NHS GGC
Portable MRI Local Rules

Site: ***location***
MRI Scanner(s): **Hyperfine Swoop 64mT**
Responsible Person: **Tracey Hopkins**
Primary Contact for MR Safety: **Blair Johnston**
MR Safety Expert: **Dr John Foster**
Estates and Facilities Duty Manager: ***insert phone number***
Radiologist advising on MR safety matters: **TBC**
Anaesthetist responsible for MR safety during Anaesthetic sessions: **N/A**

Contents

Section 1: Introduction

1.0: Guidance for the reader

Within this document, general text is in black and should not be modified, site-specific text is in red and examples are written in blue (to be removed from site-specific local rules).

1.1: Purpose

The aim of the Local Rules is to comply with "Safety Guidelines for Magnetic Resonance Imaging Equipment in Clinical Use", MHRA, Feb 2021, and relevant legislation, to ensure the safety and well-being of patients, staff and all other personnel who may have cause to be in the MRI Controlled Access Area (MR CAA).

Specifically, these local rules provide the local operational and safety information for the Hyperfine Swoop Point-of-Care (POC) Magnetic Resonance Imaging (MRI) Device located on the QEUH campus, NHS GG&C for use in the Emergency Department as part of the MIRACLES research study. The Hyperfine Swoop POC MRI is a portable ultra-low field point-of-care device; it is an MRI device intended for bedside use. Anything contained in these local rules that are not fully understood must be discussed with your MR Responsible Person or MR Safety Expert.

The MRI device can only be used as part of the MIRACLES research study and cannot be used to guide clinical decisions.

The operation and safety aspects specific to this portable ultra-low field MRI device are covered in the MIRACLES study SOP. Further details are provided in the Hyperfine IFU 'User Manual' and 'Site Readiness Safety Checklist' Part No. 900-11001-03/04/05— Rev. 12 (Revision Date: 2022-06-15), and users need to be aware and follow the recommendations contained in this IFU.

Additional notes regarding the management of this portable system can be found in Section 6.

1.2: Overview of risks associated with portable MRI

During MR imaging, any person within the Gauss Guard area for the Hyperfine Swoop system is exposed to static, time-varying gradient and Radio Frequency (RF) magnetic fields, each of which have distinct risks. These include:

- The "missile" effect caused by the static magnetic field which can lead to the rapid acceleration of ferromagnetic materials which has led to severe injury or death in clinical MRI scanners. The risk of ferrous missiles is ever-present as the magnetic field is always on but this risk is greatly reduced for the ultra-low field Hyperfine Swoop system.
- As the magnetic field is always on, access to the Hyperfine system must be controlled. When in use or in storage, this must be in a Controlled Access Area (CAA) which must be secure, 24 hours a day, 7 days a week. The emergency department has controlled access and all staff have been made aware of the device and instructed to stay outwith the Gauss Guard unless they have received appropriate training and completed an MRI safety checklist. When the device is being transported, access will be controlled by trained staff that are authorised to move the system.
- The static magnetic field may also have safety implications for patients and/or staff implants made from ferrous materials i.e. magnetic metals and electronic implants.
- The risk of burns caused by RF magnetic field interactions with patient skin to skin and skin to bore contact loops
- Patients can experience peripheral nerve stimulation (PNS) and cardiac muscle stimulation though this is limited by the modes of operation of the scanner
- The risk of burns caused by any electromagnetic interactions with metallic or electrical implants
- Patient heating which is related to the Specific Absorption Rate (SAR) the patient experiences. The SAR is much lower on the ultra-low field scanner compared with clinical MRI.
- The exposure to acoustic noise resulting from the gradient fields being rapidly turned on and off

1.3: Scanner modes of operation

MRI scanners may operate in two or three different modes of operation. These modes are typically known as 'Normal mode', 'Controlled' or '1st level mode' and 'Research' or 'Experimental Mode'. You must be aware of what modes are available on your system and the implications of using these modes, if not, discuss with your MRRP and/or MRSE.

