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# ASNR Special Focus Lecture: The Neuroradiologist as a Primary, Secondary, and Referring Physician

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I think it is useful to periodically review the current content and practice dynamics of medical specialties and their implications for the future of neuroradiology.

Within the memory of most of you, neuroradiology was viewed as an intellectual specialty, with most procedures—pneumoencephalography, cerebral angiography, and myelography—performed by neurosurgeons and a few neurologists. The superior knowledge of neuroradiologists, along with overburdened practices of neurosurgeons, eventually (but with no little struggle) transformed the specialty into a procedural/cognitive one, initially by those specifically trained in neuroradiology and later by other “general” radiologists trained by those leaders. This transition was assisted in no small way by the introduction of catheter techniques, which mandated new skills. Training programs in neurosurgery continued to include neuroradiology, often with the reasoning that many practice locations may not have radiologists trained in neuroradiologic procedures. This changed as more radiologists were trained, and currently it is rare for neurosurgeons to acquire hands-on experience with procedures.

Almost from its inception, the American Board of Radiology examined candidates in “intellectual” neuroradiology; that is, it required knowledge of anatomy and pathology but not actual performance. Over time, the content of the examination changed from emphasis on pneumoencephalography and myelography and plain-film examination of the skull to cerebral angiography, including questions on the “cerebral vein of the day.” Then came CT and MR imaging, and emphasis again shifted. These changes were a reflection on what was happening in the practice of neuroradiology.

All this occurred without recognition by certification of the subspecialty of neuroradiology. The process of accreditation of fellowships in neuroradiology is now approved, and invitations are being sent to institutions to apply for accreditation of neuroradiology fellowships.

But this success story of the discipline is not likely to continue forever. Already, challenges for the CT and MR turf plague many of you in this Society as well as radiologists practicing neuroradiology. The reasons usually cited are economic—too many neurologists and the greater reimbursement rewards for procedures as compared with so-called cognitive practice. However, I am not convinced that economics is the sole driving force. A contributing factor is a matter of specialty pride. We certainly have it in radiology—defining in our minds what is OURS. Other specialties do likewise. A good example is urology, where intravenous pyelography is considered part of the specialty. Residents are trained in

interpretation; and, commonly, practicing urologists perform it in their office. In some military hospitals, urologists perform IVPs on in- and out-patients, *and there is no financial incentive*.

But economics does play a major role. During neuroradiology's shift from an intellectual to a procedural specialty, procedures were favored by reimbursement from the private insurance carriers and, in 1974, by Medicare. And radiologists were well positioned because skills in catheterization procedures rested almost completely in their domain.

While interpretation of CT and MR images is not as easy as some outsiders claim, it does not require any procedural skills. We teach imaging interpretation in daily interdepartmental conferences with neurology and neurosurgery residents and staff, after which many of them, usually in private practice settings, point to their superior knowledge relative to that of the general radiologist. This is not easily dismissed in many settings.

To be sure, the emphasis on out-patient imaging centers has provided an easy platform for these nonradiologists to engage in CT and MR imaging and to steer their patients to these centers, particularly when the referers are partial owners. Some of the timid ones successfully hire radiologists to do the interpretation—at least in the beginning. (For 20 years or more, radiologists have struggled successfully to cast off the yoke of working for hospitals and now they are substituting that for a nonradiologist owner of an imaging center.)

And they have convinced many of their nonowner colleagues in neurology, neurosurgery, internal medicine, and other disciplines to refer patients to them. In fact, it is their colleagues in these and other specialties who vote them interpretation privileges in CT or MR by hospital credentialing committees.

To put the present turf situation in perspective, it is useful to look at other medical and surgical specialties to see what is happening in areas not related to radiology.

Historically, in medicine and surgery, overlap in areas of diagnosis and treatment has been common, and there is a growing trend for an increase in diagnosis and treatment of the same conditions among diverse specialists claiming expertise in fields formerly not considered a part of their specialty. To cite just a few examples: Plastic surgery and dermatology claim removal of skin lesions; the ear, nose, and throat surgeon and plastic surgeon both perform facial reconstruction; and they, along with the general surgeon, do radical neck dissection; gynecologists and general surgeons do hysterectomies and appendectomies; plastic and orthopedic sur-

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geons claim hand surgery; and, of course, neurosurgeons and orthopedic surgeons each consider the back their territory. And the list goes on and on, covering the medical specialties as well.

How can these specialists get away with this? Many are cross trained in their residency, and many have requirements in their specialty to train in other folks' areas. But the fundamental point is that they control the destiny of their patients. They are primary physicians and can refer or not refer patients for problems on the fringe of their specialty.

What does this have to do with diagnostic radiology and neuroradiology in particular? Almost from the beginning of radiology, we have justified the existence of our specialty by stating we were *consultants*—doctors' doctors! We only take patients on referral. We instruct our secretaries to deny access of patients to us unless referred. And we further distance ourselves from patients who ask for the results of our examinations by telling them that the results would be sent to "their doctor." Then, many radiology training programs eliminated the clinical year as a requirement for training in radiology residencies on the basis that it was not needed by the *consultant radiologist*.

