

MIRACLES MRI safety screening SOP

This SOP outlines the process for performing MRI safety screening to determine eligibility for patients to undergo an MRI scan on the Hyperfine Swoop system as part of the MIRACLES study.

General guidance

Complete the MR safety checklist for the patient – this is a very important safety check for the patient. If the patient is able and has capacity to reliably answer the questions themselves then this would be considered best practice. In this scenario, a member of the MIRACLES research team should go through each question to make sure the patient understands what we are asking and are able to give an accurate response. There is an element of judgement if a patient is uncertain of any responses but as this is a research study and the research team that will be completing the checklist won't have much MRI experience so if you are uncertain then please seek guidance from your MR Responsible Person (MRRP, Tracey Hopkins) or MR Safety Expert (MRSE, John Foster) before proceeding to scan. The next section provides guidance for what to do if a patient indicates they have an implant or safety concern.

For patients with incapacity or otherwise incomplete medical history, we recommend you follow the guidance document: [GGC guidance MRI patients-with-incapacity-or-incomplete-medical-history Radiographers v5 JM.pdf \(scot.nhs.uk\)](#)

Guidance for individual screening questions

This guidance is intended to outline what steps should be taken for each of the MRI safety questions (DR-GGC-FORM-016 Rev 4 Hyperfine).

1 .Have you had an MRI scan before?

- For the research team, disregard the answer to this question. If they have had a previous MRI, this does not mean they are safe for this one. Their implants may have changed or they might have been scanned because the benefit to the patient outweighed the risk. There is no benefit to the patient in getting this MRI scan so it might not be possible to proceed even if they have had a previous MRI scan. Please continue to ask this question as it can be useful for Radiographers and Physicists to know if you need to ask for advice.

2. Have you ever had or do you have a cardiac pacemaker, pacing leads or defibrillator?

- If yes, this is an exclusion criteria for this study and the scan cannot go ahead

3. Have you ever had an aneurysm in your head, clipped or treated?

- If yes, the patient should be excluded from the study.**

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- **If unsure, do not proceed with the scan.** Please seek advice from an MRI Physicist ([*contact email*](#)) or MRI Radiographer ([*contact email*](#)).

4. In your lifetime, have you EVER had any surgery to your

Heart or Chest?

Head or Brain? (e.g. hydrocephalus shunt)

Eyes? (e.g. retinal tack)

Ears? (e.g. cochlear implant, stapedectomy)

Spine? (e.g. spinal fixation, discectomy)

- There could be a range of implants that come up here.

If the patient has a cochlear implant or a shunt then do not proceed to scan.

- If an implant falls within any of the policies shown on this website, excluding shunts, read the policy carefully including the notable exceptions and follow the policy as if it was a 1.5T MRI scanner
- If unsure or there is something not covered by a policy, please seek advice from an MRI Physicist ([*contact email*](#)) or MRI Radiographer ([*contact email*](#)).

5. Do you have any metal clips, pins, plates, screws, joint replacements? If 'Yes' please detail:

- Fixed, Internal, Passive, Orthopaedic Implants (e.g. hip replacements) can be scanned under this policy [Fixed, Internal, Passive, Orthopaedic Implants – NHS GGC MRI Physics \(scot.nhs.uk\)](#)
- Provided the patient does not have aneurysm clips or anything else covered in this questionnaire, the scan can proceed but please check if there is ever anything unusual. We mainly ask this so we know whether to expect an artefact on the MR images.

6. Do you have any electronic, mechanical or magnetic implants or **pumps**? (eg neuro-stimulator, insulin pumps, glucose monitoring device, TENS)-If 'Yes' please detail:

- If yes and it cannot be fully removed, this is an exclusion criteria for this study and the scan cannot go ahead
- If all components can be fully removed then the scan may proceed

7. Do you have any other type of implant in your body? e.g. stents, breast implant, contraceptive- IUD. If 'Yes' please detail:

- If the patient has an implant below the waist, this is safe to proceed.
- If yes or unsure, please seek advice from an MRI Physicist ([*contact email*](#)) or MRI Radiographer ([*contact email*](#)).

8. Have you EVER had an eye injury where metal could have entered your eyes?

- If yes or unsure, please seek advice from an MRI Physicist ([*contact email*](#)) or MRI Radiographer ([*contact email*](#)).

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9. Have you EVER had any incidents where bullets, shrapnel or other pieces of metal have entered your body?

- If the patient has any metallic foreign bodies below the waist, this is safe to proceed.
- If yes or unsure, please seek advice from an MRI Physicist ([*contact email*](#)) or MRI Radiographer ([*contact email*](#)).

10. Have you had any surgery or endoscopy in the last 6 weeks? Or PillCam in the last 2 week. If 'Yes' please detail:

- If yes or unsure, please seek advice from an MRI Physicist ([*contact email*](#)) or MRI Radiographer ([*contact email*](#)).

11. Have you EVER had any other surgery in your lifetime? If 'Yes' please detail below:

If yes or unsure, please seek advice from an MRI Physicist ([*contact email*](#)) or MRI Radiographer ([*contact email*](#)).

Please skip questions 12-14 as these patients will not receive an MRI contrast agent

15. Do you have any of the following today?

Dental plate with metal?

A hearing aid?

Body piercing or jewellery?

Wearable exercise equipment, artificial limb, calliper, corset or hairpiece?

A nicotine, pain relief, hormone patch, silver dressing or ECG electrode stickers/cables?

A tattoo, permanent makeup, magnetic eyelashes?

Coloured contact lenses?

- There could be a range of implants that come up here.
- If any of these items will not go within the fully extended Gauss Guard then there is no need to remove them
- If they will go into the fully extended Gauss Guard and can be removed then remove them
- If a tattoo, permanent makeup or magnetic eyelashes then warn the patient that it is very unlikely but there is potential for them to heat up and, if they are able, to let us know if they feel any heating so we can stop the scan
- If unsure, please seek advice from an MRI Physicist ([*contact email*](#)) or MRI Radiographer ([*contact email*](#)).

16. Is there any possibility that you may be pregnant? If 'No' please state first day of your last period:

- If yes, they must be excluded from the study

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Guidance for potential safety issues

It is important to remember that there is no clinical benefit to the patient of the MRI scan so if there is any doubt about a patient's safety then the scan should not go ahead.

If there is any uncertainty around what is or may be implanted in a patient or whether a certain implant is safe to undergo MRI then you **must not allow the patient to enter the MR Environment**.

If you have a safety query that is not urgent, please seek advice from an MRI Physicist ([*contact email*](#)) or MRI Radiographer ([*contact email*](#)) via email stating clearly that this query relates to the Hyperfine scanner, the patient's CHI number and the safety query.

If you need an urgent response, please call the following numbers (Monday-Friday 9-5 only):

- Tracey Hopkins: *phone number*
- Rosie/ CRIF radiographers: *phone number*
- Blair Johnston: *phone number*
- John Foster: *phone number*

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