The ultra-low field Hyperfine Swoop system will always operate well within Normal Mode.

Section 2: Roles & responsibilities of staff groups and unit layout

2.1: The MR Responsible Person (MRRP)

Key responsibilities of the MRRP include:

- Ensuring good working practice and safety policies are in place
- Ensuring they keep themselves up to date with developments in MR safety
- Ensuring medical, technical, nursing and all other relevant staff groups are educated and trained appropriately, are familiar with all policies and are kept up to date
- Ensure records of staff training are kept and maintained
- Ensuring the list of authorised MR staff is kept up-to-date
- Ensuring objects within the Controlled Access Area are labelled appropriately
- Remaining abreast of local service developments that may impact on the MRI service and/or MR safety
- Liaise with other local staff groups to ensure the safe scanning of patients with implanted medical devices
- Ensuring a suitable delegation of duties takes place

2.2: The Designated Person

In addition to the MRRP we also define a role known as the Designated Person. This role is to ensure that there is always clarity of leadership in the MRI unit during periods where MRRP is not present.

For the Hyperfine Swoop system, this will be the most senior member present from the MIRACLES research team.

2.3: The MR Safety Expert (MRSE)

Key responsibilities of the MRSE include:

- MR site planning and procurement
- Development of a safety framework and advising of MR safety governance
- Investigation of adverse incidents
- Advising on MR safety information on implants and active implanted medical devices
- Advising on safety aspects in respect of risk/benefit considerations for MR scanning
- Conducting risk assessments pertaining to MR safety issues

2.4: MR Staff Categories

You must be aware of the different categories of staff (A, B, C and D), see the summary below and your local implementations. You must understand which personnel have been granted access to enter the MR CAA, who are allowed to enter the MR Environment and who must be supervised at all times within the MR CAA. Discuss with your MRRP or Designated Person if you have additional questions.

Category A: This is an MR Authorised Personnel who has been trained and is therefore entitled to operate the MRI scanner. Most typically these are Radiographers and MR physicists. These staff must read and sign the local rules to ensure they are familiar with the safe working practices of the MRI Unit.

Specific members of the MIRACLES research team will be signed off as Category A staff after they have received sufficient training to operate the Hyperfine scanner and MRI safety training

Category B: These are staff groups who require unsupervised access to the MR CAA and the MR Environment but who will not operate the scanner. Most commonly these are Radiologists and Healthcare Support Workers. These staff must read and sign the local rules to ensure they are familiar with the safe working practices of the MRI Unit.

Any staff that require to accompany or assist patients in the MR Controlled Access Area or assist with moving the Hyperfine scanner will be classed as Category B following appropriate training

Category C: Members of staff in Staff Category C must be supervised by an authorised MRI member of staff whilst working in the MR CAA (in the room containing the Hyperfine scanner). You must be familiar with the policies and procedures governing the work of Category C staff within the CAA. For example, domestic service staff within the MRI unit must be trained specifically in regard to MRI and be aware of the hazards involved. MR Safe cleaning equipment must be appropriately labelled and kept separate from normal cleaning equipment such as to avoid the risk of MR Unsafe equipment entering the MR Environment. A list of MRI category C staff must be available.

It is not anticipated that anyone will fall into this category. Please notify the MRRP if cleaning staff need to enter the region within the Gauss Guard.

Category D: These are staff whose work requires them to enter the MR CAA but not the MR Environment. These staff must be informed of the risks of the MR Environment prior to entering the MRI CAA. Category D staff are typically members of management or administration. They must be instructed not to enter the MR Environment under any circumstances.

Anyone with access to the room that the Hyperfine scanner will be stored and used in but with no need to enter the region within the Gauss Guard will be classed as Category D staff. This will effectively be all staff with access to the emergency department

2.5: Permitted MRI Unit storage locations

Allowed storage locations (position is approximate). The Hyperfine Swoop storage setup is visually recognisable as per photos below.

