The BRAIN TUMOUR CHARITY

Scans

Scans provide a detailed image of the brain. They allow doctors to see whether a tumour is present, its size and position. Scans are used during diagnosis, as well as for monitoring during and after treatment. The two scans that are most commonly used are CT scans (image below) and MRI scans.

In this fact sheet:

- CT scans: what they are and the scan procedure
- Answers to some common questions you may have about CT scans
- MRI scans: what they are and the scan procedure
- Answers to some common questions you may have about MRI scans.

This fact sheet is relevant to brain tumours in adults - for fact sheets and other resources for children, please see www.thebraintumourcharity.org

CT scans

CT stands for *Computerised Tomography*. You may also sometimes hear doctors referring to CT scans as CAT scans - these are the same thing. CT scans use x-rays to build up a three-dimensional image of the inside of your head by taking several pictures from various angles.

The CT scan procedure

- You are likely to be given a 'contrast medium' (via an injection) that enables a clearer image to be given from the scan. This may make you feel warm all over.
  (If you are having a scan of other parts of your body at the same time, you may be given the contrast medium as a drink. You will not be given the contrast if you are allergic to it or if you have poor kidney function.)
- The scanner is shaped like a doughnut or ring, with a round hole in the middle – this is where your head will go. It will take a bit of time to get you into the right position.
- During the scan, you'll need to lie very still. Staff will leave the room, but will be nearby and able to see and hear you should you need them. You will also be able to hear them.
- During the scan, you will hear a soft humming from the scanner and clicks when it is taking pictures.
- After the scan, you will usually be allowed to go straight home.

How long does the CT scan take?

It takes around 5-10 minutes for a CT scan of the head, although more time will be spent beforehand to get you into the correct position ready for the scan. The newest CT scanners take about 1 minute to scan the whole brain.

Is the scan painful?

No, but the contrast medium may make you feel hot. Less commonly, some people have reported feeling cold after having the contrast medium.

Can I breathe normally during the CT scan?

Yes, it's fine to carry on breathing quietly during the scan.

Are CT scans dangerous?

CT scans are used only when they are considered necessary, with the benefits outweighing the risks. Although radiation is used, it is kept at a very low dose.

I get claustrophobic - what can you suggest?

It's a good idea to let staff know before the day of your scan. If necessary, you may be given a sedative to help calm you before the scan, but you'll need to ask in advance if you think you will require one.

After the CT scan

You will usually be able to go straight home after the scan, unless you had a sedative to calm you. In this case, the hospital staff will first check that it is safe for you to do so. You should arrange for a friend or relative to accompany you and to take you home afterwards.

How long will I have to wait for the results?

This varies, but you should be given a time frame if you ask your doctor or Clinical Nurse Specialist. Scans are often reviewed at weekly meetings of your health team (known as the multi-disciplinary team or MDT meeting) - the result of your scan may not be available until this has been done.

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MRI scans

Magnetic Resonance Imaging, or MRI, uses magnetic fields to build up a three-dimensional image. Like the CT scan, it takes pictures from several angles and builds up a detailed picture of the brain. Due to its use of powerful magnets, you will be asked beforehand whether you have a pacemaker or any implants, such as a programmable shunt. You should also tell your doctor if you have ever worked in the metal or steel industry, as you may have very small fragments of metal lodged in your body.

The MRI scan procedure

- You may be given a 'contrast medium' (usually an injection, but sometimes, as with CT scans, as a drink) that enables a clearer scan image. This may make you feel warm all over. The contrast medium may be given to you before, or part way through, the scan.
- The scanner is a cylinder with a hole through the centre. Your head and shoulders fit inside it. To some people, it can feel claustrophobic.
- Metal items, such as hair clips and jewellery will need to be removed. During your scan, staff will leave the room, but you can hear them and they can hear you.

How long does the MRI scan take?

The scan can typically take between 15 and 90 minutes depending on the size of the area being scanned and how many images are taken.

Is the scan painful?

No, the scan is painless, but it is very noisy. You'll probably be given headphones or earplugs though. If you have headphones, you can usually take some music with you if you like, although it can be difficult to hear it clearly over the noise of the scanner.

The noises are caused by the electric current in the scanner coils being turned on and off. You can hear the noises of an MRI scanner online: http://www.youtube.com/watch?v=xS_V_OgeX-U

What if I am claustrophobic?

