

Nuclear Medicine in the Military

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In more than 20 plus years of practicing nuclear medicine at a military hospital, Lieutenant Colonel Sue Abreu, MD, a nuclear physician and medical director of quality assurance, at Wornack Army Medical Center, Fort Bragg, Fayetteville, NC, had thought she had seen it all. She knew what it was like to experience the fast-paced stress of doing emergency scans for last-minute troop deployments during the Gulf War. “We had a few days and sometimes even hours to perform dozens of emergency thallium myocardial perfusion scans for soldiers over 40 who had never had their routine screening tests for cardiovascular disease,” Abreu recalled.

Recently, she and her fellow nuclear physicians were faced with a puzzling dilemma: They had been performing emergency bone scans to evaluate for stress fractures in troops preparing for airborne jumps, and she could not figure out why many of the soldiers had poor tracer tissue clearance similar to the clearance seen in elderly diabetics. “We eventually realized that the soldiers were lacing their combat boots so tightly that it interfered with circulation of the tracer.”

Such is a day in the life of a nuclear physician in the armed services. About 35 nuclear physicians practice full-time at military hospitals run by the Army, Navy, and Air Force. Only two nuclear medicine fellowships are offered each year for training, one at Walter Reed Army Medical Center in Washington, DC, and one at Brooke Army Medical Center in San Antonio, TX. Still, the armed services have offered a fertile training ground for nuclear physicians who are now leaders in the field. Howard Dworkin, MD, and Peter Kirchner, MD, two past presidents of the Society of Nuclear Medicine (SNM), both served in the Navy as head of nuclear medicine at Bethesda Naval Hospital, Bethesda, MD, before becoming civilian leaders in nuclear medicine. The immediate past SNM president, H. William Strauss, MD, was an Air Force major at Travis Air Force Base-David Grant Hospital in the early 1970s where he helped develop the myocardial perfusion scan. “My training in the Air Force introduced me to many giants in the nuclear medicine field including Dr. George Tappan, inventor of the lung scan and renogram,” said Strauss, who is now chief of nuclear medicine at Stanford.

Colonel John Bauman, MD, chief of radiology at the Madigan Army Medical Center in Tacoma, MD, and a consultant in nuclear medicine to the

Army surgeon general, agrees that the armed services have offered unique opportunities to many nuclear physicians: “Walter Reed and other military facilities have attracted some of the brightest, most dedicated individuals in nuclear medicine over the years, including a significant number of the world’s nuclear physicists, radiopharmacists and technologists, many of whom now practice as civilians.” Nuclear physicians benefit from the unique experience and state-of-the-art research offered in the military. They are also, however, becoming a rare breed as military hospitals succumb to the forces of managed care by slashing residency training slots and folding nuclear medicine departments into radiology.

Basic Training Requirement

When President Eisenhower made his “Atoms for Peace” speech in the 1950s calling for the use of nuclear technologies for medical purposes, the military responded by setting up nuclear medicine training programs. Bethesda Naval Hospital established a basic training course, now called the Officers’ Course in Nuclear Medicine and Radioisotope Techniques. A requirement for all Army, Navy and Air Force physicians who train in nuclear medicine, the course is offered as a 5-week basic science module (which also includes the physics of ultrasound, CT, and MR) to satisfy the NRC didactic-hours requirement and a 3-week clinical module, which gives a structured overview of the various approaches to performing studies and a strategic overview of clinical problems.

The course’s unique scope and cutting-edge approach has also attracted radiology residents from civilian institutions nationwide, and hundreds of residents now attend each year. “The course prepares physicians for making tactical decisions in the clinic, where they will be bombarded with many questions on what type of study to perform, how to perform it, and what to expect to find,” explains course director Captain Eugene D. Silverman, MD, Medical Corps US Navy, chairman of the Department of Radiology at Bethesda Naval Hospital, and specialty advisor, Nuclear Medicine, to the Navy Surgeon General. Dr. Silverman said he continually tailors the course to reflect changing practice environments and technologies. “More course speakers now address PET indications and issues. Additionally, thyroid scans and cardiology are still major focuses, but the clinical module now incorporates many other

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topics, including multiple lectures in endocrinology and oncology, a specialization at Bethesda Naval Hospital, which is affiliated with the National Cancer Institute.”