Figure 1: Storage location in *location*.

2.6: Designated scanning locations

You must be aware of the concepts and implementations of the MR CAA and the MR Environment (the area within the extended Gauss Guard), if not, discuss with your MRRP and/or MRSE. Your local site implementation is shown below:

At present, the Hyperfine Swoop system is only permitted to scan in the storage locations shown in Figure 1. If the scanner will need to be moved elsewhere, please notify your MRRP and MRSE.

2.7: Special circumstances for staff

2.7.1: Pregnant staff

You must be familiar with the procedures in place for pregnant workers within the MRI CAA and MR Environment and the point at which you must inform your employer that you are pregnant. You must be familiar with the location of risk assessments on this topic and where to find them. Consult your MRRP if further explanation is required.

2.7.2: Staff working in MRI with a medical implant

You must be familiar with the procedures in place for staff working in MRI with medical implants. All staff must complete an MRI safety checklist and have this signed off by authorised staff members before they are permitted to enter the MR Environment. If you have a new medical implant or device, you must inform the MRRP or Designated Person prior to returning to work. This will allow the MRRP to conduct a risk assessment to ensure your ongoing safety at work. The MRRP or Designated Person may wish to consult the MRSE in these instances. Under no circumstances should you enter the MR Environment, following a new implant, without the express consent of the MRRP or Designated Person.

Section 3: Authorised MRI operators operational procedures

You must be aware of the procedures for safely preparing the patient/volunteer for MRI including screening, positioning and setup, obtaining further information on the safety status of any implants and understanding when it is appropriate to seek additional support from a Radiologist and an MRSE. You must also be aware of safe procedures for scanning and contrast administration.

3.1: MR safety statements regarding common procedures or implants

You must know where to find technical information relating to the scanner and the MR Environment that may pertain to MRI safety or implants, e.g. maximum gradient amplitudes and the maximum spatial gradient. If you are unsure where to find this information or what it means, contact the MRRP and/or MRSE.

Following a range of risk assessments, the following are statements of MR safety borne out of the empirical evidence and evidence from the peer reviewed literature. Great care must be exercised when implementing safety policies based on generalised statements as if one is not explicitly determining the make and model of an implant then one must at least be convinced of the type of implant the patient has. Should any doubt remain, it is within your prerogative as an MRI Authorised Operator to exercise other means of determining the safety status of a patient implant or procedure such as to convince yourself the implant and therefore the patient are safe to be taken into the MR Environment and have their MRI examination. If in doubt, please contact your MRRP or MRSE.

Up-to-date MR implant safety policies are available on:
http://www.mriphysics.scot.nhs.uk/implant-safety-policies/

Please note that these policies were written for higher field (1.5T & 3T) systems and many of these implants will not have been tested on an ultra-low field scanner. Please follow the guidance in the MIRACLES study SOP and only use the policies on the website where it states that this is appropriate in the SOP. Whilst the risks will be reduced in most situations, MR Conditional implants generally have conditions restricted to 1.5T and 3T; active implants are as much a concern as at higher fields. If a patient has an active implant then they are excluded from this study and must not be scanned on the Hyperfine Swoop scanner. If you are unsure if an implant is active, seek advice from MRI Physics.

Passive implants should typically follow the same guidance as would be given for a 1.5T scan, with a few exceptions noted below. This does not mean that all passive implants are safe to scan as there are some MR Unsafe implants. This has been risk assessed: DR-GGC-RISK-208.

As this is a research study with no benefit to the patient, we also recommend that patients with aneurysm clips or shunts are excluded from the study.

Many of the patients scanned using this system will be unable to provide a full clinical history. If this happens please follow the guidance below:

https://www.mriphysics.scot.nhs.uk/mr-safety-guidance-for-patient-groups/guidance-for-patients-with-incomplete-medical-history/

3.2: Contrast

You must be familiar with the processes and procedures for administering various contrast agents in MRI and what to do in the event of a problem occurring.

