

REFLECTIONS OF AN ACCIDENTAL GENERALIST

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The other speakers in this Colloquium have discussed the phenomenon of subspecialization among practicing neurologists, and the implications for residency and fellowship training. My presentation concerns a related question: Who should be doing the teaching? In particular, should neurology trainees – especially neurology residents – be taught by subspecialists or by generalists? My answer is both.

THE CASE FOR SUBSPECIALISTS

The role of subspecialists in *subspecialty* training is self-evident. Although gifted teachers can sometimes guide trainees in learning a specialized body of knowledge and skills without being expert in the field themselves, it obviously helps when teachers have mastery of the topic.

The role of subspecialists in teaching neurology trainees who have not yet selected an area of subspecialization (or who have decided not to subspecialize) is also fairly self-evident. These trainees still need to learn about the various subspecialties, and who is better equipped to teach them than the experts in those fields? Indeed, even if all neurologists in “the real world” were generalists, and even if there were universal agreement that the goal of neurology residency is to train general neurologists, there would still be at least four forces driving academic neurologists to subspecialize. First, academic neurologists can enhance their expertise by narrowing their scope. By focusing their clinical practice on patients with a well-defined set of diseases (such as neuromuscular diseases) or symptoms (such as dizziness), academic neurologists can accumulate a wealth of experience that can inform their teaching and research regarding those conditions. Second, academic neurologists devote a considerable share of their time and energy to research and teaching, and it is difficult for them to remain current in many different branches of neurology at the same time. Clinical subspecialization allows them to marshal their resources efficiently and realistically. Third, the synergy between investigators’ research and their clinical practice is often maximized by subspecialization. Certainly, investigators who are active in clinical trials gain from spending most of their clinical time with patients who might be candidates for research protocols. Their patients gain from having physicians who are familiar with ongoing protocols and who can counsel them accordingly. Even bench researchers may require tissue or fluid specimens from particular sets of patients, and this is facilitated by establishing a clinical relationship with those patients. Moreover, ongoing clinical experiences may stimulate investigators to consider new research questions or approaches. The fourth force driving subspecialization in academic medical centers is the need to compete in the health care marketplace. To the extent that academic medical centers are successful in their mission of training qualified general neurologists, and to the extent that their graduates remain in the general vicinity after completion of their training, academic medical centers are engaged in fostering their own competitors. When the standard of neurologic care in the community is high, academic medical centers must offer something more than just overall excellence in order to generate patient referrals, and subspecialty expertise is definitely a “selling point.”

The practical factors reviewed in the previous paragraph have probably been more important than educational considerations in prompting academic neurology departments to subspecialize. Nonetheless, subspecialization has educational benefits as well. The most obvious benefit is that it gives trainees access to experts in various clinical subspecialties, and thus to current information and ideas – even material that may still be unpublished or available only in abstracts. Moreover, if the department’s outpatient clinic is organized into subspecialty clinics, it facilitates a scheduling system that permits trainees to see particular outpatients under the supervision of the faculty members who have subspecialty expertise relevant to those patients. If the subspecialist is engaged in clinical research, trainees may even get experience with medications, diagnostic tests, or other clinical procedures that are still investigational. In addition to the potential for learning about important clinical discoveries in the early stages, exposure to the *process* of clinical research has educational value. Another positive educational consequence of subspecialization is exposure to a multidisciplinary approach to patient care, which is common in subspecialty clinics.

THE CASE FOR GENERALISTS

With all the practical incentives to subspecialize, and with all the concomitant educational benefits, it is not surprising that academic departments usually recruit new faculty with specific subspecialty programs in mind.

Advertisements for “generalist” positions in academic neurology are extremely rare. Increasingly, the governing principle among academic neurology departments seems to be that if generalists have any role at all, it is a secondary role. For example, it is difficult for a department’s subspecialty programs to “cover all the bases,” and the department must have some mechanism for managing patients who “fall in the gaps” between subspecialty programs. Such gaps may arise because a department has no expert in a particular subspecialty, or because the department’s subspecialty structure applies only to outpatients and not to inpatients, or because a patient’s diagnosis has not yet been established, or for other reasons. The common theme is that the generalist’s role is defined by default. The generalist sees the patients for whom there is no subspecialist. According to this view, the generalist has no unique qualifications or characteristics (except perhaps a lack of ambition or focus), and no discrete educational mission. Indeed, in many cases, the generalist role is not assumed by specific individuals, but instead is treated as a communal responsibility shared by all faculty members. After all, subspecialty training occurs after completion of a neurology residency – it is a supplement to training in general neurology, not a replacement. Thus, even for diseases outside their subspecialty, subspecialists typically have had as much formal training as generalists.

