

MRVector

Newsletter of the:

American Registry of Magnetic Resonance Imaging Technologists

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Fall 2003

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New Eligibility Requirements

Member Response

7-8-03

Jim,

Wanted to drop you a line regarding the article "New Eligibility Requirements" (MRVector Spring/Summer 2003). I have to say that I **firmly disagree** with the concept of eliminating the equivalency clause (4 years and/or 6,240 hrs. of MRI clinical experience) as a means of qualifying for the Registry exam. I feel there are many Techs out there who have gained invaluable experience through their practical experience on-the-job.

There is no better way to learn than through practical experience! I know this personally because that is how I learned my trade. I did not have a significant classroom background in MRI other than what amounted to a minimal course given by FONAR (Melville, NY) which to me was a joke. I learned about 99% of what I know on-the-job and to abolish that as an option to sit for the Registry exam is an insult to the way in which I have learned this profession.

Taking away the equivalency clause is taking one step closer to becoming similar to the ARRT. Now that I have gotten that out of my system I want to propose an option to eliminating the equivalency clause:

☞☞ Whereas the current stipulation is four (4) years of MRI clinical experience, perhaps a revision to that could be four (4) years with the last two (2) years at the same MRI facility.

This would eliminate the application of sub-standard Techs who jump from one MRI facility to another. If a tech is a good Tech,

they should be able to maintain employment at one facility for a period of two years and thus be able to sit for the exam. Of course, a notarized letter from the Medical Director and other stipulations would still be required.

As a long time member of the Registry (June 1994), I have always been a strong supporter of the Registry. I have never reacted so adversely to any suggestions; however, I firmly believe that eliminating the equivalency clause is way off base. **If these changes go through I would have to seriously consider my continued support and membership in this Registry.** Sorry for the harsh words but this one struck a nerve with me.

Best Regards,

Richard Burkhard, Registry Active # 1305

What's Your Opinion?

Whether it's new eligibility requirements, exam development, CME requirements, MRI schools, etc. The ARMRIT wants to hear from you. The ARMRIT is a Professional Organization made up of a national membership, Board of Directors and Examination committee. The key to the Registry's success is member involvement which is strongly encouraged.

As MRI Technology completes its twentieth year as a clinical medical imaging modality and the ARMRIT enters its thirteenth year, progress and change are inevitable. ARMRIT members need to be involved. One way is to voice your opinions, concerns and ideas through the MRVector.

Phone, fax, e-mail, write but let us hear from you and be part of the progress.
Jim Coffin, President / Executive Director.

Fall 2003

Pacemaker, Beware!!

By James F. Coffin, ARMRIT

In the early part of 1996, on both the east and west coasts, incidences of patients with cardiac pacemakers having MRI scans, with fatal results, have been

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reported. Who is at fault is only one issue. Needless to say, all parties involved will be held accountable including the referring physician, the MRI facility's Medical Director, Technical Supervisor and the MRI Technologist performing the MRI scan and even the patient if they've survived. These incidences are, in my nine years experience, not new nor are they isolated to inexperienced technologists.

The best way to safeguard against such situations occurring is education, education, education. Understanding why and how an MRI system can affect the implanted device falls under the category of bio-effects and safety. This subject is covered in detail by Drs. Shellock and Kanal in their book "Magnetic Resonance; Bioeffects, Safety and Patient Management". This text is on the recommended reading list of the Registry for those who apply for our exam and should probably be at hand at every MRI facility when questions such as pacemakers arise.

When attempting to look up the subject of pacemakers in any MRI text, all take the long road to saying "**STOP, NEVER DO A PACEMAKER PATIENT !!**". It may be very interesting to know what the specific effects are of the main magnet, radio-frequency and gradient magnetic fields but it all comes down to the statement above. But since we're on the subject a brief overview is in order. In Drs. Shellock and Kanal's text the subject is covered in two sections, chapter 2 on pages 13-14, "Bioeffects of Gradient Magnetic Fields" and chapter 11 on pages 123-125, "MR Procedures and Patients with Electrically, Magnetically, and Mechanically Activated Implants and Devices".

In chapter 2, the "theoretical concern" is the possibility of "pacing the cardiac rate at the frequency of the applied MR imaging pulse". They go further to say that "no data are available to demonstrate arrhythmias or other harmful effects to patients as a result of induced currents from MR imaging". Pacemaker fatalities mentioned suggest "this may have been caused by the effects of improper reed switching within the pacemakers and the mode of operation may have been changed (i.e., synchronous to asynchronous), the possibility of an arrhythmia-induced injury has not been excluded".

In chapter 11, the figure of "approximately 80,000 cardiac pacemakers implanted yearly in the U.S. alone" opens the subject, going on to say that "the effects MR systems may have on the function of a cardiac

pacemaker are variable and depend on several factors, including the type of pacemaker, the static (main) magnetic field strength, and the specific type of pulse sequence used for the MR procedure". Also mentioned are the possible effects of the RF (electromagnetic fields) on the lead wires or other "cardiac wire configuration". This current could be enough to result in an arrhythmia, cardiac fibrillation, a burn, or similar precarious situation.

The large static (main) magnetic field and its fringe fields may affect the reed switch of the pacemaker and according to Drs. Shellock and Kanal's book, "the acceptable safe levels for exposure to magnetic fringe fields with respect to patients who have cardiac pacemakers have been reported to be between 5 and 15 Gauss lines". It is the recommendation of the Registry of Magnetic Resonance Imaging Technologists, that any individuals with cardiac pacemakers not be allowed beyond the 5 Gauss line, this includes individuals who might request to accompany a patient into the MRI suite. High-field magnets (i.e., 1.5T, 2T), mid-field (i.e., 0.35T - 1T), or low-field (i.e., 0.035T - 0.2T), are all considered very dangerous when pacemaker patients are involved. Pacemakers are considered an absolute contraindication in all MRI systems even if the pacemakers themselves are disabled.

The MRI Technologist is the last and most important line of defense when it comes to implanted devices, especially those that are magnetically activated. The screening form is useless if not read and signed by both the patient and Technologist. Then the Technologist should again verbally ask if the patient has any implanted devices and should reinforce this by physically palpating the patient. In the case of pacemakers the area to be palpated should be the upper thorax at the upper breast and subclavicular area but also below the breast around the upper abdomen. Pacemakers, like many electrical devices are designed smaller than those of years ago. What used to be as large as a small wallet are now as small as a stack of three silver dollars. The best advice is to be detailed in your examination for implants, especially cardiac pacemakers.

Remember, "STOP, NEVER DO A PACEMAKER PATIENT!!"