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Commentary. Generalism and specialism revisited: the case of neurology
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National health policy after World War II included on its agenda the eradication of a perceived serious shortage of physicians. This effort employed such methods as preferential immigration status for physicians, expansion of the nation’s medical schools, and a variety of capitation and training grants. At no time, however, did the private and governmental groups involved clearly define the roles of different groups of physicians in the provision of health services as the basis for setting the optimum total number and density for each group. As a result, the postwar physician expansion became linked more closely to the biomedical research effort and the personnel needs of the nation’s medical schools than to the health needs of the population.

By the mid-1970s, a consensus emerged that the physician supply problem was not one of total supply, but rather geographic and specialty maldistribution. Both in numbers and influence, subspecialists dominated the U.S. health system. (Because the semantics of the words “specialist” and “specialty” are now so blurred, a distinction is drawn here between primary care physicians {generalists} and all other physicians {subspecialists}.) In 1970, only 38 percent of all physicians fell in the primary care category. Between 1970 and 1979, a period in which total physician supply increased 36 percent, overall primary care physician growth was only 30 percent.

Since very little was known about physician supply in direct relation to patient care requirements, Congress requested a study of this issue. This resulted in the landmark 1980 Report of the Graduate Medical Education National Advisory Committee (GMENAC), which projected a surplus of 70,000 physicians by 1990, or 13 percent of all physicians, rising to 145,000 more physicians than required by 2000, or 22.5 percent of the total supply (643,000). These findings and recommendations have pro-
voked a controversy that continues unabated. By taking into account the projected demand for subspecialty care in 1990 and 2000, William Schwartz and colleagues conclude that a continuing national shortage of medical subspecialists will persist throughout the period.

Using the field of neurology as an example, it is the purpose of this Commentary to stand back from the numbers, and to examine instead the key assumptions that underpin a health system dominated by subspecialists, to explore the consequences that follow from subspecialist-dominated service provision, and to propose a restructuring of the social contract between subspecialty medicine and society. My perspective is that of a practicing neurologist in the community who is also an active member of a medical school clinical faculty, and whose income derives from fee-for-service practice (80 percent), direct capitation payments by a traditional health maintenance organization (HMO) (15 percent), and salary (5 percent). Although I am informally labeled a “general” neurologist among peers, to identify a broader scope of professional activities than occurs, say, in a hospital-based epileptologist’s medical practice, I use the label “subspecialist” for all neurologists in this discussion.

Primary Care And Subspecialty Medicine

Notwithstanding years of discussion and debate, many of the factors that contributed to subspecialists’ dominance of the medical care system largely continue at this time. Given free choice of subspecialty and practice location, the great majority of recently graduated physicians may be expected to develop a practice in the subspecialties and locations with the highest income potential and in those communities with the most desirable demographic characteristics.

The rise of subspecialty medicine also has been enhanced by the lack of acceptance of a clear role definition of primary care. This deficiency makes it possible for many types of subspecialists to expand the scope of their own professional activities, as the number of physicians in each subspecialty increases in each community. By contrast, when the scope and the capacity of the primary care physician are clearly defined and carried out in practice, as in the United Kingdom, the horizons of subspecialty medicine are automatically and concomitantly limited.

An unfortunate trend toward competition with primary care is encouraged by the attitude prevalent among many groups of subspecialists that the enormous growth of biomedical knowledge makes it unrealistic for any physician to be broadly competent across several organ systems. Over time, each medical community, dominated by subspecialists, tends to view the dysfunction of an organ system as the exclusive therapeutic
domain of the local group of subspecialists in that field, and to develop local hospital staff policy and physician practice style accordingly. For example, the general internist, who only a generation ago served as a consultant for the general practitioner and was exalted with the label “diagnostician,” now finds that he or she is, ostensibly, inadequately prepared for many tasks and responsibilities, including the determination of death among some comatose patients.

Interspecialty competition, rather than coordination, is further enhanced by the trend among subspecialists to deliver primary care services as they carry out their subspecialty function—that is, in a “hidden” fashion. Most subspecialists seek to provide as much care as they can in subspecialty medicine, and adopt a primary care role *pro re nata*—that is, only when necessary to fill desired total time in professional activity. The “hidden” provision of primary care services by subspecialists assumes that subspecialists can acquire and retain the special skills of the generalist in medical school and subsequent subspecialty training and practice. In brief, it is suggested, without evidence, that subspecialists can function as generalists without special postgraduate preparation.

The Case Of Neurology

Neurology is a field that is growing more rapidly than most. The total U.S. active physician population is expected to increase from 511,090 in 1985 to approximately 683,000 in 2000, a change of 33.6 percent. During the same period, the number of neurologists is expected to increase from 6,359 to about 10,967, or 72.5 percent. Between 1970 and 2000, a 350 percent increase in the number of neurologists has been projected. Remarkably, there is presently one neurology resident in training for every five residents in family practice.

