Top-10 MRI Suite Safety Planning Principles

FOR ARCHITECTS AND PLANNERS…

Zones: Design in accordance with American College of Radiology (ACR) 4-Zone principles

Access Controls: Secure Zones 3 and 4 from the rest of the hospital

Line-of-Sight: The Technologist must have clear sight of safety-critical areas from their seat at the console

Non-Ambulatory Patient Holding: Your layout must consider both ambulatory and non-ambulatory patients

Induction / Resus' Area: Create multipurpose bed spaces for patient holding, induction / recovery, and emergency resuscitations

Patient Changing: Provide sufficient to avoid bottlenecks; 2 or 3 change rooms per MRI scanner

Belongings Storage: Put lockable storage in Zone 2 close to patient changing rooms. Size lockers generously

FMDS Systems: Position screening Ferromagnetic Detection Systems in Zone 2, and entry control in Zone 3 protecting the Zone 4 doorway

Quench Button: Locate for ease of accessibility for staff, but away from areas of regular patient flow

Staff Entry: If there is a 'back door' entry for staff bypassing the safety provisions made for patients, ensure it has similar protection!

Zones: Design with successive layers of screening and supervision. Zone 4 (most restricted) is the MRI scanner room. Zone 3 is anywhere with a magnetic field hazard (e.g., above 5 Gauss / 0.5 mT), *or* anywhere with direct access to Zone 4 (often the control room, potentially spaces above or below the MRI scanner).

Access Controls: Zones 3 and 4 need to be secured from the rest of the hospital. Don't include in the master keying system for the hospital; don't use combination locks.

Line-of-Sight: Ensure that the technologist can see the following from their position at the operator's console: entry to Zone 3, entry to Zone 4, patient in the scanner (through the console window). Ensure the MRI room door won't block view when open.

Non-Ambulatory Patient Holding: Make sure the layout considers subwaiting needs for non-ambulatory patients, as well as those who are ambulatory.

Induction / Resuscitation Area and Equipment: In a hospital setting, you may have bed bays for inpatient holding and transfers (from transport gurneys to MRI-specific transports). Consider making these spaces dual-purpose for anesthesia inductions / recoveries, and for emergency resuscitations. Plan crash cart and medical gases.

Patient Changing: Can be a big bottleneck. Provide 2 changing rooms per MRI scanner if lockers or belongings storage are outside the room, or 3 changing rooms per MRI scanner if the lockers are within the changing rooms.

Belongings Storage: Put lockable storage in the path between patient changing rooms (in Zone 2) and the doorway to Zone 3. Typically, you'll want these close to the patient changing rooms. Provision for bags / purses, boots or large coats (depending on the local climate), size lockers generously.

Siting of FMDS Systems: Ferromagnetic Detection Systems (FMDS) are most effective when deployed as both screening (located near changing rooms and belongings storage) and Zone 4 doorway protection systems (immediately outside the door into the MRI Scanner room).

Quench Button: For many MRIs, the only way to quickly remove the magnetic field is by 'quenching' the MRI. Quench buttons can be placed in either / both the MRI scanner room, or the control room. Locate the buttons in locations easily accessible to staff, but away from patterns of regular patient flow.

Staff Entry (Short-Circuiting Safety Layout): Many MRI suites in hospitals will have 'back door' entries for staff or inpatients, which will bypass the safety provisions you've made for patients. Make sure that these staff entries have similar protections, which might include belongings storage bins / lockers, and a screener FMDS product for 'back door' entries.

More info at: https://diagnostic.itelte.it/accessori-detail/metal-detector/

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