This reasoning is flawed. It ignores the fact that medical education is a lifelong process. Subspecialists typically make a concerted effort to stay abreast of developments within their area of expertise, but they are usually less diligent in following the literature outside their subspecialty. After all, one of the reasons academic neurologists subspecialize in the first place is so that they can focus their time and energy more efficiently and effectively, and this implies a corresponding reduction in their attention to other aspects of neurology. Subspecialists achieve and maintain clinical expertise by maximizing their experience with patients within their subspecialty, limiting their experience with other patients correspondingly. In contrast, generalists are compelled to be aware of recent developments across a broad range of neurologic conditions. As an analogy, an internist with no post-residency training probably has more experience prescribing ACE inhibitors than a rheumatologist does, and is probably more familiar with current treatment of rheumatoid arthritis than a cardiologist would be. For that matter, the internist is almost certain to be more adept than a neurologist in treating *both* hypertension and rheumatoid arthritis, even if the neurologist completed a full internal medicine residency (and, thus, has just as much formal training as the internist). In fact, the longer neurologists have been practicing, the higher the likelihood that their general medical skills and knowledge base in internal medicine will be “rusty,” especially if they have limited their patient population in any way. Analogous reasoning applies to neurologic subspecialists and their general neurologic skills.

Viewed from this perspective, it is fairly intuitive that generalists should be superior to subspecialists in teaching those aspects of clinical neurology that lie outside the realm of the subspecialists’ areas of expertise. What is less obvious, but perhaps even more important, is that generalists have an important function in teaching aspects of neurology *within* subspecialists’ areas of expertise. The easiest way to appreciate this is to consider the nature of academic subspecialty practice.

Academic subspecialists typically see “tough cases” – patients whose diagnosis is unclear, or patients who have not responded to standard treatment, or patients who are not candidates for standard treatment (or patients who explicitly request a referral, but even these patients are often people who have not responded to standard treatment or are ineligible for it). This is only natural. General neurologists are comfortable managing patients with straightforward neurologic problems and do not routinely refer them to subspecialists..

As a result, subspecialists often confront clinical problems for which there is no evidence-based answer. Stroke specialists are asked to recommend appropriate management for patients with intracranial stenosis, neuromuscular subspecialists are sent patients with non-specific symptoms of weakness and pain who are found to have subtle mitochondrial abnormalities, movement disorder specialists are asked for advice in managing patients with complications of dopaminergic therapy, and so forth. Unless they are therapeutic nihilists, the subspecialists must recommend a management strategy based on their clinical experience and their extrapolations and inferences from both clinical and experimental literature.

Trainees working with subspecialists may have trouble distinguishing management decisions that are evidence-based from those that are based on the subspecialists’ best judgment. Similarly, trainees may not recognize which aspects of management would be considered standard of care and which reflect the judgment of individual subspecialists. Clearly, this potential confusion is avoidable. Subspecialists can and should be very explicit with trainees (and with patients) about the basis for their conclusions and recommendations. It is difficult to do this consistently, however. Phrases such as “There’s never been a controlled study, but it makes sense to ...” or “I can’t prove this, but it seems to me ...” apply to an overwhelming number of the pronouncements physicians

make every day, and this is especially true of subspecialists who are being referred “tough cases.” While such qualifications may render the pronouncements more precise, they may also obscure the main message. Skillful communicators and presidential nominees are well aware of the dangers of dwelling on nuance and subtle shadings. Moreover, physicians must instill a sense of trust in their patients, and it is difficult to do so while prefacing every statement with a caveat. This applies especially to subspecialists, who are often in the position of offering a second or third opinion, which may have more therapeutic value when delivered with an air of certainty. Some degree of artificial certainty may also be “therapeutic” for trainees, who may find it difficult to navigate the vagaries of clinical practice without some firm maxims. Thus, despite the best of intentions, subspecialists are likely to replace phrases that reflect uncertainty with phrases such as “In my experience ...” or “I usually ...” or “I’ve found ...” Ultimately, they may omit the qualifier phrase altogether, and simply issue matter-of-fact pronouncements, such as “In this situation, X is the drug of choice.”

While trainees (especially early in their training) benefit from learning an unambiguous and definitive approach to a complex set of clinical problems, at some point they must learn about alternative theories and approaches. Subspecialists may have difficulty presenting opposing viewpoints dispassionately (in part because some of their effectiveness as subspecialists depends on their ability to present their own views convincingly). Generalists are ideally suited to serve this function. Although they do not have advanced training in a subspecialty, and their knowledge of the literature may be incomplete, competent generalists are usually aware of the results of pivotal clinical trials and their implications for patient management, and can recognize practices that deviate from the general standard of care. Even when they fully support a subspecialist’s approach, generalists can provide a valuable service simply by challenging trainees to explain the rationale behind their management plan. Surprisingly often, trainees will respond by saying something like “That’s the way Dr. X does it.” Although there is no inherent reason why Dr. X could not be the one who certifies that trainees understand the evidence (or lack thereof), this type of challenge is more likely to come from knowledgeable outsiders who are less personally vested in the management plan. This is especially true when the outsiders have a legitimate difference of opinion. One of the best ways for trainees to learn the evidence underlying clinical practice is to listen to advocates of two different approaches debate. Granted, the playing field may be uneven when a generalist and a subspecialist debate a clinical question within the latter’s field of expertise, but this can provide trainees with a valuable lesson in thinking critically about statements made by experts. In the simplest exchange, the subspecialist cites evidence of which the generalist was unaware, the generalist learns something, and so does the trainee. More often, the generalist will challenge the relevance or the validity of the evidence the subspecialist cites, or the subspecialist will admit that the evidence is not compelling but will argue that it is suggestive. These exchanges can be valuable learning experiences for all concerned. In some cases, the generalist and the subspecialist may not even interact directly, instead using the trainee to communicate. When the trainee says, “That’s the way Dr. X does it,” the generalist may reply, “Then find out why Dr. X. does it that way and let me know” or “Well, *I* do it *this* way. If Dr. X can persuade you that *that* way is more reasonable, let me know. I’d be happy to change my approach if you can convince me to do so.”

