	Policy Title: Practice and Procedures MRI Emergency Procedures - Fire
	Date Created: Dec 19, 2019 Updated:

Objective

The MRI Emergency Fire policy is for all personnel to provide the appropriate response to a Code Red situation in the MRI Unit.

Introduction

The Magnetic Resonance (MR) environment presents unique hazards not commonly encountered by most personnel. Anyone entering the MR environment must be conscious of the strong magnetic field, radio frequencies and time varying gradient field. The most important point to remember is that the magnet is **always on**. Entry into the scan room (Zone IV) must only be authorized after successful screening process and completion of the screening form. All metallic objects and pocket contents must be removed.

During a Code Red in the in the MRI Unit, personnel are to follow designated policy to ensure safety for all participants, family and personnel.

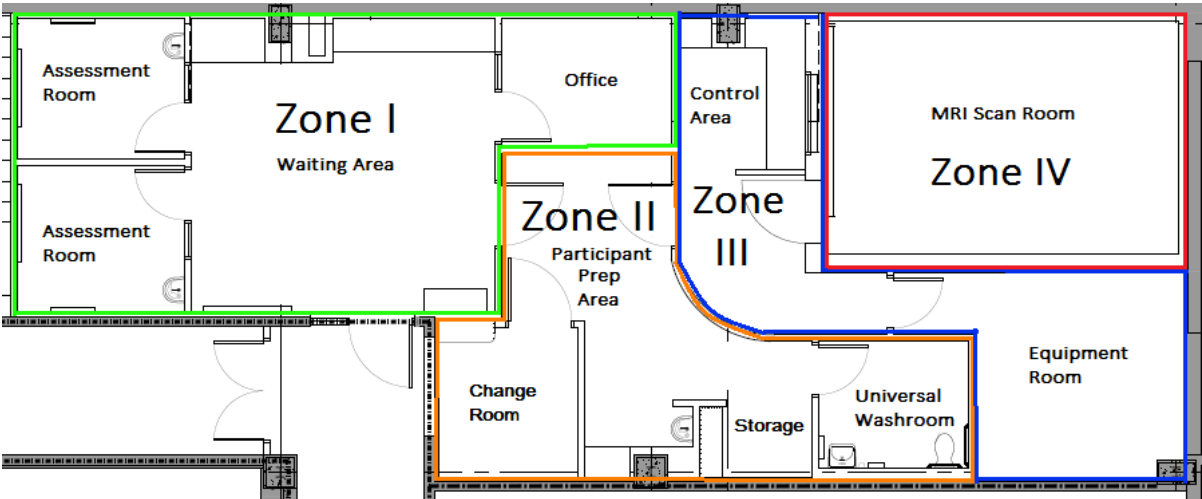
Definitions


Zone I: Readily accessible areas by the general public outside MR environment (waiting room)

Zone II: Area between Zone I and Zone III where individuals are supervised by MR personnel (participant prep area)

Zone III: Restricted transition area between Zone II and Zone IV that is supervised and controlled by MR personnel (control room and restricted waiting area)

Zone IV: Area controlled and strictly supervised by Level Two MR personnel. This is a potentially hazardous area with presence of very strong magnetic fields. (MR Scan Room)



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Level Two MR Personnel: Individuals who work in MR environment and have extensive education on MR safety issues that is renewed on a yearly basis (i.e., MRI Technologist, MR Physicist)

Level One MR Personnel: Individuals who work in MR environment that have completed and passed minimum MR safety education (administered by a Senior MRI Technologist certified in MR safety) that is renewed on a yearly basis. (e.g., Clinical Coordinators, Research Assistants, Imaging Analyst)

Authorized non-MR Personnel: Staff that enter the MR environment occasionally and have completed and passed minimum MR safety education (administered by a Senior MRI Technologist certified in MR safety) that is renewed on a yearly basis. (e.g., building-services staff)

Access to MRI Unit: The personnel listed above will be provided with electronic and key access to MRI Unit. The MRI Technologist will also have key access to the MR scan room (Zone IV). For emergency access to the MR scan room, a key will be stored in a breakable glass case located in the MR control room

Fire in MRI Unit


In the event of a fire in the MRI Unit where a sprinkler head is activated, the hospital fire-detection system will alarm. The external fire alarm monitoring contractor will receive the alarm signal and Toronto Fire Services will be dispatched. When Reception/Switchboard staff are on duty, they will also call 911 to report Code Red situation and give address of property.

