Cardiac Arrest or Medical Emergency in OHBA 3T

OH PPE guidance (non-BHC) *– Compression only CPR (plus defibrillation) to be performed in Level 1 PPE (surgical mask, gloves and apron). Rescue breaths are a personal choice, compression only CPR is acceptable until help arrives.*

OH PPE guidance (BHC) *– Compression only CPR (plus defibrillation) to be performed in Level 1 PPE (surgical mask, gloves and apron). Once all responders within 2 metre radius or in the same room have donned Level 2 PPE (FFP3 mask, gown, gloves and eye protection) then bag valve make ventilation or iGEl insertion can occur.*

On suspicion of participant cardiac arrest or any medical emergency during scanning.

<table>
<tr><th>Scanner Operator</th><th>Researcher</th></tr>
<tr><td>Remove scanner bed from magnet bore</td><td rowspan="2">Wait</td></tr>
<tr><td>Check for response and breathing - is an ambulance required?</td></tr>
<tr><td>If ambulance required ask Researcher to call (9)999</td><td rowspan="2">If instructed dial (9)999 for the emergency services and read the following when the call is answered:

Ambulance required –
OHBA, Warneford Hospital,
Warneford Lane, Oxford, OX3 7JX</td></tr>
<tr><td>Prepare for transfer - remove equipment / coils and detach scanner table</td></tr>
<tr><td>With the Researcher transfer scanner table to the OHBA Control Room</td><td>With Scanner Operator transfer scanner table to the OHBA Control Room and close Magnet Room door</td></tr>
<tr><td rowspan="2">Start CPR, when defibrillator arrives attach pads and start unit</td><td>If required collect AED from OHBA reception WC lobby and return with it to OHBA MRI control room</td></tr>
<tr><td>Go to OHBA main entrance and the direct the Ambulance Crew (if possible delegate this and stay to assist in Basic Life Support).</td></tr>
</table>

UNDER NO CIRCUMSTANCES SHOULD ANY RESUSCITATION EQUIPMENT SUCH AS DEFIBRILLATORS BE TAKEN INTO THE MAGNET ROOM.

Quench in OHBA 3T

Background

Superconducting magnets may occasionally lose field abruptly due to a process known as a spontaneous quench. Alternatively a quench may be performed deliberately in an emergency where life is at risk or the fire brigade must enter the magnet room.

If the magnet is properly installed and the cryogen levels are adequately maintained, spontaneous quenches are an extremely rare event. A quench, whether spontaneous or performed deliberately, will in general be accompanied by a loud bang and the emission of large quantities of cold gas. In normal circumstances this gas will be vented outside the building through quench piping.

For a quench where helium gas has vented externally

The O2 alarm will not be triggered.

Quickly remove the participant from the scanner using the table controls, lock the magnet room door, and call a Senior MR Staff Member.

For a quench where helium gas has entered the magnet room

The O2 alarm will be triggered (remember the O2 sensor can develop a fault/trip so secondary evidence of a quench is required before treating the situation as one).

If a quench occurs and a volunteer is in the magnet room

- Stay calm and act quickly, immediate evacuation of the volunteer is required.
- Instruct the volunteer what is happening and, where possible, ask them to leave the MRI.
- Check for obvious signs of helium release (e.g. a white cloud of gas coming from the top of the magnet) before entering the room.
- Tell a second member of staff to wait outside.
- Enter, keeping low to the floor, and assist the volunteer.
- If the volunteer/patient cannot leave immediately or the situation is severe, then press the fire alarm button and assemble by the Department of Psychiatry Main entrance.
- Using either a phone inside the Department of Psychiatry or a mobile, dial **(9)999** and ask for **"Fire Brigade due to a Helium gas leak at"**:

OHBA, Warneford Hospital,
Warneford Lane, Oxford, OX3 7JX

Do not hang up until the address has been repeated back to you correctly. Proceed directly to the assembly point:

Main Entrance, Department of Psychiatry

Senior member of OHBA to advise fire crew on arrival of magnet hazard. Call a Senior MR Staff Member. Do not re-enter the magnet room or control room until a Senior MR Staff Member has confirmed that O2 levels have returned to normal.

