NHS Greater Glasgow and Clyde

ID: DR-GGC-RISK-014

Risk Assessment Form

Use this form for any detailed risk assessment unless a specific form is provided. Refer to your Summary of Hazards/Risks and complete forms as required, including those that are adequately controlled but could be serious in the absence of active management. The Action Plan and reply section is to help you pursue those requiring action.

Name of Initial Assessor /Reviewer:	John McLean	**Post Held:**	MR Safety Expert
Department:	**Imaging**	**Date (of initial review):**	**8/8/2018**

Subject of Assessment: E.g.: hazard, task, equipment, location, people

MRI scanning of patients with fixed, internal, passive, orthopaedic implants.

For clarification purposes: this policy covers orthopaedic implants, entirely fixed within the body (internal) (i.e. implants that are fixed to the bone and where the implant does not extend beyond the skin surface). This policy also only covers fixed internal passive orthopaedic implants i.e. the implant has no electronic or magnetic or expandable components.

Hazards (Describe the harmful agent(s) and the adverse consequences they could cause)

The strong static magnetic field of the MRI scanner has the potential to exert force on ferromagnetic objects. Furthermore, there is a risk of heating to all metal objects within the volume of the MRI transmission coil as a result of the RF power being transmitted. This is typically the length of the body coil, though it could be another, more focal, volume if a local transmit and receive coil is being used).

The subject of this risk assessment is to assess the risk to patients with fixed, internal, passive, orthopaedic implants when exposed to the static magnetic field and the RF power of the MRI scanner.

Description of Risk

Describe the work that causes exposure to the hazard, and the relevant circumstances. Who is at risk? Highlight significant factors: what makes the risk more or less serious – e.g.: the time taken, how often the work is done, who does it, the work environment, anything else relevant.

In regard to the risks of the static magnetic field, the overwhelming majority of orthopaedic implants are non-ferrous or only mildly ferromagnetic. Orthopaedic implants are typically held in bone by great force. There has never been an incident that we are aware of where a fixed orthopaedic implant has become dislodged within the MRI causing patient harm. That said, some external orthopaedic implants and orthopaedic implants with magnetic components are typically deemed MRI unsafe.

In regards to the risks of the RF power of the MRI scanner. While there is a theoretical risk of heating, particularly in larger and longer implants, there have only been a very small number of injuries to patients. The rare injuries that have occurred have typically resulted in minor burns.

Existing Precautions	Describe how they might fail to prevent adverse outcomes.
Patients are taken through an MRI safety checklist prior to entering the MR scanner room such as to determine the nature of their implant. If a patient is identified as having a fixed, internal, passive, orthopaedic implant, they must be warned about the risk of heating and told to press the patient call button should they feel any heating or unusual sensations.	**In some very rare incidences in the literature, burns have been reported as a result of large, passive, orthopaedic implants**

Level of Risk - Is the control of this risk adequate?
Give more than one risk level if the assessment covers a range of circumstances. You can use the 'matrix' to show how 'likelihood' and 'consequences' combine to give a conclusion. Also, be critical of existing measures: if you can think how they might fail, or how they could be improved, these are indications of a red or orange risk.

Risk Matrix

Likelihood	**Impact/Consequences**				
	Negligible	**Minor**	**Moderate**	**Major**	**Extreme**
Almost Certain	**Medium**	**High**	**High**	**V High**	**V High**
Likely	**Medium**	**Medium**	**High**	**High**	**V High**
Possible	**Low**	**Medium**	**Medium**	**High**	**High**
Unlikely	**Low**	**Medium**	**Medium**	**Medium**	**High**
Rare	**Low**	**Low**	**Low**	**Medium**	**Medium**

Very High **High** **Medium** **Low**

Current risk level

Given the current precautions, and how effective and reliable they are, what is the current level of risk? **Green** is the target – you have thought it through critically and you have no serious worries. Devise ways of making the risk green wherever you can. **Yellow** is acceptable but with some reservations. You can achieve these levels by reducing the inherent risk and or by effective and reliable precautions.
High (Orange) or Very High (Red) risks are unacceptable and must be acted on: use the Action Plan section to summarise and communicate the problems and actions required.

Action Plan (if risk level is **High (Orange) or Very High (Red)**

Use this part of the form for risks that require action. Use it to communicate, with your Line Manager or Risk Coordinator or others if required. If using a copy of this form to notify others, they should reply on the form and return to you. Check that you do receive replies.

Describe the measures required to make the work safe. Include hardware – engineering controls, and procedures. Say what you intend to change. If proposed actions are out with your remit, identify them on the plan below but do not say who or by when; leave this to the manager with the authority to decide this and allocate the resources required.

Proposed actions to control the problem List the actions required. If action by others is required, you must send them a copy	**By Whom**	**Start date**	**Action due date**

Action by Others Required - Complete as appropriate: (please tick or enter YES, name and date where appropriate)

Report up management chain for action	
Report to Estates for action	
Contact advisers/specialists	
Alert your staff to problem, new working practice, interim solutions, etc	

Reply

If you receive this form as a manager from someone in your department, you must decide how the risk is to be managed. Update the action plan and reply with a copy to others who need to know. If appropriate, you should note additions to the Directorate / Service Risk Register.

If you receive this as an adviser or other specialist, reply to the sender and investigate further as required.

Date of last review	As per Qpulse record	**Date of next review**	As per Qpulse record