In the same way, generalists can serve an important educational function by challenging trainees to justify their use of diagnostic tests. Given the economics of the health care system, tests should only be ordered when there is a realistic chance that the results could change management, unless it is clear that there will be no cost to the patient or the patient has explicitly agreed to pay for the tests. Physicians are frequently tempted to order tests to answer lingering questions about a patient’s condition, even though the information will not affect management (“Where exactly was the patient’s stroke?” “How many new demyelinating lesions have developed, and how many old ones have improved?” and so forth). This curiosity is not necessarily idle – the answers to such questions could eventually lead to insights that would improve future patient care. This is especially true for academic subspecialists, because (as already discussed) they so often confront clinical questions for which no evidence-based answers are available, and they must rely on their accumulated experience. Furthermore, academic subspecialists often participate in clinical trials that include funding for diagnostic tests that would not be considered necessary for routine patient management. It is easy to develop the habit of ordering those same tests on all patients, even those who are not enrolled in research protocols. For example, specialists in cognitive disorders may routinely order neuropsychological testing and brain imaging studies, and neuromuscular specialists may arrange their schedules on the assumption that they will obtain an EMG on most new patients. In the extreme, subspecialists may develop a battery of standard tests that they require even before seeing a patient. Even when subspecialists have a good justification for the tests they order, trainees may not understand it. Generalists are ideally situated to intervene when trainees demonstrate an unthinking, reflexive approach to diagnostic testing. The simple question, “How will the results change your management?” can go a long way toward correcting trainees who have blithely concluded that all patients with epilepsy require admission for long-term CCTV-EEG monitoring, or that all patients with strokes should have an MRA, or that all patients with

cognitive symptoms need neuropsychological testing. In principle, subspecialists themselves could teach this same lesson, but in practice, they often assume that trainees already understand which tests are standard and which are not. Generalists, who are less likely to order the non-standard tests in the first place, are more likely to take notice when trainees behave as if the tests were standard.

Although the above discussion is most applicable to undifferentiated neurology trainees (i.e., neurology residents who have not yet entered a subspecialty or who have decided to become generalists), it also applies to subspecialty trainees (fellows). Fellows who did their residency at a different institution have the advantage of having seen a different style of patient management, so they are more likely to recognize elements of patient management that are idiosyncratic to a given individual or institution. Nonetheless, they often attribute the differences in approach to the fact that they were less knowledgeable as residents, and they become ready converts to the teachings of their new “masters.” Fellows are particularly prone to develop the habit of ordering a routine battery of tests, because they see the same tests ordered on so many patients; they can benefit greatly from periodic challenges to justify specific tests in individual patients.

Generalists are also ideally suited to help residents and fellows avoid limiting their differential diagnosis prematurely. Subspecialists run the risk of becoming the proverbial blind men with the elephant. After all, “to one who is good with a hammer, everything tends to look like a nail”, and a subspecialized department reinforces this tendency by establishing procedures that, in effect, direct the nails to the hammers. Subspecialists who work in departments with effective patient triaging systems can realistically expect that most of the patients they see will have problems relevant to their subspecialty. Although good subspecialists remain familiar with relevant conditions outside of their subspecialty, they may not emphasize those conditions when teaching trainees. In particular, they may not notice if their fellows become so focused on their subspecialty that they start to forget other aspects of neurology. Generalists are more likely to notice when trainees narrow their focus excessively.

A final rationale for generalists in an academic neurology department is that they serve as role models. Perhaps at some point all practicing neurologists will be subspecialists, but that is certainly not the case now. As long as a substantial segment of the average neurologist’s job involves general neurology, trainees will need exposure to faculty members who can demonstrate a reasonable approach to a broad range of neurologic problems, who know when subspecialty referral is necessary, but who also know how to manage straightforward patients confidently and competently.

SUMMARY

Subspecialization in academic neurology facilitates both basic science and clinical research. Academic subspecialists play an important role in neurologic education by exposing trainees to ideas and approaches at the cutting edge of neurology. Academic generalists play an equally important role by compelling trainees (and sometimes the subspecialists themselves) to maintain a proper perspective: to generate a suitably broad differential diagnosis and to distinguish opinions and practices that are commonly accepted and/or evidence-based from those that are not.

While the subspecialist’s role is widely recognized, the generalist’s role is often neglected. This approach is shortsighted. The two roles are complementary, and they are both fundamental. If the subspecialist is considered paramount and the generalist secondary, neurologic education will suffer.