Commentary

The United States Endocrinology Workforce: A Supply-Demand Mismatch

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The shortage of clinical endocrinologists in the United States has become apparent to patients seeking appointments, hospital administrators, and private practices seeking to hire endocrinologists; physicians referring to endocrinologists; and the pharmaceutical industry, healthcare insurers, and physician recruiters. The difficulty in accessing diabetes care has appeared recently in the front pages of the *New York Times* and *Philadelphia Inquirer* (1, 2).

The endocrinologist shortage has impaired access to care by patients with diabetes, obesity, metabolic syndrome, lipid disorders, thyroid nodules, thyroid cancer, osteoporosis, pituitary disease, adrenal disease, menopausal symptoms, and reproductive disorders. It is standard to encounter waits of 3–9 months, and many endocrinology practices are closed to new patients. In this brief commentary, I provide an overview of the supply and demand issues surrounding the clinical practice of endocrinology.

The Demand Side

In the United States, there are approximately 6000 hospitals (www.aha.org). As a result of payer incentives and regulatory pressures (*e.g.* diabetes quality improvement programs), many hospitals now believe that they require the services of at least one full- or part-time endocrinologist. Indeed, many would see two endocrinologists as a minimum. Of course, some large medical centers have 20–40 endocrinologists, with a significant component of their combined efforts devoted to clinical care. One might speculate that these hospital responsibilities nationwide might require several thousand endocrinologists to fulfill.

In addition, there are many solo practices, multi-practitioner endocrinology and diabetes practices, or multidisciplinary subspecialty practices with need for an endocrine specialist. For example, some cardiology practices are now hiring endocrinologists to manage diabetes, metabolic syndrome, and lipid disorders to provide secondary coronary risk reduction. This also allows the cardiologists in the group to focus on more remunerative procedures. Although these private practice slots are difficult to quantify, they might account for as many as 2000 slots nationally, an average of 40 per state.

Academic medical centers are searching for M.D. endocrinologists to perform academic endocrinology services, ranging from administrative and teaching positions to research positions. Again, these numbers are hard to gauge accurately, but some 1500 members of The Endocrine Society self-describe themselves as being primarily academicians.

Finally, the pharmaceutical industry is constantly looking for M.D. endocrinologists to support their osteoporosis, women's health, and diabetes/obesity/lipid programs, both for their sales and marketing and their basic and clinical research operations. As with the other categories, the precise number of such slots is difficult to obtain but may be several hundred positions.

Thus, if one adds the number of hospital-based, private practice, academic, and pharmaceutical industry positions, there might be as many as 7,000–10,000 positions available for clinically trained M.D. endocrinologists in the United States. Furthermore, this back-of-the-envelope estimate does not consider the number of endocrinologists who may choose to work only part-time.

Another way to look at demand is to examine the numbers of patients in the United States with diabetes (20 million), osteoporosis (12 million), and thyroid nodules/cancer (12 million), collectively representing 44 million people. Furthermore, endocrinologists could contribute to the care of the sizable populations with metabolic syndrome, pituitary disease, adrenal disease, male and female reproductive disorders, and postmenopausal women, not to mention the 150 million Americans who are obese or overweight (>50% of the U.S. population). Obviously, not every one of these individuals unequivocally requires an endocrinologist, but this catalog of

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Abbreviation: ABIM, American Board of Internal Medicine.

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endocrine and metabolic disorders' prevalences makes the point emphatically that these diseases are highly prevalent, and none are becoming less common. It is also important to understand that there is a difference between clear evidence-based need for subspecialty care and market-driven need for an appointment with an endocrinologist. In a society in which better-informed patients are allowed to self-identify the need to see a subspecialist, many obese, hirsute, diabetic, menopausal, osteoporotic, and hyperlipidemic patients simply demand to see an endocrinologist.