Use of gadolinium-based contrast agents (GBCAs) has not been assessed for the Hyperfine Swoop system and must not be used on this system.

3.3: MR safety checks on non-ambulatory patients (i.e. trolleys and wheelchairs)

You must be aware of the procedures in place at your site for checking non-ambulatory patients; local guidance can be found below:

A thorough inspection of all devices and objects surrounding the patient on the trolley must take place. Note that it may not always be possible from a visual inspection to determine whether an object accompanying a patient on a trolley is MRI safe. In such instances and where documented evidence of the MRI safety status is not available and it has not been risk assessed in advance, the object must be removed prior to entering the MR Environment.

3.4: Pregnant Patients

You must know the policy for identifying pregnant patients in your MRI unit. MRI scans may be conducted in normal mode irrespective of the patient trimester. Please note that MRI scans in pregnant patients with Gadolinium based contrast agents are **not** recommended. You must be familiar with the location of risk assessments on this topic and where to find them, local guidance can be found below:

Pregnant patients are excluded from this study.

3.5: Scanning patients who are also prisoners

Site-specific instructions for scanning a patient who is also a prisoner can be found below. This aims to ensure the safety of NHS and security staff whilst maintaining patient safety.

Patients who are prisoners should be excluded from the study.

3.6: Policies for carers, comforter or other persons assisting the patient with their MRI scan

There are a varied range of circumstances under which someone may require to accompany a patient into the MRI CAA and MR Environment. As a general rule, there is no reason why a person accompanying the patient should be refused entry into the MR Environment. These persons must be prepared for the MRI in the same way as the patient would be.

3.7: Procedure for dealing with complaints

You must be aware of the procedure for dealing with complaints, if not, discuss with your MRRP and/or MRSE.

Section 4: Routine Unit Management

4.1: MR safety labelling of objects within the CAA

It is the responsibility of all authorised MRI members of staff to ensure no MR Unsafe objects are taken into the MR Environment. Only objects with MR Safe or MR Conditional stickers or labels may be taken into the MR Environment, provided the Conditions can be met. Anything unlabelled or with an MR Unsafe sticker or label must not be taken into the MR Environment. The definition of the MR safety labelling is as follows.

- MR Safe: these are defined as "an item that poses no known hazards resulting from exposure to any MR environment. MR Safe items are composed of materials that are electrically nonconductive, nonmetallic, and nonmagnetic"
- MR Conditional: these are defined as "an item with demonstrated safety in the MR environment within defined conditions. At a minimum, address the conditions of the static magnetic field, the switched gradient magnetic field and the radiofrequency fields. Additional conditions, including specific configurations of the item, may be required" Text which describes the conditions of safe use must accompany this equipment. If unsure, staff must consult the conditions of safe use before taking the equipment in to the MR Environment.
- MR Unsafe: these are defined as "an item which poses unacceptable risks to the patient, medical staff or other persons within the MR environment".
- MR Unlabelled: these are defined as "an item without an MR_SAFE, MR_CONDITIONAL or MR_UNSAFE label". Items which are not labelled should be considered to be MR_UNSAFE until determined to be otherwise.

Labelling of the MRI status of objects will be conducted by the MRRP or Designated Person. If you, as an authorised MRI operator, are in any doubt as to the appropriate MR safety status of an object within the CAA then you must raise this with the MRRP or the MRSE immediately.

Labelling all equipment in the emergency department is not feasible. Assume all objects that are unlabelled or have not been risk assessed for use with the Hyperfine Swoop system are MR Unsafe and must not be taken within the Gauss Guard. If there is specific equipment that requires MR safety signage please highlight this to your MRRP. Please raise any issues with the MRRP and/or MRSE.

