

HAZARD ALERT

Magnetic Resonance Imaging – Safety for non-medical personnel

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Hazard Summary

Magnetic Resonance Imaging (MRI) is a way to picture the internal structure and function of the body. MRIs make use of powerful magnetic fields and special care has to be taken to avoid bringing in metals that may be affected by the magnetic field. Medical personnel who work with and near MRIs are aware of the hazards; however, non-medical personnel that may accompany patients – for example, justice personnel, peace officers, etc. need to be made aware of the hazards before hand.

- Hazards¹ associated with MRI that could cause injury are:
 - Projectiles – magnetic materials being pulled by the magnetic field. Examples include IV poles, patient lifts, pens, stethoscopes. (Hairpins can reach speeds of 40 mph when near a 1.5 tesla magnet)
 - Twisting – magnetic objects aligning with the field. Examples include magnetic cochlear implants, clips
 - Burns – electrically conductive material that enters the chamber (bore). Examples include some tattoo inks or tattooed eye liner that may contain iron oxide

MRI hazards are difficult to detect because it is impossible to tell by looking at an MR system if it is “on”. Also, the magnetic fields created are invisible and extend out in 3 dimensions. In general the magnets in an MRI are always active. They are turned off only in extreme emergencies. The risk is made even greater by the fact that it is often difficult to tell whether an object contains iron.

All persons who may be entering an MRI room need to be made aware of these hazards so they may take appropriate steps to ensure no incidents or injuries occur.

Preventive Measures

Regulatory:

Section 13(1) a and b of the Health and Safety Act

- Ensure health and safety of persons at or near the workplace
- Maintain equipment, machines, materials or things that are properly equipped with safety devices

Useful Links

[Capital Health Patient MRI FAQ](#) – includes items to avoid

[Guidance Document for Safe MR Practice 2007](#) – MR hazard checklist page 24 and 25

¹ [FDA's MRI Working Group Report \(1997\)](#)