It is important to recognize that this demand for endocrinologists and their services will continue to increase dramatically over the next decade. Diabetes and obesity are the epidemic of our generation. For example, the United Nations in 2007 established an annual Diabetes Day (3) to recognize the global impact of this problem. Osteoporosis is also increasing in frequency as the population ages (4). Thyroid cancer detection is increasing in frequency (5). Moreover, payer and regulatory factors, such as pay-for-performance and diabetes quality improvement programs, are driving patients from generalists to endocrinologists. Public awareness campaigns are also driving patients to seek endocrinology care, such as the Surgeon General's Report on Osteoporosis (4) and direct-to-consumer advertising for drugs to treat diabetes, osteoporosis, hyperlipidemia, and erectile dysfunction.

The Supply Side

The supply of M.D. endocrinologists in the United States is clearer. In 2006, according to the American Board of Internal Medicine (ABIM), there were 5341 board-certified endocrinologists in the United States (www.abim.org). Their average age was 49 yr in 2002 (6) and is likely higher now. Approximately 1500 of these individuals are not clinical care providers, instead performing primarily research, administrative, teaching, or pharmaceutical industry activities. Thus, there are approximately 4000 M.D. endocrinologists available in the United States whose primary focus is to provide clinical care.

With regard to training of new clinical endocrinologists, the ABIM and Accreditation Council for Graduate Medical Education report that there are 122 accredited M.D. endocrinology fellowships in the United States (www.abim.org; www.acgme.org). This is reduced from the 140 such training programs existing in 1996. Thus, despite the growth of the need for endocrinologists, the number of training programs in the United States to train medical doctors in endocrinology has declined over the past decade.

At the same time, the number of fellowship candidates seeking to enter these 122 endocrinology training programs has recently increased, from 185 in 1996 to 263 in 2005 (www.acgme.org). These figures agree nicely with the national ABIM Endocrinology, Diabetes, and Metabolism board passing rates, which are in the 200/yr range (www.abim.org). Of these, 80% are estimated to remain in the United States (6), generating only 160 new endocrinologists per year to meet all of these demands.

The ultimate allocation of these 160 endocrinologists is unknown. Many remain in the region of their training programs, either in academia, practice, or industry.

Overall, there appear to be only one half the endocrinologists required to the fill the needed positions in the United States. Demographic, disease prevalence, regulatory, and patient expectation trends will increase the requirement for endocrinology care, a need that the addition of only 160 graduates yearly entering the job market will fall far short of fulfilling. Seen another way, there are some 4000 M.D. endocrinologists to care for the approximately 25–100 million patients who might reasonably wish to be seen by an endocrinologist. This means that the majority of rural and suburban regions in the United States have no practical access to these trainees, as is the case with cities that lack endocrinology fellowship training programs.

Thus, there is an enormous mismatch between the supply and the demand for the services of clinical endocrinologists. This mismatch will expand rapidly in the next decade. This mismatch has a large impact on the access of patients to expert and appropriate healthcare and on U.S. academic and pharmaceutical industry-based research efforts.

Efforts are urgently needed to analyze these forces in greater detail, to enhance the visibility of this problem to the public and the government, and to identify solutions that could avoid a workforce shortfall that will have enormous consequences for public health. Examples might include requiring hospitals with endocrinology training programs to fund clinical fellowship training slots; requiring agencies such as the Accreditation Council for Graduate Medical Education and Residency Review Committee to streamline the accreditation and management of endocrine fellowships; augmenting federal and private third-party payors' compensation for endocrinologists to make it competitive with other specialties; appropriate tracking and attribution by hospitals of endocrinology-derived downstream revenues to endocrinology departments; increasing training for internists and family practitioners in diabetes and obesity management and prevention; providing waiver visas for international medical graduates who wish to practice endocrinology in the United States; expanding the numbers, training, and deployment of nurse practitioners, physician assistants, and certified diabetes educators; providing third-party payment for telemedicine services to underserved areas that lack an endocrinologist; and broad public health and regulatory approaches to diabetes and obesity prevention programs, analogous to the tobacco settlement used to reduce cigarette smoking. Many additional approaches are both plausible and possible.

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