4.2: Security protocols and out-of-hours (OOH) access to the MR CAA

You must be aware of how to contact hospital security in the event of requiring their support. You must also be aware of the out-of-hours procedures for security access to the MRI unit that your MRRP has put in place. Specifically, who and under what circumstances are security allowed to enter the MRI CAA. Local procedures and contact numbers are detailed below.

No access will be given to MR Environment *under any circumstances* unless by or under the Supervision of an MR Authorised Member of staff. The Hyperfine Swoop scanner should be stored in a way that nobody will require it to be moved.

4.3: Reporting incidents and near misses (Local recording on Datix)

Any accident or near miss events to patients or staff within the MRI department must be reported in accordance with established departmental accident policy. General guidance is available on: https://www.mriphysics.scot.nhs.uk/reporting-incidents-and-near-misses/

The link to Datix can be found on the NHS GGC staffnet website or by following the link below: *link*

4.4: Reporting device failures or defective medicines to the MHRA via IRIC

Any accidents owing to serious defects in Magnetic Resonance Diagnostic Equipment must be reported to the MRRP who will then report to the MHRA via IRIC. For Healthcare staff in Scotland it is essential to report to National Services Scotland, using the following site, Report an incident | National Services Scotland (nhs.scot). A login will need to be created.

4.5: Running down and restarting the MR system

Instructions for turning the system on and off is contained in the MIRACLES study SOP

4.6: Quality control for MRI images

NHS GG&C MRI Physics will perform routine QA.

4.7: Scanner handover procedures (e.g. maintenance and service days)

If a scanner handover is required, you must formally transfer the scanner to the manufacturer representative at the beginning of the maintenance period and then ensure it is formally handed back to NHS GGC at the end of the maintenance period. An Authorised staff member and an authorised representative of the manufacturer must sign the handover form on both occasions (MHRA 5.3.6).

The equipment maintenance and servicing will be covered as described in the service contract between the manufacturer and NHS GGC. Under no circumstances must any unauthorised attempt be made by department staff to repair the equipment. A detailed logbook of breakdowns and maintenance will be maintained by the MRRP or Designated Person, minimally containing the following information: All scheduled working hours of the system; all scheduled services and other scheduled down time; time of breakdown call; time of the engineers arrival and time of completed repair.

Section 5: Emergency procedures

5.1: Overview of MR emergency procedures

Safety features such as electrical isolation buttons and fire alarms must be clearly labelled within the CAA. If this is not the case, raise immediately with your MRRP and/or MRSE.

To ensure the safety of patients and staff, you must familiarise yourself with the following:

- The alarm systems and reset buttons in the MRI Controlled Access Area
- The position of the emergency stop (E-Stop) button and signage
- The brake release button.

5.2: Electrical isolation (E-Stop) button

An emergency stop button (E-Stop) is provided to immediately and safely shut down the Swoop system in the event of an emergency. E-Stop immediately halts the execution of a scan. The Swoop system stops making noise and stops emitting gradient magnetic and RF fields. **The permanent magnetic field remains on**.

There are a number of circumstances where it may be necessary to cut the power to the MRI unit. For example, if water or other liquid is found to be leaking into the MR Environment or CAA, the electrical isolation (E-Stop) button must be pressed and the patient evacuated to a nearby safe area.

Figure 2: Control Panel - (A) Power Button, (B) Battery Indicators, (C) Mode Key Switch, and (D) E-Stop

5.3: Ferrous object stuck to the MRI scanner and a patient is in the scanner

If an object is small and can be removed easily without risk to the patient then please remove but report the incident to the MRRP and/or MRSE. If the ferrous object is large, sharp or an otherwise higher risk object, please remove the patient from the magnet, if possible, and contact the MRRP and/or MRSE.

5.4: Emergency OOH contact numbers

You must be familiar with the procedure for obtaining necessary contact information in the event of a scanner emergency during the out of hours (OOH) period. **This does not include patient safety queries as these can be dealt with during office hours (Mon-Fri 9am-5pm).**

For example, contact information must be readily available for the MRRP, Designated Person, MRSE, estates and facilities staff, hospital security. Local procedures are outlined below.