Projectile or Ferromagnetic Incident in OHBA 3T

Volunteer/Patient/Member of Staff is NOT pinned or trapped by the object

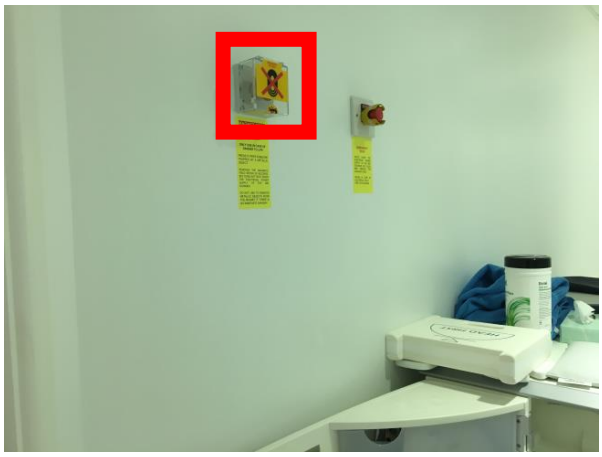
DO NOT press the Quench button if the person can be safely removed from the scanner.

Remove the person, lock the magnet room door, and immediately inform a Senior MR Staff Member.

DO NOT attempt to remove the object. Doing so risks injury to yourself or damage to the magnet.

Volunteer/Patient/Member of Staff is pinned or trapped by the object <u>AND less than 15min have passed</u>

Press either Magnet Quench button (located under a plexiglass cover).



The magnet field will take approx. 30-40 seconds to collapse. Do not take anything ferromagnetic into the magnet room until it has been confirmed the magnetic field has dissipated (the object will no longer be attracted to the magnet).

The situation should now be treated as per **Cardiac Arrest or Medical Emergency in OHBA 3T.**

Volunteer pinned or trapped by the object <u>AND more than 15 minutes have passed</u>

DO NOT press the Quench button. The volunteer is at risk of crush syndrome and removing the object must be done under direct medical supervision.

Call a Senior MR Staff Member and then the emergency services. Until there is a Senior MR Staff Member present you are responsible for screening any members of the emergency services that require access to the magnet room.

Fire in OHBA 3T Controlled Area

Note the Siemens Electrical Power Off buttons will only stop power to the scanner, console computer and Siemens cabinets in the equipment room. The magnetic field will still be present.

On discovering a fire or smoke in one of these areas immediately press the Emergency Power Off switch. If it is quick and safe to do so, remove the participant from the scanner and close the magnet door.

DO NOT press the magnet quench button unless requested to do so by a Senior MR Staff Member or a member of the fire brigade.

Leave the control room, press the fire alarm in the outside corridor and summon help if possible.

If no-one is in the magnet bore take the CO2 fire extinguisher from the MRI Control room, and if it is safe to do so, attempt to extinguish the fire.

If there is someone in the magnet bore take the water fire extinguisher from the corridor outside the MRI control room (towards the EEG lab)

- If possible remove the participant from the bore, extinguishing any fire on their person first before tackling the magnet fire.
- If removing the participant isn't possible, for example, due to greater risk of injury, direct the water extinguisher into the bore to attack the fire.

If the fire cannot be extinguished, lock the magnet room door if safe to do so and leave by the nearest fire exit. Once outside dial **999** and ask for **"Fire Brigade."** When the Fire Service operator replies say **"Fire at"**:

OHBA, Warneford Hospital, Warneford Lane, Oxford, OX3 7JX

Do not hang up until the address has been repeated correctly by the fire service.
Proceed directly to the assembly point:

Main Entrance, Department of Psychiatry

Senior member of OHBA to advise fire crew on arrival of magnet hazard.

Electrocution in OHBA 3T

Note the Siemens Electrical Power Off buttons will only stop power to the scanner, console computer and Siemens cabinets in the equipment room. The magnetic field will still be present.

If someone is being electrocuted from contact with the scanner, console computer or Siemens cabinets in the equipment room, **press the Electrical Power Off button.**

DO NOT press the magnet quench button unless requested to do so by a Senior MR Staff Member or a member of the fire brigade.

Remove the volunteer from bore of magnet by pulling the magnet table manually by disengaging the clutch and pulling on the handle at the foot of the bed.

If volunteer has been injured follow the procedure for **Cardiac Arrest or Medical Emergency in OHBA 3T**.

Ensure the MRI scan room door is shut and secured and call a Senior MR Staff Member.