

NEUROLOGY IS NOT ENOUGH

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The A.B.Baker Award honours the person after whom it is named more than the person fortunate enough to be selected to receive it. Abe Baker was one of the driving forces in the foundation of the Academy. He wanted to establish an organization that admitted junior neurologists, even though more senior neurologists were opposed to the idea. His efforts made education an important part of the mission of the AAN. It is a privilege to receive the award for 2007 and to deliver this lecture. Among earlier recipients of the award I was delighted to see the name of Robert A. Fishman who first invited me to San Francisco more than 30 years ago from London, England, where I was born and educated.

The United Kingdom differed from other European countries and from the United States in that neurology stemmed from general (internal) medicine as opposed to psychiatry; nearly all the early founders of British neurology were general physicians (internists) or academicians with a particular interest in neurology. In other countries, neurology evolved from psychiatry as an independent specialty focused primarily on the paralyzed and epileptic, i.e., on motor disorders as opposed to mental or psychiatric disorders. 1 In countries such as Germany there was often a single head for the departments of psychiatry and neurology; in Japan, neurology did not really separate from the disciplines of psychiatry and neurosurgery until the 1960s; and, even today in the United States, the specialist boards of neurology and psychiatry are united, to the benefit of both, as a single Board. 2 I will not discuss here the need for training in psychiatry for all neurologists, as that will be covered by others, but I do wish to affirm my belief that there is a need for such training.

Given my British background, my concerns about the clinical training received by our residents and trainees may perhaps be more understandable to you. In particular, I am disturbed at the gradual erosion of clinical training and specifically at the increasing separation of clinical neurology from other branches of internal medicine. This is especially hard for me to understand given the relative youth of our specialty.

The foremost neurologists of the nineteenth century were all general physicians first and then developed an interest or focus in neurology. Indeed, when I specialized in neurology in England, the standard route was still to obtain first the British equivalent of boards in internal medicine, and then move on to a subspecialty in internal medicine, namely neurology. Many US neurologists did 2 or more years in internal medicine before turning to neurology. Raymond Adams was one of several illustrious American neurologists who were also known for their wide interest in internal medicine. The editors of Harrison's Principles of Internal Medicine recognized neurology as an important part of internal

medicine by making him a co-editor of that textbook; indeed, all major textbooks of internal medicine now include a section on clinical neurology.

Specialization is a consequence of advancing knowledge and of the development of new techniques in medicine such that one person cannot sensibly keep up with more than a single field. The boundaries of a specialty are fluid, evolving with time depending on the depth of the field. For years, there have been specialists in individual diseases, such as tuberculosis or diabetes, so it is not new that physicians specialize in individual neurological disorders such as headache, movement disorders, or multiple sclerosis. But in the past, such specialists first gained a solid general training in a broader branch of medicine – usually internal medicine – before focusing on general neurology and then confining themselves to a favored disease (MS) or bodily region (headache).

There has been increasing conflict between the trend to specialization in medicine and the need to encourage physicians to gain or retain expertise in general medicine. The need for a broad base in general medicine among neurologists relates to several factors. First, many patients with neurological disorders are in the older age range and have a wide variety of general medical disorders as well. Second, many general medical disorders have neurological complications or manifest as neurological diseases. For example, it is becoming increasingly clear that gluten sensitivity has more effects than on the gastrointestinal tract. It is often difficult to determine whether a stroke relates to cardiac pathology, infection (e.g., infective endocarditis and meningitis), or inflammatory diseases (e.g., vasculitis, connective tissue disease), but despite this many of our trainees have had no training even as medical students in cardiology or rheumatology.

Hematological disorders account for up to 8% of all ischemic strokes in different series³ and yet neurologists are not well informed about such disorders. Moreover, general medical disorders may be influenced by neurological disease. Thus, delayed weaning from a ventilator in critically ill patients may be due to development of critical illness neuropathy in certain high-risk patients, and this may be the sole manifestation of such a neuropathy; all neurologists who venture into the ICU should be familiar with this recently recognized disorder. Third, the prognosis, course, and management of many neurological diseases are influenced by general medical factors. The effect of pregnancy on myasthenia gravis, multiple sclerosis, or epilepsy exemplifies this well.

Moreover, neurological disorders may be caused by medications given for general medical conditions, as exemplified by the tardive dyskinesia that may follow use of metoclopramide. Fourth, general rather than focused skills are often still required for the initial evaluation of patients admitted acutely to hospital.⁴ Despite this need, it is also true that specialist care is generally more effective than the care of generalists. In general, cardiologists are more up to date in managing acute MI than internists, and patients with MI have a greater mortality when looked after by the non-specialist. A systematic review showed a more than 30% reduction in the combined outcomes of death and dependency when patients are managed in stroke units rather than on a general medical ward. However, the real

issue is whether comprehensive specialist care is better than focused specialist care. Fifth, neurologists need to work alongside and communicate with specialists in other medical fields. This requires that neurologists have more knowledge of general medicine than they can glean simply during their medical student years and a year of internship. At the present time, there is no clear agreement between primary care physicians and specialists concerning the preferred extent of specialist involvement in caring for patients with neurological conditions. 5 This makes it all the more important to ensure that patient care is properly coordinated between physicians and requires that neurologists have some understanding of the general medical issues posed by their patients.