Contact switchboard for OOH contact details for:

- **John Foster**
- **Tracey Hopkins**

- **Rosie Woodward**

5.5: What to do in the event of a fire in the MRI unit

You must know what to do in the event of a fire or suspected fire, general guidance is shown in black text with local site variations shown in red text. If you have any remaining questions, raise immediately with your MRRP.

If the fire is in the MR CAA, the electrical isolation (E-Stop) button (see Figure 2) should be pressed. The MRRP or Designated Person must then remain near the MRI Controlled Access Area to greet the fire response team or fire brigade when they arrive. This person should ensure the attending fire officers are aware of the risks posed by the MRI scanners and that they are safe to enter the MR Environment if need be e.g. the radiographer must ensure the fire crew do not have pacemakers, aneurysm clips or other potentially MR Unsafe implants. Note also that fire fighting equipment such as personal locators, axes, infrared heat detector which firemen may have on their person may also be MR Unsafe and therefore should not be allowed into the MRI magnet unless under the strict instruction or supervision of the MRRP.

location* operates a new fire alarm system. If the fire alarm sounds intermittently, the fire is not in your area but may be in an adjacent area. If this is the case, do not evacuate the area but be prepared to evacuate the Controlled Access Area should the situation change.

If you detect a fire in the Controlled Access Area you should hit the fire alarm button

Dial * and inform the operator of your hospital, floor, and ward/location.***
At the *location* this information is as follows:
What type of Emergency? Fire
Where are you located? *location*

If the solid alarm sounds then the fire is in your area and you should evacuate staff and patients from the area.

5.6: Fire Extinguishing Equipment in the MRI unit

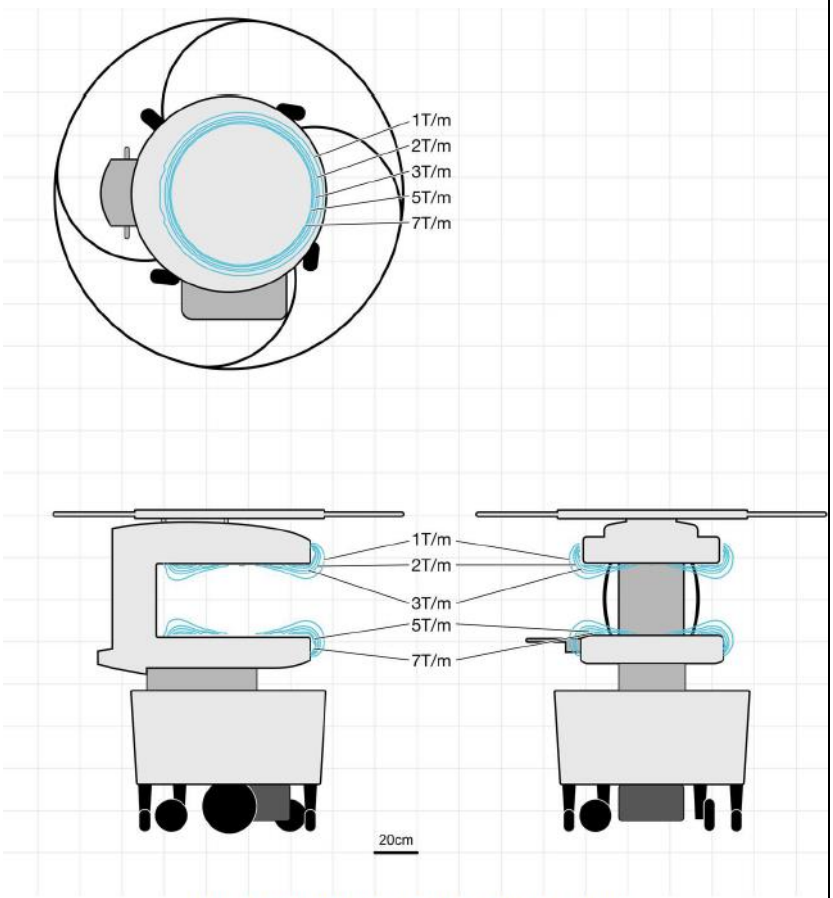
Fire fighting equipment must be kept outwith the MR Environment.