During MRI business hours:

- 1) MR Personnel will remain vigilant and immediately investigate any smoke or fire within the MRI Unit. It is preferable to attempt to extinguish the fire using MRI safe fire extinguisher located in the control room. It is imperative to extinguish the fire before ceiling sprinkler(s) activate.



- 2) A) MR Personnel will enter the MR scan room to investigate smoke or fire. Level Two MR Personnel must be present during investigation. Any scan that is in progress is to be aborted by MR Technologist. The MRI scan room is to be initially assessed through the scan room window since the magnet is always on. MR Personnel or authorized non-MR personnel may enter the scan room to investigate further inside the room.


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B) If there fire is detected in the scan room:

- MR personnel will remove research participant from the scan room and bring them to a secure location. If participant cannot be removed, call 911 immediately for fire department before proceeding with next steps
- MR personnel or authorized non-MR personnel will shut down electrical power to the scanner by pressing red button (inside push button cover) on the wall in the control room labelled “EPO”, **NOT** the quench button



- If safe to do so, MR personnel or authorized non-MR personnel may attempt to extinguish fire using **MR compatible** fire extinguisher located in control room (labelled with Green MR Safe sticker; see photo at step 1)
- If fire cannot be extinguished, fire fighters may attempt to extinguish fire **from outside the room** using their equipment
- If fire still cannot be extinguished and fire fighters need to enter the room, the magnet must be quenched using quench button pressed by Level Two MR personnel (under flip cover on magnet control panel) during business hours and by fire captain (after contacting Siemens hotline to guide subsequent actions) when MRI Unit is closed. Authorized non-MR personnel shall only activate quench procedure at the direction of Toronto Fire Services. One to two minutes is required for magnetic field to dissipate before fire fighters may enter to extinguish fire and confirm all clear.

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- **Siemens Services Hotline : 1-800-359-6709**
Holland Bloorview Site ID # 10628

- If magnet did not need to be quenched to extinguish fire, fire fighters must be properly screened by Level Two MR Personnel and may only enter with “MR safe” (no metal) equipment
- Level Two MR Personnel will contact manufacturer to dispatch service engineer for scanner servicing

When MRI Unit is closed:

If Code Red is activated within the MRI Unit, Reception/Switchboard will contact Senior MRI technologist through paging services.

If Reception/Switchboard is closed, Security will contact Senior MRI technologist through paging services.

Monday-Friday 1700-2300 hrs. (except all Statutory Holidays); Sat/Sun 0730-1530 hrs.:

Authorized non-MR Personnel in Building Services will follow steps described in 2B above. Security will escort Toronto Fire Services to MRI Unit.

If fire fighters need to enter the scan room to confirm fire is extinguished when quench was not needed, Level 2 MR personnel that have arrived on site will need to ensure fire fighters do not enter with any metallic or electronic equipment and complete MRI screening form.


Monday-Friday 0000-0730; 2300 – 2400 hrs.; Sat/Sun 1530-2400; 0000-0730 hrs.; All Stat Holidays 0000-2400 hrs.

Reception/Switchboard/Security will contact Senior MRI Technologist through paging services.

Security will contact Building Services Manager or on-call designate. Staff will attend to site.

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Security will escort Toronto Fire Services to MRI Unit.

- If fire is detected in the scan room, fire fighters may attempt to extinguish fire **from outside the room** using their equipment
- At the same time, fire captain shall call the 24/7 Siemens hot line to establish contact with Siemens personnel to guide subsequent actions
- If fire still cannot be extinguished and fire fighters need to enter the room, the magnet must be quenched using quench button (under flip cover on magnet control panel) pressed by fire captain at the direction of Siemens personnel. One to two minutes is required for magnetic field to dissipate before fire fighters may enter to extinguish fire and confirm all clear.




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- If magnet did not need to be quenched to extinguish fire, fire fighters must be properly screened by Level 2 MR Personnel that have arrived on site and may only enter with “MR safe” (no metal) equipment
- Level 2 MR Personnel will contact manufacturer to dispatch service engineer for scanner servicing

References

ACR Guidance Document for Safe MR Practices: 2013. JOURNAL OF MAGNETIC RESONANCE IMAGING 37:501–530 (2013)

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Shellock, F. G., Magnetic Resonance Procedures: Health Effects and Safety, Pre-Magnetic Resonance Procedure Screening, 2009

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