And finally, with each medical advance, we all assume an added responsibility to ensure that our patients benefit appropriately. How can we possibly keep abreast of the amazing advances in medicine when our knowledge of all but neurology is barely above the medical student level? Despite these considerations, much of the internship year may be spent unwisely, for example, in a sophisticated environment with the emphasis on too-specialized a topic, such as a kidney transplant service. One of my residents had no cardiological experience at all prior to starting neurology residency. It seems desirable, at least to me, to ensure that our trainees undertake their internship year in an environment that is suited to their clinical and career needs, rather than being convenient geographically, fulfilling a service need, or being undertaken in a prestigious institution. I wonder how our neurology program directors would feel about taking on the added burden of vetting internship positions in a more systematic way – I suspect they would not be too enthused because they already do so much to ensure that trainees receive a quality education and have to deal with an increasingly complex and time-consuming bureaucracy.

Neurology has changed dramatically in the last 40 years. It is hard to imagine practice without CT scanning, MRI, and the other imaging modalities that are now available to us. The application of advances in neuroscience has led to tremendous change. Clinical examination, laboratory studies, and imaging have allowed neurology to evolve from a clinical skill in which some intuition, imagination, or even guesswork was required to a clinical science with an exactitude that was hard to imagine just a few years ago. To produce neurologists without a fundamental training in neuroscience would be a folly. The discipline of hypothesis-driven concepts and actions helps us all to establish a diagnosis based on logical and firm principles and thereby ensures that clinical neurology has substance. When I was in training, the best clinicians were generally those who could come up with a diagnosis that was plausible and hard to disprove; now, they are those who come up with plausible diagnoses that can be confirmed by the new technologies available to us. The neurologist with a scientific background is perhaps best placed to advance the field, in the area of so-called translational medicine. These positive aspects, however, are counterbalanced by certain drawbacks.

Training is becoming more focused and narrowed and yet the basis of neurology in particular and medicine in general is becoming more extensive. Increasingly, residents are being encouraged to learn facts rather than to learn an approach to the topic. An MRI is often undertaken before the patient is even examined. Neurological education needs to

be more broad-based, and preceded by adequate education in general medicine. One cannot simply short-circuit the issue by focusing the internship year and taking some time for neurology during that year; and then by taking time from the residency for research or because of restrictions imposed on working hours, although that is what is happening. One or preferably two years of general medicine help to solidify the clinical base that will be needed for a successful career as a clinical neurologist. Nevertheless, the pressure placed on residents by the limitation of work hours, as well as by social factors such as family issues, increasing debt for medical education, etc., have limited the time available for clinical training. It has been stated that the so-called “linear” model of training is a barrier to the launch of a successful academic career⁶ and the same factors can be regarded as a disincentive to obtain an adequate clinical education. Unfortunately, however, there seems to be little alternative.

It requires a long time to acquire the requisite knowledge and skills to be a neurologist. However, the time available for training in general medicine has been eroded, as has also the time available for clinical training in neurology. This time limitation and the trend to specialization training is producing a breed of subspecialists in all branches of medicine, and indeed in many other professions. Instead of encouraging our trainees to move beyond the confines of a single disease or technique, we have followed them by developing new specialties and subspecialties until soon there will be no neurologists but headache doctors, MS specialists, stroke doctors, and so on. Our health-care system cannot sustain this financially – and, even if it could, there are disturbing implications of this approach that relate to who is qualified to see and treat patients with particular diseases.

How do we teach our residents and trainees clinical common sense? How do we teach a student or trainee to recognize that one patient is ill enough to be admitted to hospital while another – with the same vital and other signs – can be sent home? Are clinical neurologists being replaced by subspecialists in individual neurological diseases, and – if so – who will make the initial diagnosis? Or are they being replaced by radiologists, immunologists, molecular biologists, and others who think that good medicine can be read from a viewing box or laboratory slip, that the history is too subjective to be of value, and that the clinical examination is made redundant by our ability to view the detailed structure of the living nervous system. These are the people who may not appreciate that structure and function are interrelated but may be distinct; the people who will operate on the incidental degenerative changes of a septuagenarian’s spine because they are there and the patient has the new onset of leg pain. Our residents need to use their reasoning faculties when applying new techniques and knowledge to everyday practice, rather than following an algorithmic approach that is stultifying and reduces medicine to a mindless exercise.

During medical school and residency, the approach to diagnostic reasoning is developed. With more clinical experience, such reasoning is replaced by patterned recognition of disease.⁷ Physicians who specialize encounter more patients with similar diseases and thus improve their clinical skills in a small area. When medical conditions are

encountered frequently, experienced physicians develop patterns that permit recognition of each condition; with unfamiliar diseases, they instead have to rely on reasoning and a systematic approach to differential diagnosis. These two situations require different skills and knowledge. Our present trend is to emphasize the former at the expense of the latter. If the neurologists of tomorrow are to have the clinical skills that they require, they need to have adequate training in general internal medicine and – I might add – psychiatry.

Neurology alone is not enough.

References

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