

EP LAB DIGEST

HMP COMMUNICATIONS

www.eplabdigest.com

A PRODUCT, NEWS AND CLINICAL UPDATE FOR THE ELECTROPHYSIOLOGY PROFESSIONAL

JUNE 2004

Protection from Radiation Exposure in the EP Lab

*William W. Orrison, MD, MBA
Las Vegas, Nevada*

What do all EP physicians who use fluoroscopy to perform interventional procedures such as pacemaker/ICD implantation, biventricular pacing and ablation procedures have in common? They all receive a significant amount of radiation that may lead to health problems in the future. In recognition of the seriousness of this issue, federal and state government agencies have established the principle of ALARA, which is an acronym for "As Low As Reasonably Achievable."

continued on page 8

RADIATION PROTECTION

Continued from page 1

ALARA refers to the concept of keeping every individual's radiation exposure to the absolute minimum that is practical to achieve. As a result of ALARA, hospitals, clinics, and other

healthcare facilities are obligated to work toward reducing radiation exposure to the lowest level possible by providing their personnel with whatever radiation protection is technically available. This makes a new line of radiation protection products that are now on the

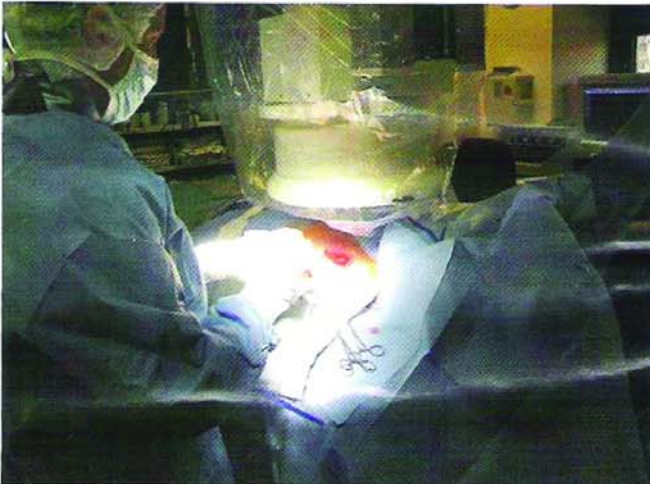
The RADPAD material is quite flexible, lightweight and lead free. The patented material is a combination of radiation attenuating metals embedded in a film base.

market particularly significant for interventionalists, and allows for increased protection from radiation exposure.

Until the introduction of this new line of radiation protective shields and drapes known as RADPAD® products, the only available means of protection from scatter radiation has been either lead products such as aprons and thyroid shields, or pull-down protective devices that often interfere with the ease of performing procedures. These older products do not protect the physicians and supporting EP lab staff from receiving significant dose levels of radiation to their hands, arms, face, and head. Further, if leaded glasses and thyroid shields are not worn, the health risks increase even more dramatically. In the past, these risks were accepted as an unavoidable occupational hazard since no other methods of protection were available. However, with RADPAD's new sterile, disposable radiation-protective shields and drapes, the scatter radiation

reaching the physician has been reduced by as much as 70–95%.

Scatter (or secondary) radiation is the primary exposure source of radiation for the physician. It occurs when the primary radiation beam comes in contact with the patient, scatters, and emanates out from the patient in all directions. The closer the physician is positioned to the primary beam, the greater the exposure to the scatter radiation. The sterile,



Figures 1–3. RADPAD® Interventional Specialty Shield (#2215) used during a biventricular pacing procedure.

placed on the patient between the area of the beam and the physician. The shield creates a protective shadow by blocking the scatter radiation from reaching the physician. This effectively cuts the physician's exposure to the harmful x-rays. The shield absorbs the scatter radiation instead of reflecting it back to the patient, so there is no additional exposure to the patient as long as

RADIATION PROTECTION

Continued from page 8

the shield is not placed in the primary beam. Placing the shield in the primary beam could be counter productive, since the only radiation exposure to personnel is from patient scatter.

The RADPAD material is quite flexible, lightweight and lead free. The patented material is a combination of radiation attenuating metals embedded in a film base. Worldwide Innovations & Technologies, Inc. of Overland Park, Kansas, the shield manufacturer, has worked with practicing physicians and developed

different sizes and shapes to support various medical procedures.