As a result, certain trends are somewhat more evident in this field than in other medical subspecialties. First of all, since the total number of neurologists is increasing far more rapidly than the population, each neurologist provides care for fewer people (Exhibit 1). As of 1987, there were about 32,400 people per neurologist. As the number of people per neurologist falls, each subspecialist has less exposure to complex disorders, many of which are quite rare. For comparison with other health systems, as of 1987 there were 435 neurologists in Canada, or approximately 69,300 people per neurologist. In England and Wales, there were only 178 neurologists, or about 280,000 people per neurologist.

In the case of neurology, the number of primary care physicians per neurologist may be a better indicator of the opportunity to maintain specialty skills than is population density. Since many of the complex
Exhibit 1
Estimated Total Number And Density Of Neurologists, United States, 1960–2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Population (millions)</th>
<th>Neurologists</th>
<th>Ratio of population per neurologist</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>179.32</td>
<td>1,920</td>
<td>93,500</td>
</tr>
<tr>
<td>1970</td>
<td>203.30</td>
<td>2,438</td>
<td>83,400</td>
</tr>
<tr>
<td>1980</td>
<td>226.51</td>
<td>4,604</td>
<td>49,200</td>
</tr>
<tr>
<td>1985</td>
<td>238.74</td>
<td>6,359</td>
<td>37,500</td>
</tr>
<tr>
<td>1990</td>
<td>249.73</td>
<td>8,078</td>
<td>30,900</td>
</tr>
<tr>
<td>2000</td>
<td>267.99</td>
<td>10,967</td>
<td>24,400</td>
</tr>
</tbody>
</table>


Neurologic disorders occur infrequently in an undifferentiated population, the number of referring physicians and other caregivers per neurologist is a proxy of the effective demand for neurologic subspecialty services. In 1978, approximately 87 percent of a U.S. neurologist’s patients were referred by another physician or agency, and only 13 percent represented patient self-referrals. The care protocol that calls for referral of patients to a neurologist remains the norm in Canada and the United Kingdom, where virtually all patient encounters with neurologists are referred by a primary care physician. There are approximately 174 general practitioners per neurologist in the United Kingdom, about fifty-six general practitioners per neurologist in Canada, compared with only twenty-nine general/family physicians and internists per neurologist in the United States.

As the density of neurologists (and other medical subspecialists) in the United States has increased, these subspecialists have moved away from the referral basis for provision of services. Indeed, the Committee on National Needs for Neurologists, sponsored by the American Academy of Neurology and approved by the Association of University Professors of Neurology, took the position in 1986 that “many excellent physicians in primary care . . . are deficient in neurology. . . . For both diagnosis and management, neurologic disorders deserve neurologic expertise. In our view, neurologists are and ought to be the primary physicians for patients with neurologic disorders; further, the public is entitled to free access to the physician or specialist of its choice.” Although this viewpoint among a group of subspecialists is hardly surprising, it is important to note that unlimited access of patients to the generalist or subspecialist of one’s choice is the highly questionable policy that makes this viewpoint tenable. It is an unwarranted extension of the more general concept of the patient’s freedom to select a primary care physician, because it assumes that the patient can tell which symptoms require subspecialty care.
In 1976, a study of eight family physicians revealed a total referral rate of only 1.6 percent of all patient encounters, of whom 6 percent (or 0.096 percent of all encounters) were referred to a neurologist.\(^{19}\) Previously, it was estimated that about 0.24 percent of patients encountered by four family physicians were referred to a neurologist.\(^{20}\) Since some family physicians are able to provide definitive care in up to 98 percent of all patient encounters, without consultation or referral, it is evident that the large increase in the number of neurologists puts these subspecialists in direct competition with primary care physicians for many patients. For example, it has been proposed by some neurologists that 75 percent of all new cases of migraine receive care from a subspecialist (neurologist) in five physician encounters during the first year of illness.\(^{21}\)

### Three Steps Forward

In my view, policy that encourages subspecialist care for most patients is flawed. It is appropriate only among a small group of patients who are acutely and seriously ill, have complex and severe illness, or have uncommon disorders. Among an undifferentiated population, such policy is unscientific and wasteful. The lion’s share of illness in an undifferentiated population is a collage of poorly understood and benign symptoms, and the common and self-limited disorders of each organ system that the generalist may be expected to encounter frequently. From this perspective, self-referral of most patients to a subspecialist is a doubly flawed matrix of care. As a first step toward resolution of these problems, I would propose the following measures as ones that merit thoughtful and open-minded discussion.

**Entitlement of all citizens to primary care.** This step follows from the burden of illness in the entire population to be served: most illness calls for primary care services, and a primary care provider. Some may suggest, pejoratively, that an entitlement to primary care services is a halfway measure, and that what is needed instead is an entitlement to all services.\(^{22}\) Although certainly correct as a long-term perspective, this latter proposal will, unfortunately, likely translate in the political arena, short term, into “nothing but the best” for all citizens. This scenario is the all-too-familiar American Health Care Syllogism: Nothing but the best for all; we cannot provide the best for all; therefore, nothing for millions of people. The popularity of this viewpoint finally seems to be lessening in the face of thirty-eight million uninsured Americans, the result of doing nothing but the “very best.”

