

Anaesthetist find working in the MRI environment challenging. Anaesthetists have limited access to the patient in the scanner. Airway, ventilation, and monitoring equipment brought into the magnetic field may become projectile hazards or the anaesthetic equipment may malfunction.

Standards of care for the provision of an anaesthesia service in the MRI suite:

Training: Anaesthetists and ancillary personnel responsible for provision of anaesthesia for MRI should have regular MRI safety training in line with local guidance.

Screening & Assessment: Patients and staff providing anaesthesia care should be screened. Patients should have a pre-anaesthesia assessment and an anaesthesia plan before their scan.

Monitoring: Anaesthetised and sedated patients should be monitored with equipment designed for use in the MR Environment. The standard of monitoring equipment for anaesthesia in the MR Environment should be the same as that within the operating theatre and in conformance to the standards of the Association of Anaesthetists.

Resuscitation: Emergency equipment and drugs should be readily available. In a medical emergency, the patient should first be evacuated out of the MR Environment. This is to avoid the responding medical team bringing any MR Unsafe equipment into the MR Environment.

Post anaesthesia care: A staffed and monitored recovery area, documented handover and discharge information should be available for every patient.

Checklists: MR safety checklists for general anaesthesia and for intraoperative MRI (1) should be used in conjunction with the World Health Organisation (WHO) checklist (2).

Safety checks for the provision of an anaesthesia service in the MRI suite:



- 1. Risk assessment:** On acceptance of the booking, comprehensive screening for MRI procedures by an authorised person ensures the safety of patients preparing to enter the MR Environment.
The patient should be reviewed by the anaesthesia team and pre procedure instructions like fasting should be discussed with the patient.
- 2. Prior to induction of anaesthesia:** On arrival of the patient to the MRI unit, MRI personnel confirm the safety screening questionnaire with the patient or carers.

The anaesthesia team along with the MRI personnel, should go through the WHO checklist (2) before anaesthetising the patient. This includes confirmation of fasting status, allergies, and medical equipment checks.

- 3. Prior to entering the MR environment:** After the patient is anaesthetised the use of the “GA MRI Patient Ingress Checklist” (1) is recommended. This check is led by the MRI personnel and covers the patient, equipment, and staff checks.
- 4. During or after the scanning process:** Staff may need to enter the MR Environment, a check should be carried out by the MRI personnel before staff enter.

Conclusion:

It should be recognised that the supervising MR radiographer is responsible operationally for MR safety within the Controlled Access Area and that anaesthetic staff should defer to them in relation to MR safety matters. Good teamwork will ensure that safe working practices are being followed.

Resources:

- 1 S.R. Wilson et al. Guidelines for the safe provision of anaesthesia in magnetic resonance units. *Anaesthesia* 2019 74(5): supplementary material.
- 2 WHO Surgical Safety Checklist: <https://www.who.int/teams/integrated-health-services/patient-safety/research/safe-surgery/tool-and-resources>.

See page below for Checklist

Checklist 2

Safety checklist for diagnostic scans ingress into MR

Consultant Date: DD / MM / YYYY Time: HH : MM Scanner	Patient's name: Date of birth: Hospital No. NHS No. (affix patient addressograph)	
Patient has a completed MR safety checklist signed by a radiographer?	Yes	No
The patient is on an MR Safe trolley or undocked scanner table?	Yes	No
All MR Unsafe devices (laryngoscope, sharps, flowtron, patient warmer, EasyWarm blanket, gas cylinder) have been removed from the patient?	Yes	No
Any drip stands are MR Conditional?	Yes (or not used)	No
The patient monitor is MR Conditional, including all probes and cables?	Yes (or not used)	No
All drug infusion pumps are: <ul style="list-style-type: none"> • MR Conditional • Mounted on a stand • Positioned to enter the scan room behind the patient? 	Yes	No
The tracheal tube or laryngeal mask is not reinforced (reinforced tubing is not MR Conditional)?	Not reinforced	Reinforced
The pilot balloon is taped away from the area to be scanned?	Yes	No
Have all MR Unsafe ECG dots or earth patches been removed?	Yes	No
The patient has been provided with hearing protection (ear plugs)?	Yes	No (insert in OR)
Final check of patient bed for any MR Unsafe items is clear?	Yes	No
Any equipment you have not personally used in MRI before on the patient? (check with the team out-loud even if it seems obviously MR Safe)	Nothing new	Yes (Check safe)
All staff are safety checked and have empty pockets?	Yes	No
Radiographer supervising transfer sign and print name		

Guidelines for the safe provision of anaesthesia in magnetic resonance units 2019



Association
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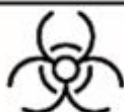
naccs
Neuro Anaesthesia & Critical Care Society
of Great Britain and Ireland

1



All hospitals providing a service for anaesthesia within the MR unit should have a lead anaesthetist responsible for provision of anaesthesia for MRI.

2



Training should be provided for all grades of anaesthetist delivering anaesthesia in this remote area; all anaesthetists should have an understanding of the hazards involved in anaesthetising a patient in the MRI unit.

3



Anaesthesia/sedation for a patient needing an MRI scan, including intensive care unit (ICU) patients, should take into account the patient's pathophysiological status and the remote location of the MRI unit.

4



Whenever possible, anaesthesia in remote sites should be provided by appropriately experienced consultants.

5



When care is delegated to a trainee or Specialty and Associate Specialist (SAS) doctor, they should have the appropriate competencies and level of training.

6



It is not acceptable for inexperienced staff, unfamiliar with the MR environment, to manage a patient in this environment, particularly out-of-hours.

7



Patients must be accompanied to the scanner by appropriately trained staff members, and if an anaesthetic machine is being used, then the anaesthetist should be supported throughout by an anaesthetic assistant who should be suitably skilled, trained and familiar with the anaesthetic requirements.

8



All patients and staff must be screened for the presence of implants and devices that may be a contraindication to a safe scan. The referring team should discuss the safety of the devices with the MR Responsible Person and the anaesthetist to plan a suitable management strategy.

9



Anyone remaining in the scanning room should be provided with ear protection during scanning.

10



The MRI for patients should only be undertaken if the diagnostic benefit outweighs the risk. This discussion must involve the multidisciplinary team, particularly for a patient on the ICU.

11



The MR safety checklists for general anaesthesia, intra-operative MRI and for transfer of ICU patients should be used in conjunction with the World Health Organization (WHO) checklist.