

Safety Awareness Notes when using Cables and Electrodes during MRI

The radiofrequency fields that occur during an MRI can heat ECG cables and electrodes, seriously burning skin under the electrodes, so the following precautions should be considered for any MRI research protocols.

Precautions

The number of MRI studies performed annually is consistently increasing. As the imaging technology advances, more subjects require monitoring during study because of the type of study or their general condition. Subject monitoring requires the use of MRI-compatible equipment. To help reduce subject adverse events during an MRI, follow these steps:

- Coordinate with the MRI staff technologist before the imaging study to ensure that cables and electrodes are available that have been cleared for use in the MRI environment (radio-translucent, MRI-compatible). Make sure electrodes used aren't past their expiration date.
- Search the subject for any previously used electrodes and cables that may have been inadvertently left behind, either in clothing, in the sheets, or on the subject. Remove any electrodes and cables that are no longer being actively used for monitoring. This will prevent the possibility of burns from leftover electrodes.
- Be aware that, even though you're using electrodes and cables that are approved for use during an MRI, a serious burn can still develop if the electrodes aren't in complete contact with the skin surface (that is, if excess hair hasn't been removed or there's an air gap between the electrode and the skin). When there's an air gap, the electrical pathway is broken and heat can build up at the center of the electrode as well as letting the current arc from the electrode to the skin, which can cause burns. Don't let the cables form a loop and keep them off the subject's skin by placing a blanket under them.
- After the MRI study is complete, subjects (especially those who can't verbalize), should be examined for possible burns or reddening of the skin under the electrodes.

Learn more about BIOPAC's line of MR Safe and MR Conditional products at www.biopac.com.

Excerpted from *Nursing2006, Volume 36, Number 11, p. 18*
BY SUSAN LANGE, ARRT, MPH, AND QUYNH NHU NGUYEN, BS

Susan Lange is a medical imaging specialist and Quynh Nhu Nguyen is a biomedical engineer fellow at the Center for Devices and Radiological Health.