Although the basic training course is still being well attended, the training of nuclear medicine fellows in the armed services has been greatly reduced. Bauman said the Army has fought hard to retain two nuclear medicine fellowship slots after other branches eliminated their fellowships. “The whole Army’s GME [Graduate Medical Education] program is under intense scrutiny and has undergone downsizing, not exclusive to nuclear medicine,” Bauman explained. “There are people who feel that the armed services should be out of the business of training new physicians altogether. I disagree strongly, as does the Army’s senior leadership. We are determined to groom and retain the highest quality nuclear physicians.”

Cutting Edge Research

As any nuclear medicine researcher knows, military institutions can be ideal for a young researcher starting out in the field. Military centers often have a lot of government funding and usually have strong ties to major universities and teaching hospitals. Junior research staff are often afforded opportunities to rub elbows with the stars of nuclear medicine. Abreu said she is fortunate to have been close to so many illustrious nuclear physicians and other specialists during her training. “At Walter Reed, two great endocrinologists, Drs. Burman and Wartofsky, pioneers in thyroid imaging, were right down the hall and greatly added to our thyroidology education.”

The current high level of institutional research support at major military medical centers remains a boon for clinical nuclear medicine research, added Abreu. The availability of the clinical research is also reliant upon support from other fields of medicine. Abreu said she frequently cooperates with researchers in other specialties to work on convergent projects. “Walter Reed has always been highly committed to investigational technologies,” she said. “During my tenure in training, I had the opportunity to work with many new white blood cell imaging techniques, including indium- and technetium-labeling for porous coated plastic hip prostheses.” Walter Reed continues to be a world leader in nuclear medicine research, according to Colonel Ana A. Rodriguez, MD, chief of Nuclear Medicine at Walter Reed. “Some of our ongoing research projects include scintimammography, echocardiography or electron-beam CT versus myocar-

dial perfusion studies, and gamma probe studies for breast sentinel nodes and melanoma.”

In terms of the basics of nuclear medicine departments, the armed services has been maintaining facilities with the latest equipment and technologies. Womack has a fully digitized network in nuclear medicine and will have a fully digitized radiology department (with the exception of mammography) once the hospital moves into its new facility in the summer of 1999. Abreu believes that she has more access to nuclear technologies than many of her colleagues in non-military institutions. “A radiologist I worked with was trained at a major children’s hospital, but she rarely used nuclear scans before coming here,” said Abreu. “She was amazed when she saw how we perform nuclear cystograms instead of radiocystograms, which reduces patient radiation exposure, a crucial benefit for a pediatric patient.”

Bauman concurred that the Army has continued to embrace new nuclear medicine technologies. “I am pleased that my colleagues and I have introduced gamma cameras with PET capabilities into our medical system.” Although such technologies have had to compete with CT and MR machines for limited dollars, said Dr. Bauman, they have been very well funded over the past 5 to 6 years. “The Army gave us funding to acquire variable-angle multidetector gamma cameras and coincidence detection machines. Our leaders recognized that maintaining the best quality imaging devices is crucial to keep up interest and recruitment, which in turn allows us to maintain a high quality of patient care.”

Another area of expanding interest is in the field of telemedicine. “Telemedicine is proving to be useful for providing nuclear medicine expertise as a backup to radiology services offered at the front lines or at military hospitals without nuclear physicians,” said nuclear physician Richard Bakalar, MD, head of telemedicine at Bethesda Naval Hospital and executive assistant for telemedicine to the Navy Surgeon General. “Also, telemedicine techniques should improve the continuity of care. For example, last summer, 750 clinicians were deployed out of Bethesda Naval Hospital to the USS Comfort, but we were able to send those physicians their case studies.” As with all telemedicine, nuclear medicine provides a benchmark for such military applications thanks to its relatively low information density. “Telemedicine has the potential to bring nuclear medicine services into the fold,” said Silverman.