It's a good idea to let staff know before the day. Most people find it manageable with support from the radiographer. Sometimes an angled mirror can be used which enables you to see out.

If necessary, you may be given a sedative to help calm you before the scan, but you'll need to ask in advance if you think you need one.

Are MRI scans dangerous?

The MRI scan procedure is harmless. It does not expose your brain to radiation.

However, they are not suitable for some people who have metal in their body (for example, skull sections). Having something metallic in your body does not necessarily mean you cannot have an MRI scan, but it is important for the medical staff carrying out the scan to be aware, so they can organise any further measures that may need to be taken. For example, people with some pace-makers may be able to have an MRI scan if a cardiologist or other trained professional is able to make the device MRI-safe.

Can I have an MRI scan if I have fillings or wear braces on my teeth?

If you have any fillings, or you wear braces on your teeth, the quality of the MRI scan image could be affected. It is, however, completely safe to have an MRI scan with both of these. Let your radiographer know about any fillings or braces before your scan. He or she may ask you to take out any easily removable items.

After the MRI scan

You will usually be able to go straight home after the scan, unless you had a sedative to calm you. In this case, the hospital staff will first check that it is safe for you to do so. You should arrange for a friend or relative to accompany you and to take you home afterwards.

How long will I have to wait for the results?

This varies, but you should be given a time frame if you ask your doctor or Clinical Nurse Specialist.

What is the difference between an MRI and a CT scan?

MRI scans and CT scans are similar - both build up detailed images of the brain. However, whilst CT scans use a small amount of radiation to do this, MRI scans use magnetic fields.

What other types of scan might I have?

MRI scans and CT scans are the most common type of scan you are likely to have, but there are some other types of scan that may be used to diagnose a brain tumour, or to find out more about a diagnosed tumour. These include:

PET (Positron Emission Tomography) scans
These are often used to help detect whether a brain tumour is low grade (slow growing) or high grade (fast growing).

SPECT (Single Photon Emission Computerised Tomography) scans
These are similar to PET scans. They can be used to help doctors find out more about the tumour and about chemicals within your brain.

fMRI (functional MRI scan)
When an area of the brain is active during a 'function', such as speech, that area uses more oxygen and more blood flows into it than other areas. Functional MRI scans show movement of blood through the brain, highlighting which areas are active. This helps doctors to plan surgery, so that they aim to avoid the functional, active areas of the brain.

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Specialised MRI scans

Specialised MRI scans include scans called magnetic resonance angiography (MRA) and magnetic resonance spectroscopy (MRS). MRA scans can show the blood vessels in the brain that are supplying the tumour, whilst MRS scans look at chemicals in the tumour.

These can help doctors to diagnose and decide how and when they will treat your tumour.

What if I have further questions?

If you require further information, any clarification of information, or wish to discuss any concerns, please contact our Support and Information Team:

Call: 0808 800 0004
(free from landlines and most mobiles:
3, O2, Orange, T-mobile, EE, Virgin and Vodafone)

Email: support@thebraintumourcharity.org

Join our online forums at:
thebraintumourcharity.org/forums

About us

The Brain Tumour Charity makes every effort to ensure that we provide accurate, up-to-date and unbiased facts about brain tumours. We hope that these will add to the medical advice you have already been given. Please do continue to talk to your doctor if you are worried about any medical issues.

We are the UK's pre-eminent brain tumour charity. We fund scientific and clinical research into brain tumours and offer information and support to those affected, whilst raising awareness and influencing policy.

We rely 100% on charitable donations to fund our vital work. If you would like to make a donation, or want to find out about other ways to support us including fundraising, leaving a gift in your will or giving in memory, please visit us at thebraintumourcharity.org, call us on 01252 749043 or email fundraising@thebraintumourcharity,org

About this fact sheet

This fact sheet has been written and edited by The Brain Tumour Charity's Support and Information Team. The accuracy of medical information has been verified by a leading neuro-oncologist. Our fact sheets have been produced with the assistance of patient and carer representatives and up-to-date, reliable sources of evidence. If you would like a list of references for any of the fact sheets, or would like more information about how we produce them, please contact us.

The BRAIN TUMOUR CHARITY

Scans

Your notes

Saving lives through research, information, awareness & policy

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