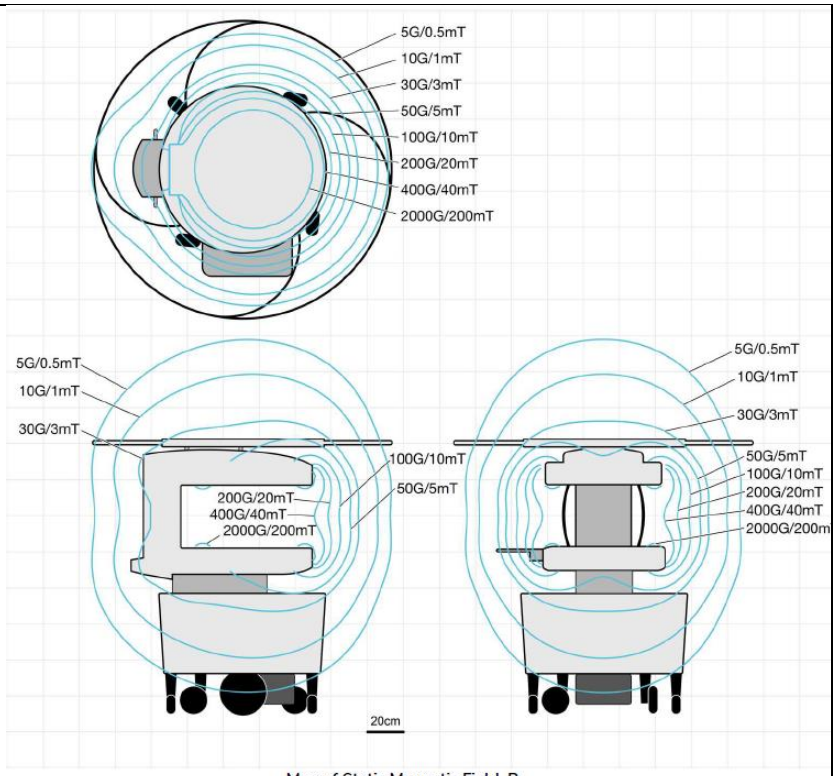
5.7: Cardiac Arrest or other Medical Emergencies

Following a cardiac arrest or any other medical emergency, the patient should be immediately removed from the magnet at which point resuscitation should begin immediately. Resuscitating team help must also be sought by dialling ****. Please note that equipment brought by the resuscitation team will not be MR Safe and neither they nor their equipment must be allowed into the MR Environment under any circumstance. The MRRP should arrange practice of this procedure on an annual basis and make sure the necessary equipment is available and functional.

Section 6: Additional information and guidance

6.1: MRI Scanner Safety Information

Feature	Details
System	Hyperfine Swoop POC MRI - **Mk 1.9**
Field Strength	0.064 T (max = 0.2 T)
Patient accessible bore size	610 mm width, 315 mm height
Maximum Gradient Slew Rate	X: 24 T/m/s, Y: 22 T/m/s, Z: 21 T/m/s
Maximum Gradient Amplitude	X: 24.3 mT/m, Y: 22.9 mT/m, Z: 38.5 mT/m
Spatial Gradient of the Static Magnetic Field	The force of attraction on a magnetically saturated ferromagnetic object is proportional to the spatial gradient of the static magnetic field. The maximum for this device is 7 T/m (700 G/cm)  Map of Static Magnetic Field, B_0, Spatial Gradients *This information is reproduced from the Hyperfine Summary Specifications Sheet V10 Part No. 850-11001-06.*