Bauman expressed some uncertainty, however, about the ability of telemedicine to completely

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support radiologists performing nuclear medicine studies when full-time nuclear physicians are pulled out of community hospitals. “I’m cautiously optimistic that telemedicine methods will help in peer review and consultative purposes and perhaps temporarily alleviate staffing shortages, but we cannot completely replace the expertise of a full-time staff nuclear physician at an Army community hospital.” Bakalar added, “The clinical case has been made that telemedicine techniques can improve the quality of medicine, including nuclear medicine. But constrained budgets mean that military facilities also must demonstrate financial returns for broadening these applications in ways, such as simultaneous multipoint delivery of images, that could benefit specialties including nuclear medicine.”

Nuclear Medicine Threatened As Independent Specialty

The combination of the broadening use of imaging modalities, like ultrasound, CT and MRI, and the budget cutbacks in the age of managed care have threatened the survival of nuclear medicine as a separate specialty in the military services. There has been a strong movement in recent years to incorporate nuclear medicine into radiology services, an action already taken by the Air Force and Navy. “After two decades of downsizing the military, the all-important concepts of medical readiness for the battlefield mission and service outsourcing have rippled throughout all of uniformed services medicine. As a non-battlefield specialty, nuclear medicine is often tossed around most,” explains Colonel Frederic Conte,

MD, flight commander, diagnostic imaging at Travis Air Force Base-David Grant Hospital in San Francisco, and specialty advisor, nuclear medicine, to the Air Force Surgeon General. “The response by the Air Force has been to eliminate the job of the dedicated nuclear physician.”

Training of nuclear medicine technologists could be the next major upheaval: Currently there are about 240 nuclear medicine technologists in the three services, but that number could be slashed drastically over the next five years. “Nuclear medicine technologists need to be highly skilled,” said Conte, “but those skills are increasingly being overlapped to conserve personnel—Air Force nuclear medicine techs all double as X-ray techs, for example.” Carroll added that the Navy Nuclear Medicine Technologists School used to train 60 people each year but now trains only 10.

Outpatient services are also likely to increase outsourcing of military nuclear medicine. “Our clinical practice methods must reflect the overall needs of the larger Army system,” said Bauman. “As with the military’s other major medical centers, Madigan Army Medical Center has shifted to much more of an outpatient facility since the early 1990s. About 90% of our patients are now treated on an outpatient basis. The goal is to minimize hospitalizations and shorten patient stays.” An additional change in the direction of outpatient care is the transformation of small Air Force base wards into “superclinics,” said Conte. “It will be interesting to see how—if at all—nuclear medicine fits into these practice settings. Clearly, there will be a need for ultrasound, mammography, and X-ray machines, but not necessarily for nuclear medicine services.”

As good as the quality of nuclear medicine is in the armed services, many nuclear physicians in the military believe that the overall outlook of the specialty may depend on whether the entire nuclear medicine community—civilian and military—can mobilize to sell itself to the larger clinical specialties. “We need to aggressively market nuclear medicine services to the internists, emergency physicians, and family practitioners, in the same way that we used to market ourselves to subspecialists, because the primary care doctors have taken over as our major referral base,” explained Bauman. “The need for the studies is still there—it is our job to educate the many primary care physicians who do not know about advances in the field and the ways in which nuclear medicine studies can reduce costs and workloads and improve the care of their patients.”

—Jill Katz

Captain William Harold Briner, 1926–1998

Captain William H. Briner, United States Public Health Service (ret.), long-time member of the Society of Nuclear Medicine, (SNM) and recipient of the SNM Distinguished Service Award, died November 6, 1998, at Suburban Hospital, Norristown, PA. He was 72.

For many years, Captain Briner practiced pharmacy and participated in research at the National Institutes of Health, during which time he established the second radiopharmaceutical service in the U.S. In 1970 he joined the faculty of Duke University as a professor of radiology and director of radiopharmacy. He retired from Duke in 1998 with emeritus status.

As a member of the SNM, Capt. Briner was long-time chair of the Government Affairs Committee, building a number of ties between government and nuclear medicine. One of his signal contributions was his influence in persuading airline pilots in the early 1970s to restore transportation of radioactive materials, after pilots had placed a moratorium on such transport.

The president and leadership of SNM note with sadness the passing of this distinguished leader in radiopharmacy. A more detailed article describing Capt. Briner’s career will appear in a future issue of *Newsline*.