

## Incidents in MRI

MRI is usually considered a “safe” modality. Nevertheless, hazards exist and accidents and incidents do occur.

The most obvious hazard arises from the “missile effect”, whereby ferromagnetic objects (chairs, scissors, etc.) are accelerated into the magnet. More common, and harder to control, is the effect of the static field on small, treatment-related objects (e.g. endotracheal tube components) and on non MR-safe implanted devices including pacemakers, stents, or aneurism clips.

The most significant hazard in MRI is associated with transmitted radiofrequency pulses. Non-resonant absorption of energy can overheat tissues, but this is well controlled by scanner software. Burns can arise from the unintended concentration of radiofrequency fields. This may be caused by conductive objects near to the patient, including implanted pacemaker leads (remaining after pacemaker removal), non-MR-compatible or wrongly-placed ECG leads, and drug-delivery patches. Burns may also arise from malfunction or incorrect setup of radiofrequency coils.

The primary way to avoid adverse incidents is to screen (by questionnaires and background research) everyone and everything entering the MRI room. Hazards can also be reduced by careful design and control of MR facilities, education of all staff (from radiologists to cleaners) with regular updates, and the flagging of patient notes and request forms.