

Integrated Diagnostic Services May Increase Efficiency

VA NUCLEAR MEDICINE DIRECTOR QUESTIONS TREND TOWARD DEPARTMENTS OF IMAGING

Although many members of the various diagnostic imaging fields advocate the consolidation of a hospital's imaging services into one "department of imaging," some within the nuclear medicine community question whether this popular idea would actually result in improved patient management.

"The 'imaging service,' which has been in use widely in the private sector, is an outmoded concept in light of the potential benefits of a more progressive system to coordinate diagnostic data—the diagnostic processing center," said James J. Smith, MD, director of the US Veterans Administration (VA) nuclear medicine service.

According to Lawrence R. Muroff, MD, director of nuclear medicine and computed tomography at the University Community Hospital in Tampa, FL, however, a unified imaging service would be the most efficient means of providing quality care to patients.

The concept of a unified imaging department undergoes increasing analysis as imaging technologies become more sophisticated—particularly in the area of digital computerized imaging.

Authors of a recent review article noted that "the understanding of the fundamentals of digital radiography is increasing in importance as widespread integration of digital medical imaging, including computed tomography, ultrasound, nuclear medicine, nuclear magnetic resonance, and even film radiography, occurs" (1).

"Now, if nuclear medicine is se-

questered from radiology, each department operates in a vacuum, choosing its own modalities, and both disciplines suffer," said Dr. Muroff.

Residencies in imaging

With a unified imaging department, residents could get training in each modality and "make more intelligent decisions for patient care problems," said Dr. Muroff. "If a nuclear medicine physician can interpret a chest x-ray, he or she can better interpret a lung scan," he said.

As an indication of nuclear medicine's relationship to radiology, Dr. Muroff cited a recent survey by the American College of Radiology (ACR) which indicated that more than 75 percent of the nuclear medicine departments or divisions in the United States operate under the aegis of radiology departments. "If VA and academic institutions were eliminated from this survey, that percentage would be even higher," he added.

According to Dr. Smith, however, the 24 VA nuclear medicine services which are under the responsibility of radiology services have a much lower documented productivity. (The VA system has 130 nuclear medicine services.)

Diagnostic processing centers

Since July of 1982, Dr. Smith has recommended that the VA consider establishing diagnostic processing centers (DPCs) to coordinate patient studies. Managed by a chief of diagnostics, such a department could centralize numerical laboratory data, multiple sequential images, and

three-dimensional presentations, as well as patient histories and results of physical examinations, explained Dr. Smith.

With today's diagnostic algorithms, physicians trained to use them could function as DPC coordinators, and "the randomness of the sequence of a patient's diagnostic tests could be eliminated," said Dr. Smith. Under this system, each hospital department involved in diagnostic studies would retain its autonomy.

Referring to the concept of a unified imaging department, Dr. Smith said, "The confusion has arisen in the medical community that the various diagnostic modalities are randomly interchangeable and subsumed under a single specialty discipline. This fallacy arises from a lack of understanding that each new modality reveals different information about a patient's clinical state, and that each modality is based on unique and specific principles of medical physics."

Imaging data comprise only a small fraction of a patient's diagnostic data, and the DPC would bring together the technical production, computerization, clinical interpretation, and evaluation of patient studies in a broad-based, multidisciplinary team effort, explained Dr. Smith.

Picture archival communications systems (PACS), in which photoelectronic techniques replace photographic film, could transmit all imaging data to a DPC, projected Dr. Smith. In turn, the DPC could be one integral part of a total record archival communications system (TRACS), which would coordinate all patient



Lawrence R. Muroff, MD: "A department of imaging would increase efficiency in scheduling and the use of equipment and personnel."

data during a hospital stay, said Dr. Smith, adding that an "imaging service is a patch-work concept."

Mayo Clinic's diagnostic network

Last May, the Mayo Clinic of Rochester, MN, began construction of its first branch, located in Jacksonville, FL, of a planned network of regional diagnostic clinics. With computer technology and telecommunications, the branches of this network would use the physicians and scientists at the Rochester facility as consultants, explained Robert Smoldt, chairman of the Mayo Clinic's division of public affairs.

"The Mayo Clinic's proposed network will essentially use the Rochester facility as a DPC," noted Dr. Smith. The Mayo Clinic expects to build a second branch in Scotsdale, AZ, and a third facility is in the initial planning stages.

John W. Ditzler, MD, chief medical director at the VA, proposed last spring to transfer the responsibilities of the director of the VA nuclear medicine service to the director of the VA radiology service as a first step towards his long-term goal of establishing departments of imaging (see

Newsline, June 1985, pp. 553-554, July 1985, p. 693).

Imaging departments at the VA

Dr. Ditzler noted that several major medical centers have already established departments of imaging, and that the VA should "remain on the cutting edge of medical advances."

Several nuclear medicine organizations requested that Dr. Ditzler reconsider his proposal. In response, he said that he was "persuaded to move in a more deliberate fashion in order to insure objective assessment and an orderly transition."

Rosalyn S. Yalow, PhD, at the Bronx VA Medical Center, said that the dynamic imaging provided by radionuclide studies sets them apart from other imaging modalities, and should be carried out within an autonomous department. (Dr. Yalow was awarded the Nobel Prize in Medicine and Physiology in 1977 for her work with the late Solomon Berson, MD, in developing the radioimmunoassay technique.)

The ACR sent a letter to Dr. Ditzler in support of his proposal. The letter, summarized in the July 1985 *ACR Bulletin*, was signed by Dr. Muroff, who is also chairman of the ACR's Commission on Nuclear Medicine, and by Joseph A. Marasco, Jr., MD, chairman of the ACR Board of Chancellors.

Evolutionary medical advance

Dr. Smith said that he envisions the combination of the DPC, the VA Teletransmission Network, and TRACS as the "overarching paradigm which Thomas Kuhn has described as characteristic of an evolutionary advance in science or medicine (2). Here, in contrast to the dead-end 'imaging service,' is a true cutting edge into the veteran patient care of today and the future." (The VA Teletransmission Computerized Nuclear Medicine Network, based in the Cochran VA Medical Center in St. Louis, was es-



James J. Smith, MD: "A department of imaging treats the picture rather than the patient's diagnosis as the common denominator."

established in 1974 to provide diagnostic services to remote medical facilities.)

[It is projected that the VA system will maintain the position of director of the VA nuclear medicine service by having it filled part-time by a chief of nuclear medicine at a VA medical institution outside the Washington area who will fulfill clinical duties and administrative functions. The transfer of service directors from the VA Central Office to a VA medical facility outside of Washington is part of an overall effort to reduce administrative costs and to place directors closer to clinical settings. This reorganization has already taken effect with the VA directors of other services. The US Office of Management and Budget (OMB) has cut the \$70 million annual budget for the VA Central Office by \$12.5 million.]

Linda E. Ketchum

References

1. Smathers RL, Brody WR: Digital radiography: Current and future trends. *Br J Radiol* 58:258-307, 1985
2. Kuhn T: *Structure of Scientific Revolutions*. University of Chicago Press, 2nd Edition, Chicago, 1970