One of the early leaders in radiology in the post-World War I period is reported to have said that radiology would never become a mature specialty unless radiologists had control of their patients. He was wrong for about 60 years. But I believe his prediction has now come true. That radiology is a mature specialty clearly is true; but there are strong indications that it could be a mature specialty with a dwindling number of referred patients. Is there anything that can be done to reverse or stabilize the trend? Certainly, there is no easy solution. I firmly believe that radiologists and neuroradiologists must become primary and secondary physicians and, by doing so, become referring physicians.

One of the growing success stories in primary access radiology is mammography or, to be more accurate, breast diagnosis, which includes physical examination of the breast. In this area, radiologists offer their services and willingly accept patients who come to them directly, and they become referring physicians when breast cancer is diagnosed or suspected.

A few vascular and interventional radiology practices have established primary access to their services for diagnosis and treatment of claudication and other vascular problems. When, as in the majority of cases, the treatment indicated is surgical, they become referring physicians to a vascular surgeon.

Is there a parallel in neuroradiology? I think so, and will cite just one possibility. Low back pain is the No. 1 public health problem in the United States, surpassing the common cold. Let's think about how the average patient is managed: He or she, after trying drugstore remedies, goes to the family physician, who sends the patient for back X-rays and prescribes a pain killer and/or a muscle relaxant, and advises rest and/or physical therapy. And most get better. Those that don't are referred to an orthopedist, neurologist, or neurosurgeon. Since the patient already has had X-rays, he or she is sent for a CT or MR scan or both. Then surgery may be recommended.

What is the breakdown of this scenario? (1) The patient sought the first physician—a family physician. (2) A history was taken and physical examination performed. (3) X-rays of the lumbosacral spine were obtained, presumably by a radiologist. (4) Simple pain or muscle relaxant medication was given. (5) Physical therapy, at home or by a physical therapist, was prescribed. (6) If the pain persists, the patient was referred, and CT and/or MR was performed, again presumably by a radiologist—maybe even by a neuroradiologist. (7) If the results of the physical examination corresponded to findings on the X-ray examinations, surgery was considered.

I submit that five of the steps could all have been carried out by a neuroradiologist who was willing to accept primary patients, and the referral to the neurosurgeon or orthopedic surgeon could be made by the neuroradiologist.

Now come the objections—and some responses. (1) My friend the neurologist or neurosurgeon or orthopedist would object. True? Most of them don't like to see patients with back pain because of the low yield for surgery. And, you would be referring patients to them. (2) I haven't had the responsibility for primary patient care since my internship; and, besides, I went into neuroradiology to be a consultant and not be bothered with talking to patients. True? There is an alternative, taken from the pages of neuroradiologists and neurosurgeons who own imaging centers and hire radiologists to do the interpretation. Can the shoe be put on the other foot? You can hire a family physician or a "medical orthopedist or neurosurgeon"—there are plenty who don't want to operate any more, or never did. (3) I am plenty busy now and don't need the extra work or headaches. True? Probably. How long do you think it will last, given the economic realities of the day? Radical? Yes, in our present-day mold as consultants. But we need to look at the future as medical practice changes. Restrictions on reimbursement for physician services are growing with no end in sight. Will our referring physicians of today consider maintaining their income levels by greater erosion of radiology services, either in their imaging centers or in the back rooms of their offices? Radical? We need to remember what has been and is happening between the clinical specialties and their turf, as I pointed out earlier. It is amazing to me that radiology has been relatively insulated for so many years. Radical? Maybe we can find some temporizing measures and not have to make such a big jump.

For the risk-averse, consider being not a primary but a secondary neuroradiologist. I am using the word *secondary* for lack of a better one. There is an enormous body of primary care physicians, principally family physicians who are the usual portal of entry for patients with back problems. Their number is growing as constrictions on training of specialists increase, shifting emphasis to primary care physicians. Many, or most, of these physicians would like to take advantage of our imaging techniques for their patients without referring their patients too early in their care to a neurosurgeon or orthopedic surgeon. But some don't refer to us because we speak in strange tongues to them in our reports—"high signal," "GRASS," and "low flip angle excitation"—causing them to value the assessment of an interpreter orthopedic surgeon or neurosurgeon. Proper marketing of our imaging



services to them, with clinically helpful reporting and personal discussion of their patients, could add an immense new practice to our existing one. And, they will ask for advice for referral of their patients.

Why don't patients come to us now? (1) They don't know who we are; and, if by mistake they find out, we tell them to go away—to find a doctor to take care of them—and that doctor may be the one who refers patients to his or her imaging center or back-room office. (2) Or, if they happen to corner us, before we can escape after an examination, we tell them that the results will be sent to "their doctor."

Whether you subscribe to the primary access concept or

not, we can: (1) Take every opportunity to talk to patients referred to us. (2) Tell patients their results. (3) Encourage patients to call us for advice on present care and future care. Most patients with low back pain don't get cured with or without surgery, and eventually go doctor-shopping. We could be that doctor and could refer the patient to a grateful colleague.

These are but a few ideas that I hope to plant and fertilize. You in the specialty are in the best position to innovate and change your traditional role. The insidious erosion of your practice is a real threat to your great specialty that you and your predecessors have built.