



York and Scarborough  
Teaching Hospitals  
NHS Foundation Trust

# MRI Scan for Children

Information for patients, relatives and carers

① For more information, please phone 01904 721017 and ask to speak to the MRI appointments clerk or contact the Children's ward on 01904 726017 to speak to a children's nurse.

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Please read the whole of this leaflet. It contains important information about your child’s MRI scan and general anaesthetic they will require.

# What is MRI?

MRI stands for Magnetic Resonance Imaging. It is a scanning method that uses powerful magnets and radio waves to build up a detailed picture of your body.

Your body contains millions of hydrogen protons which move around randomly. The MRI contains a strong magnetic field which makes all these protons line up in parallel. During a scan, short bursts of radio waves are used which cause the protons to move in and out of line. As this happens, tiny radio signals are released which are detected by the scanner and transmitted to a computer. The final image is created based on the strength and location of the radio signals.

## Is it safe?

There are no known risks or side effects associated with MRI. Unlike X-rays and CT scans, MRI scanning does not use X-radiation and therefore the procedure can be performed repeatedly without any problems. However, **MRI must not** be performed on people with certain metal implants in their body.

# **Important Safety Information**

It may not be possible for your child to have an MRI scan if they have:

- A non-MRI safe heart pacemaker
- An aneurysm for which they have surgical clips in their head
- A cochlear (inner ear) implant
- Metal fragments within their eyes or head
- Neuro electrical stimulators

If your child has any of the above, please contact us as soon as possible.

## **Please also contact the MRI unit if:**

Your child has ever had an occasion when metal fragments may have entered their eyes or head.

Please note your child can still have an MRI if they have fillings. If they have braces on their teeth which can be removed, please remove them before the scan.

## **About the appointment**

Once you have received your child's appointment, please phone us on 01904 721017 to confirm you will be attending. At this time, we will ask you a few essential pre-scan questions to check that it is safe for your child to have an MRI scan.

Failure to confirm your child's scan may result in the appointment being cancelled.

## **What are the benefits of having an MRI scan?**

MRI gives accurate information about a wide range of medical problems. This gives your child's doctor important information and allows them to decide on possible future treatments.

## **How long will the scan take?**

It usually takes about 60 minutes to scan one part of the body. It will take longer to scan more than one part. The length of the scan can also vary depending on the information your child's doctor requires. It is important to remember that just because the scan takes a little longer it does not necessarily mean there is something wrong.

## **Will my child need an injection?**

Depending on the type of scan your child is having, they may need an injection of gadolinium based contrast agent to aid diagnosis. The contrast agent circulates in their blood stream making the vessels and organs easier to see. The injection is usually given into a vein in your child's elbow or hand during the scan and after they are anaesthetised.

Your child may also require an injection for their general anaesthetic. This is covered later in this leaflet.

## **Are there any side effects?**

Like all medicines, the contrast agent can cause side effects. In a small number of cases (less than one in one thousand) patients may experience a hypersensitivity or allergic reaction to the contrast agent.

Other rare side effects following the administration of the gadolinium based contrast agent include mild headache, nausea, dizziness, numbness and tingling. Very occasionally (one in ten thousand patients) more serious reactions can occur which may lead to vomiting, hives, skin rashes and breathing difficulties.

Gadolinium based MRI contrast agents, when used in patients with acute renal failure, have been associated with a rare systemic fibrosing disease called nephrogenic systemic fibrosis.

This has been associated with use of at least four different gadolinium-containing agents. These agents are not used at the hospitals within the York and Scarborough Teaching Hospitals NHS Foundation Trust.

It is important to contact the MRI unit if your child is under the care of a kidney doctor or if they have had or are awaiting a kidney or liver transplant.

## **What is General Anaesthesia?**

General anaesthesia is a state of controlled unconsciousness. It allows procedures to be carried out without the individual experiencing pain or discomfort. It is also used to enable patients to lie very still for certain investigations, such as MRI scans.