Multiple studies have been done to confirm RADPAD's protection benefits for various procedures. Dr. Grant Simons, EP Lab Director at Englewood Medical Center in Englewood, New Jersey, performed a pacemaker implantation study¹ using the RADPAD Angio/Biopsy Shield and was surprised to find that he received an 80% time-adjusted reduction in his badge counts by using the new radiation protection products. Dr. Simons' study was accepted by and presented at the NASPE annual meeting in May 2001. A subsequent study² performed by Dr. Todd Cohen at Winthrop University Hospital in Mineola, New York, supports Dr. Simons' findings. Dr. Cohen tested the RADPAD products during EP studies, pacemaker implantations, catheter ablations, and implantable cardioverter-defibrillator procedures using each procedure as its own control. Exposure reductions in the 60–70% range were reported and presented at the May 2003 NASPE annual meeting.

Dr. Raul Mitrani, Director of Cardiac Electrophysiology at Memorial Vascular and Cardiac Institute in Hollywood, Florida, performed a "mini study" using the RADPAD product. Exposure levels were measured with a radiation-detection dose meter, an Unfors EDD-30. Measurements were taken at Dr. Mitrani's hand and thyroid during two similar EP study cases. The dose reduction was evaluated on a dose per minute of fluoro time to keep the results on a comparable basis. The results were a surprising 99% reduction at the hand and 100% reduction at the thyroid. "I was truly amazed with these significant reductions, but I witnessed them myself, and I now use the RADPAD shields on a regular basis for pacemaker and biventricular procedures," Dr. Mitrani stated.

Dr. Mitrani's results were confirmed by Dr. Andrew Merliss, EP Lab Director at Bryan LGH Medical Center in Lincoln, Nebraska. He tested the RADPAD product during a pacemaker and ICD implantation procedure. Dr. Merliss commented, "I was very pleased to find that I received 95% less radiation when using the radiation-protective shields. With the length of many of our procedures, and the increasing fluoro time and exposure, we need this protection. I'm happy to do anything I can to reduce my radiation exposure, and using this shielding doesn't inhibit my work at all."

After observing first hand the radiation reductions during dual chamber pacemaker implantation procedures with the new shielding devices, Dr. Eli Gang, Clinical Professor of Medicine at UCLA School of Medicine, stated that "with the principle of ALARA, we must protect ourselves and our medical staff."

However, one of the challenges to these new products is that they are intended to benefit the physician (and staff). While not harmful, they do not directly benefit the patient. As a result, the cost of the products comes directly out of the hospital budget. Hospital administrators who struggle with limited financial resources often don't like to see new additions to their budget that aren't reimbursable. However, because of ALARA and the need to protect the hospital's most valuable assets — its people — a growing number of hospitals are embracing the RADPAD products. The cost is often less than 1% of the overall procedure cost. "I help protect a lot of patients by performing EP procedures," says Dr. Todd Cohen, "and I also want to protect myself and my EP Lab staff from the long-term effects of radiation exposure."

"Radiation is not something to ignore. It can lead to debilitating medical problems if we don't protect

ourselves to the greatest degree possible," says Dr. Grant Simons.

"With the increasing case loads in EP and the longer fluoro times, it is important to reduce our radiation exposure and reduce our health risks."

These new RADPAD radi-

ation protection shields and drapes provide a new level of protection for the interventional physicians. As Dr. Simons states, "Why would I not want to use this product?"

"Radiation is not something to ignore. It can lead to debilitating medical problems if we don't protect ourselves to the greatest possible degree," says Dr. Grant Simons.

References

1. Simons GR, Feaster CL, Hindell DA, et al. Use of a sterile, disposable radiation-absorbing shield reduces occupational exposure to scatter radiation during pectoral device implantation. NASPE Abstract, 2001; number 175.
2. Cohen TJ, Germano J, Gay G, Gregorius D. A novel radiation protective drape reduces radiation exposure during fluoroscopy-guided electrophysiologic procedures. NASPE Abstract, 2003; number 759.