Fringe Field Plot	 Map of Static Magnetic Field, B_0 *This information is reproduced from the Hyperfine Summary Specifications Sheet V10 Part No. 850-11001-06.* **Notes:** The critical 5 Gauss (0.5 mT) volume (a cylinder with a diameter of 162 cm (64 inches) must be made inaccessible for non-authorized personnel.
Gauss Guard	 The plastic petals of the Gauss Guard can be retracted. Pulling on the Gauss Guard ring around the perimeter of the outer metal rings allows the Gauss Guard rings tobe extended to their maximum size of 162 cm diameter (64”) and to completely encompass and demarcate the extent of the 5 Gauss(0.5 mT) field.

Caster brake latches	 The system's casters are equipped with brake latches. During storage and use all latches should be engaged. This is achieved by depressing the red-marked end of the latch.

Emergency Electrical Power Off Button	An emergency stop button (E-Stop) is provided to immediately and safely shut down the Scanner in the event of an emergency. E-Stop immediately halts the execution of a scan and stops emitting RF or gradient fields. The permanent magnetic field remains.  

6.2: Practical Guidance/Summary for portable MRI

1. **There are 2 areas currently in use**: *locations*.

2. **During storage, the scanner will have the Gauss Guard fully extended**, and the provided barriers with signage will be placed around it. During storage and use the caster brake latches will be engaged and the system will be in a fixed position.
3. When the scanner is moved to the room for use, it is acceptable to create temporary zones, within this specified room, which correspond to MRCAA and MRE. **Once these areas are defined, their access will be subjected to the usual restrictions that apply to these zones**.
4. **The room itself will be the temporary MRCAA**. The department has swipe access (but to a wide range of staff) but the room itself has no controlled access. It can be locked from inside - so during Hyperfine scanner use, access can be controlled by the users (e.g. by locking the door and putting temporary signage). Only MR Authorised Persons can independently enter the temporary MRCAA when the key is in the system, and it will be a responsibility of the MR Operators using the Hyperfine scanner to ensure this.

5. **The MR Environment will be defined by the Gauss Guard fully extended**, and also delimited by the providedvisual barriers (cordon) and signage. Only people who have undergone MR safety screening can enter the MR Environment.

6. **MR Unlabelled and Unsafe items may not enter the MR Environment**. The area surrounding the MR Environment should be kept as clear of MR Unlabelled and Unsafe loose items as possible. The MR Operators might need to perform ad-hoc clearing. Only MR Safe items or MR Conditional items with all conditions met may enter the MR Environment, unless the equipment has been risk assessed and deemed safe by an MRSE.
7. **The Hyperfine system will be part of the NHS GG&C MR Safety Framework**, and therefore all relevant MR safety procedures and advice for use of MR equipment will apply and must be followed.

8. **The temporary nature of the MR zones should not impede emergency procedures and evacuation**. The MR Operator should be aware of the potential need for evacuation of members ofstaff and subjects undergoing the scan during an emergency.

9. **MR Safety screening will be performed to the same standard and using the same form that is used in the clinical scanners**. Careful consideration should be given to scanning implants - although we are aware of the reduced risks in most situations, MR Conditional implants generally have conditions that are restricted to 1.5T and 3T; active implants are as much a concern as at higher fields. Further guidance is contained in the MIRACLES study SOP

10. **Acoustic noise**: Hearing protection must be provided to all patients and offered to anyone remaining in the room during scanning.

11. **The scanner will need to be cleaned with similar procedure and standard to the other clinical scanners**. Clinell wipes are widely used – MR Operators should be mindful of cleaning liquid near plugs or pooling.

12. **Transport and specific instruction for use of this scanner are not covered in the Local Rules.** These need to be performed in accordance with the guidelines provided by the manufacturer *(Hyperfine IFU Part No. 950-11001-05 — Rev. 17)* and with consideration of the moving 5 Gauss line (e.g. avoid unauthorised/unscreened people on the route, ensure that the route is clear). Local procedure should be in place for these operations.