Anaesthetics are administered as either gases or injections by specialist doctors called anaesthetists. The doctors also continually monitor the heart and breathing function of people having a general anaesthetic.

## Preparation

There are several things you can do before coming into the hospital to make the experience less stressful for you and your child. The extent of what you tell them will depend on their ability to understand but as a rule, all children should be told:

- 1) They are going into hospital.
- 2) They are having an MRI scan.
- 3) Basic information about what will happen on the day.

Sometimes it is useful to explain the procedure to your child through play. Try to talk about the MRI scan in simple terms and encourage your child to ask questions. Explain the reason for them having a scan.

## Fasting

In order for your child to have a general anaesthetic, they must have an empty stomach. This helps to avoid complications of aspiration (inhaling food particles) while they are asleep which may damage their lungs. It is very important they follow these guidelines.

- 1) **No** food, milk, thickened fluids, fizzy drinks, fresh fruit juices and baby formula feed for at least **six** hours before admission

- 2) **No** breast milk for at least **four** hours before admission.
- 3) Please encourage your child to drink clear fluids (water or diluted non-fizzy squash) until their admission time as clear fluid is quickly digested from their stomach. It is important your child remains well hydrated for their own comfort. This will help their recovery.

Occasionally, your child will need to take certain medications which cannot be stopped. If this is the case, please allow your child to take them with water or diluted squash.

If you are not sure of the guidelines, please contact the Children's Ward (ward 17) who will advise you further.

## **On the day of the scan**

Your child will be admitted onto the Day Unit by a nurse. You can be with them on the ward.

Your child will need to change into a hospital gown and pyjama bottoms.

The nurse will ask you to complete a questionnaire. They also need to weigh your child and put local anaesthetic 'magic cream' onto your child's hands (see later).

They may measure your child's heart rate, blood pressure and oxygen levels. We will also check your contact details around the same time.

An anaesthetist will visit you to discuss the anaesthetic. They will need to ask questions about your child's health and any medications. It is helpful to know about any previous anaesthetic experiences your child may have had. At this meeting they will explain about your child's anaesthetic for the scan and answer any questions you may have.

There is a playroom, but feel free to bring any small toys your child may like to have with them. We can only perform one scan at a time, and your child will have to wait their turn so something familiar to play with may help.

Please be aware there can be several children in the waiting area of the ward.

When it is time for the scan, a nurse or play specialist will escort you and your child down to the MRI scanning room. They cannot wear their own clothes; your child will need to change into a hospital gown and pyjama bottoms. The MRI scanner is a large magnet which can disrupt medical implants so for safety reasons you will be asked some health questions at this point by the MRI team.

Before the scan, we will ask you to remove any thing metal or magnetic from your child. This includes money,

keys, mobile phones, watches, hair clips and jewellery including piercings. If you are unable to remove their jewellery we may not be able to scan them. All removable dental implants must be removed. If attending for a head scan, your child **must not wear eye makeup or have hair extensions bonded with a metal gripper.**

The anaesthetist and an 'ODP' (anaesthetic assistant) will meet you in a room next to the MRI machine where your child will be given the anaesthetic. You may stay with them until they are asleep after which you can wait in the MRI waiting area or the nurse will take you back to the ward.

## **Giving the anaesthetic**

Young children will generally go to sleep sitting on your lap. Older children may need to sit on the bed but you can be next to them all the time. If possible, we may put a small peg on your child's finger or toe to monitor oxygen levels during the anaesthetic induction.

There are two methods of giving your child an anaesthetic. You may be able to help choose which method is used but sometimes the anaesthetist will advise that one method is more appropriate.

## **Anaesthetic Gases**

Your child will breathe in a mixture of anaesthetic gas and oxygen to go off to sleep via a clear facemask. Anaesthetic gases are sweet smelling and not generally unpleasant but sometimes children find this new smell and the presence of a facemask a little overwhelming. This method can take a little longer for your child to go to sleep and they may appear restless as the anaesthetic starts to work. The anaesthetic team will talk you through this.

