In a recently submitted PA-PSRS report, a patient underwent an MRI while wearing a transdermal medication patch. Though this patient apparently suffered only minor skin irritation directly beneath the patch, a less healthy patient with impaired skin integrity could have sustained a significant burn from this type of event. While this is the first MRI safety report received by PA-PSRS related to transdermal patches, healthcare workers have reported patient injuries in similar cases to other patient safety organizations for several years.

MRI systems generate radiofrequency (RF) pulses that create the magnetic resonance signal used in imaging. If electrically conductive materials are introduced within the bore of the MR system, the RF pulses produce electrical currents that can excessively heat the conductor and burn tissue.1,2

Transdermal patches have three basic components: a liner that is peeled away before application, the drug, and the backing.3 Some patches have an aluminized or foil backing in the layer furthest from the skin. This layer contains the drug and allows it to slowly disperse through the skin, but aluminized backings also serve as electrical conductors.4 The dangers of ferromagnetic materials near MRI systems are well documented.5 Though transdermal patches are not ferromagnetic, they can result in burns during an MRI procedure.6

Healthcare workers can reduce the risk of this problem by:

- Including in a pre-MRI screening checklist a question asking patients whether they use a patch for administering any drug such as nitroglycerin or for smoking cessation.4,7
- Having patients remove any patches before undergoing MRI and replacing them with a new patch after the MRI is completed.3,7 Reusing the removed patch is not advised because the patch may have lost its adhesive-ness or the drug may leak once the patch is exposed to the air for an extended period.4
- Posting a warning/list of specific patient items/implants that prohibit the use of MRI, including aluminized/foil-backed medication patches. This can be a helpful reference for both healthcare workers and patients.4,8
- Providing physician offices, patient care departments, and patients with a brochure concerning MRI hazards and contraindications.8,9
- Contacting the patch prescriber, if necessary, to determine whether the drug delivery system can be interrupted for the time required to conduct the MRI.4
- Educating those responsible for prescribing, medication administration, screening, transporting, and performing the MRI about the hazards involved with this procedure.6
- Prior to conducting an MRI, reviewing the medication patch drug package insert to identify whether wearing the patch during MRI is contraindicated.

Following are examples of patches that may have aluminized backings.1,4 If in doubt, it’s best to advise the patient to remove the patch prior to the MRI and to apply a new patch after the MRI is completed. Contact the patch prescriber to determine whether the drug delivery system can be interrupted during the MRI procedure.

Androderm (testosterone)
Catapres-TTS (clonidine)
Depontit (nitroglycerine)
Habitrol (nicotine)
Nicoderm (nicotine)
Nicotrol (nicotine)
Transderm-nitro (nitroglycerin)
Transderm-scop (scopolamine)
Foiled Again! Risk from Transdermal Patches in MRI Procedures (Continued)

Notes


4. Karch AM. Practice errors: don’t get burnt by the MRI: transdermal patches can be a hazard to patients. AJN 2004 Aug;104(8):31.


The Patient Safety Authority is an independent state agency created by Act 13 of 2002, the Medical Care Availability and Reduction of Error (“Mcare”) Act. Consistent with Act 13, ECRI, as contractor for the PA-PSRS program, is issuing this newsletter to advise medical facilities of immediate changes that can be instituted to reduce serious events and incidents. For more information about the PA-PSRS program or the Patient Safety Authority, see the Authority’s website at www.psa.state.pa.us.

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The Institute for Safe Medication Practices (ISMP) is an independent, nonprofit organization dedicated solely to medication error prevention and safe medication use. ISMP provides recommendations for the safe use of medications to the healthcare community including healthcare professionals, government agencies, accrediting organizations, and consumers. ISMP’s efforts are built on a non-punitive approach and systems-based solutions.