able to analyse the information of the test and the test may need to be repeated.

What happens when the monitoring is complete?

The appointment to remove the probe will take 10 to 15 minutes. Once the tape is removed the probe slips out of the nose very easily. This only takes a few seconds and may feel odd, but it should not be painful. Each probe is only ever used once and then discarded. The diary sheet will then be reviewed with you and your child to ensure that we have all the relevant information.

Once the probe is out your child can go home. Any anti-reflux medication can be restarted if this was advised by your doctor before the study.

When do I find out the results?

The information on the Impedance recorder is downloaded onto a computer and the results are analysed by the doctor or specialist nurse from your child's team. This can take up to a week and you will either receive a telephone call or be seen in clinic to discuss the results.

A letter confirming the findings of the procedure and management plan will be given to you, and sent to your child's GP, your referring consultant and any other health care professionals involved in your child's care. If you **do not** wish for anyone involved in your child's care to receive this information, please let one of the team know.

What are the benefits of the procedure?

Your doctor should have discussed the likely benefits of this procedure with you and your child. If you are not sure how the procedure is likely to benefit your child's health, please ask one of the medical team who will be happy to explain this to you. In most cases the procedure is done to try and help make a diagnosis i.e. to work out the cause of your child's symptoms and therefore allow better treatment for your child.

Alternatives

Some units measure pH reflux alone with a 'pH-study'. An impedance study is a better study of the function of the oesophagus and cannot be replaced by any other type of scan/X-ray or blood test. Sometimes it is appropriate to treat a patient without doing an impedance study, but this should be discussed with you before booking this investigation.

Are there any risks?

There may be a little bleeding from the nose if your child has a history of nosebleeds, or the tube was difficult to insert.

There is also a small risk of the probe going into a lung rather than the oesophagus. This is very uncommon and not dangerous. Misplacing the probe is very unlikely as passing the probe into the lungs will usually make your child continue to cough and feel uncomfortable. The correct position will be checked by X-ray before he or she is allowed to eat, drink or leave the hospital.

If you are concerned, or your child has any of the symptoms below:

- Severe pain
- Fever – temperature higher than 38.5° C for more than two hours

Please contact the one of the following:

- 8am until 4pm: Gastroenterology nurse: 01223 274757
- 4pm until 8am: Your GP or local Accident and Emergency Department or;
- Addenbrooke's Hospital: 01223 245151 (ask switchboard to bleep the on-call paediatric registrar.)

Any other questions?

Feel free to write down any other questions you may have. No question is ever too minor or too silly to ask, so please ask any member of the team caring for you if there is anything you wish to know. Your child is also encouraged to ask questions. It is important that you and your child are fully prepared for the procedure and that we try and address all of your worries and concerns before the procedure.

If you have any problem understanding or reading any of this information, please contact any of the team below or ask your consultant for more details.

- Clinical Nurse Specialist in Paediatric Gastroenterology: 01223 274757
- Gastroenterology Nurses: 01223 384950



We are currently working towards a smoke-free site. Smoking is only permitted in the designated smoking areas.

For advice and support in quitting, contact your GP or the free NHS Stop Smoking helpline on 0800 169 0 169

Help with this leaflet:



If you would like this information in another language, large print or audio format, please ask the department to contact

Patient Information: 01223 216032 or

patient.information@addenbrookes.nhs.uk



Document history

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