## **Intravenous anaesthetic**

The 'magic cream' put on your child's hand on the ward should numb the back of their hand. This can take at least an hour to work. The cream is taken off in the MRI department and a small needle is used to put a plastic tube (cannula) in a vein on the back of their hand while they are distracted.

Once in place, the needle is removed and only a small plastic tube remains. Anaesthetic drugs are injected into this and will work very quickly.

Once your child is asleep, you can wait in the MRI waiting area or you will be taken back to the ward so the MRI scan can take place. During this time, your child's heart, breathing and oxygen levels will be continuously monitored. They will be kept asleep using anaesthetic gases.

Once the scan is complete, your child will be woken up in the MRI department by the anaesthetist and a specialist recovery nurse and then you will be invited back into the area near the MRI scanner to be with your child or your child will be brought back to you on the ward. The scan itself is not a painful procedure, but children can feel a little disorientated on waking.

The duration of the scan can be quite variable but often children are in the MRI department for at least an hour. Once we know what scans your child requires we can give you more of an idea about timing.

## **After the scan and going home**

Once back on the ward with you, your child will need to spend an hour or two recovering. They should not have any pain but occasionally they may have a sore throat or feel sick. There will be some medicine they can take if needed.

Once they are awake enough and able to tolerate eating and drinking the nurse will discharge them.

You will generally not receive the results of the scan on the same day as specialists are required to look at each image individually and each scan produces many different images. Please do not ask any member of staff looking after your child for results as they will not be able to give them to you.

## **Side effects and complications**

Serious problems with anaesthesia are uncommon with modern drugs and techniques and generally most children will recover very quickly. Some children may experience a sore throat or sickness immediately after the MRI scan which is often short lived.

One in 10 children may suffer from disrupted sleep in the days following the anaesthetic.

Approximately one in 100 children will suffer a mild allergy to one of the medications used.

A serious allergy to the medication may be seen in one in 40,000 children. This is a very small risk and is equal to about one person in a small town.

Sometimes a pre-existing medical condition can have implications for the anaesthetic. This will be discussed with you by the anaesthetist at the pre-scan visit. Rarely this may result in delaying the scan for another day, for example if your child is unwell with a cold or temperature. This is for the safety of your child and if applicable, will be explained to you on the day.

Your child remains fully monitored for the duration of the anaesthetic to allow any complications to be detected as soon as possible.

## **Tell us what you think of this leaflet**

We hope that you found this leaflet helpful. If you would like to tell us what you think, please contact:  
Julie Caddick, MRI Principal Radiographer,  
York Hospital, Wigginton Road, York, YO31 8HE or  
telephone 01904 721017.

## **Teaching, training and research**

Our Trust is committed to teaching, training and research to support the development of health and healthcare in our community. Healthcare students may observe consultations for this purpose. You can opt out if you do not want students to observe. We may also ask you if you would like to be involved in our research.

## **Patient Advice and Liaison Service (PALS)**

PALS offers impartial advice and assistance to patients, their relatives, friends and carers. We can listen to feedback (positive or negative), answer questions and help resolve any concerns about Trust services.

PALS can be contacted on 01904 726262, or email [yhs-tr.patientexperienceteam@nhs.net](mailto:yhs-tr.patientexperienceteam@nhs.net).

An answer phone is available out of hours.

# Leaflets in alternative languages or formats

If you would like this information in a different format, including braille or easy read, or translated into a different language, please speak to a member of staff in the ward or department providing your care.

Patient Information Leaflets can be accessed via the Trust's Patient Information Leaflet website:  
[www.yorkhospitals.nhs.uk/your-visit/patient-information-leaflets/](http://www.yorkhospitals.nhs.uk/your-visit/patient-information-leaflets/)

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