Just as an entitlement to primary care is the logical cornerstone of improving health care delivery within the contemporary pluralistic...
American context, a sufficient number of primary care providers is logically the first tenet of physician supply policy. When access to a primary care provider is lacking, subspecialty care may be the only care available for some individuals. In my practice experience, past efforts to reduce subspecialty services inevitably have brought this added dimension of discomfort and suffering to some.

Within this framework, it is an essential concept that no physician in a medical practice provide both generalist and subspecialist services. The range of tasks and responsibilities assigned to different groups of physicians should seek to make optimum use of differentiated knowledge and skills in practice. A “hybrid” medical practice that provides a blend of primary care and subspecialty services is socially beneficial when there is an overall shortage of physicians. When there is an adequate total supply of physicians, however, it has deleterious quality and cost considerations. Among other things, it is a question of subspecialists’ trying to do as much subspecialty care as they can while they carry out a primary care role.23

Subspecialty care on a referral basis. To avoid the kind of deprecation of the scope of primary care that has occurred in the subspecialist-dominated U.S. health system, the self-referral of patients to a subspecialist should be discouraged. Although quality of care is the primary consideration, the total cost of care likely will be reduced if all but emergency subspecialist care is predicated upon referral of the patient by a primary care physician, as in the United Kingdom. In the care of referred patients, the dual roles of subspecialists, for consultation and continuing care, must be clearly delineated in the context of a gradation of complexity of problem and services.24

When incomplete and inconclusive scientific evidence allows for more than one appropriate care protocol, medical decision making is heavily influenced by social, political, and economic considerations.25 Given the large number of these clinical situations in which one or more subspecialists is a participant, it is not surprising that the approach taken by different groups of physicians may reflect disciplinary differences in the norms of care.26 For example, the indications for carotid endarterectomy in many communities tend to be very different among neurologists and vascular surgeons.

In brief, physicians tend to do in practice what they have been trained to do, given the necessary technology. I would suggest that a well-trained primary care physician, who is likely the provider most knowledgeable about a patient’s longitudinal medical history, attitudes toward illness and care, and psychosocial profile, is generally in a position to weigh the relative benefits and risks among several proposed patient care protocols.
Separation of generalist and subspecialist payment mechanisms. The complexities of the subject of physician compensation are beyond the scope of this Commentary. Within the context of this discussion, however, it seems appropriate to note that a physician payment scheme that has the same base for generalists and subspecialists creates distortions in service provision, and is not supportive of the central role of primary care in medical care delivery. (A distinction is made here between the base on which compensation is made, and the process by which the level of compensation per unit of that base is determined, after Uwe Reinhardt.27)

For example, if generalists and medical subspecialists are both paid fee-for-service, then the latter group of physicians will tend to expand the range of tasks and responsibilities undertaken, as has occurred in the recent past, even where such activity is of unproven value.28 This trend is further enhanced when the level of compensation of the subspecialist is higher than that of the generalist for a similar service, as is usually the case.

Likewise, if generalists and medical subspecialists are both paid on a direct capitation basis, as in a traditional HMO, then it is the former group of physicians whose “productivity” (for example, the number of patient encounters per hour) will increase by greater use of subspecialty services of questionable relevance. Clearly, one way for a generalist to end a lengthy patient encounter is to refer the patient to another physician. It is a question of the much greater time required for the primary care provider to explain, reassure, and counsel a patient with, say, chronic headache, than to arrange a consultation with a subspecialist.

Compensation of both groups of physicians by salary, as now occurs among some full-time clinical faculty in a medical school, tends to encourage physicians to perform nonclinical activities and to shuttle as many patients as possible to other physicians. This physician behavior is often labeled by practitioners, pejoratively, as the “dumping syndrome.”

It would seem that, if one seeks to preserve an optimum scope and capacity of primary care and to foster a health personnel mix composed of proportionally fewer subspecialists and more generalists, a different compensation base for different groups of physicians is beneficial. In my view, the “invisible hand” of the medical marketplace will work in the public interest most efficiently if generalists are paid fee-for-service and subspecialists are paid on a different base, depending upon practice organization and the institutional arrangements that convert patient expenditures into physician incomes. In any event, the process of uncoupling the generalist and subspecialist payment mechanisms should serve to make primary care practice relatively more attractive to medical students and young physicians. It is an essential component of such a
framework that no physician function both as generalist and subspecialist in practice.

Conclusion

It is not necessary to bespeak an “oversupply” of physicians to note the distortions and imbalances in the delivery of medical care, and the overt gaps in care, that occur because the number of subspecialists and generalists is out of proportion to the health needs of the entire population to be served. Among the medical subspecialties, a wasteful competition with generalist medicine has emerged, and results in excessive subspecialty services of questionable relevance and quality, as well as inadequate primary care. I have put forward three proposals to help remedy this situation. Taken together, these measures will be a step in the direction of stability.

NOTES

13. Menken, “Consequences of an Oversupply of Specialists.”


18. Kurtzke et al., “Neurologists in the United States.”


23. Menken, “Consequences of an Oversupply of Specialists.”


28. Menken, “Consequences of an Oversupply of Specialists.”