The U.S. Physician Workforce: Serious Questions Raised, Answers Needed

We all have a stake in the size of the physician workforce. With too few physicians, access to care will be compromised; with too many, there will be strong pressures to overconsume health services. Increasing the production of U.S.-trained physicians by expanding physical resources of medical schools and creating new residency and fellowship positions will be costly and will have delayed, long-lasting effects on the supply of physicians’ services. According to those who believe that physicians increase the demand for their own services, every additional physician would generate added health care costs for the length of a career, which now averages about 30 years. These increased expenditures would dwarf the short-term costs of expanding our capacity to train physicians.

Because new graduates are a small fraction of the total physician workforce, the supply of physicians would change little in the short run, even if it were possible to expand the number of training positions instantly. In an article in this issue (1), Richard Cooper forcefully argues that this delay is an important reason to take immediate action to increase the production of physicians. He projects that the United States will have 200,000 fewer physicians than we need in 2020. We agree that demographic and economic trends could increase the demand for physician services in the coming years, but we also believe that his forecast contains far too many uncertainties to serve as the basis for taking immediate action. We think that Cooper’s analysis does not take account of important factors that could change the need for large increases in physician supply. In this commentary, we discuss the potential roles of a healthier aging population, changes in government policy, new technology, physician-induced demand for health care, and changes in the price of health care.

Cooper’s concerns about future shortages rest on the conviction that both an aging population and rising economic well-being will increase the demand for physician services (2). A large literature reinforces Cooper’s claim that a nation’s economy drives its demand for health care (3, 4). Furthermore, in the United States and other nations, health expenditures and the number of physicians increase as the economy expands. Cooper bases his projection of a physician shortage of 200,000 largely on the historical relationship between the size of a nation’s economy and the size of its physician workforce. He implies that this historical relationship is the “right” one for maximizing the health of the nation. He seems to believe that the past relationship between the number of physicians and national wealth (“what is”) is “what ought to be” in the future.

Cooper’s model for predicting future physician requirements treats the critical determinants of the “right” number of physicians as a black box. His model, like many others, fails to distinguish between the supply of and demand for physician services, and it fails to recognize the important role of price. People who can’t agree on the definition of the “right” number of physicians can agree on the “wrong” number: one that causes either shortages or surpluses of health care. People use the terms “shortage” and “surplus” loosely, but the standard economic definitions are clear: A shortage exists when there is an unsatisfied demand, which occurs when the quantity of a good or service supplied is less than what people would be willing to buy at the current price. Long waits for elective procedures and for office visits are manifestations of shortage. Conversely, a surplus occurs when there are more willing sellers than buyers at the current price. Unless the demand for physician services is completely independent of price, describing a quantity as too low or too high has no meaning except in relation to its price. The debates about the adequacy of the physician workforce have largely failed to consider price along with quantity. Thus, to address future workforce needs, we must ask how demand and supply will each change and whether price shifts will prevent shortages and surpluses from developing.

Although Cooper’s belief that economic forces increase the demand for physician services has considerable support from published research, other factors may reduce demand. A particularly important unknown is whether future cohorts of elderly Americans will have as much disease and disability as past cohorts. According to some evidence, older people are healthier (5, 6) and less disabled (7) than past cohorts. Changes in health care financing may also change the future demand for physician services in ways that we cannot fully anticipate.

The effect of technologic innovation is probably the most important unknown in projecting future demand for physician services. New health technology could increase or decrease the demand for physician services. For example, a new operation would require a surgeon to perform it, which might increase the demand for surgical services—at least in the short term. But in the long term, the new procedure could obviate the need for other forms of medical care, leading to an overall reduction in the demand for physician services by substituting for them. The direction and nature of technologic change are not entirely predictable, but inventors and investors everywhere are aware of the large financial rewards awaiting breakthroughs in prevention and treatment of diseases. Some of their innovations will probably reduce rather than increase the need for physician services. With the explosion of genomics and biotechnology and other technologies, we shouldn’t simply use the historical effect of new technology on demand, as
seen in the past 70 years, as the basis for projecting the future need for physician services.

If, as many believe, physicians induce demand for their own services, policies to increase physician supply can have far-reaching effects. The concept of supply-induced demand is controversial, but strong evidence shows that demand and supply interact in unusual ways in medicine. For example, higher per capita health expenditures occur in regions with more hospital beds and more physicians (8, 9). Studies of these phenomena do not prove that increased supply causes increased demand. However, the circumstantial evidence is strong enough to raise the concern that increasing the supply of physicians could trigger an upward spiral of health care expenditures. The additional expenditures won’t necessarily buy better health (9–11). These plausible but unproven links between an expanded physician workforce and the future costs and outcomes of health care are an important reason to be cautious about triggering an expansion of physician supply.

The recent history of hospital supply is a cautionary tale for those who attempt to predict the future by simply extrapolating from past trends. Twenty-five years ago, we might have anticipated that the need for hospital beds would greatly increase, given the growing population and the high rate of technologic change in medicine in 1980. In fact, many changes—ranging from Medicare’s implementation of the Prospective Payment System, to changes in commercial health insurance that promoted reduced use of hospital care, to changes in practice that enabled physicians to shorten hospital admissions—led to a drastically decreased demand for hospital beds. We often think of hospitals as fixed resources whose supply does not adjust easily or rapidly, but the number of hospital beds per 100,000 population in the United States fell from 679 in 1975 to 349 in 2000 (12). Changes in financing that encouraged less use of the hospital created larger markets for innovative therapies that reduced hospital use; examples are same-day surgery and the use of growth factors for neutropenic patients. Just as new technologies helped reduce hospital length of stay, we can expect scientific discovery and an active investment sector to enable industry to develop solutions that require less physician effort.

In most markets, price can change rapidly to prevent shortages or surpluses by offsetting an imbalance between supply and demand. Health care is different because negotiated insurance contracts and administered prices in the Medicare program constrain how much and how quickly prices can respond to changes in supply and demand. Nevertheless, these buffering mechanisms don’t eliminate price adjustments in health care; they delay them.

In fact, recent reimbursement trends suggest that future markets for physician services will act more like conventional markets, despite the many barriers to price adjustment in health care markets today. Larger copayments and deductibles in employer-sponsored health insurance, the rise of “self-directed” health plans, and the health savings accounts legislated in the Medicare Modernization Act are manifestations of a trend to make patients take price into account in making decisions to seek care. If prices of physician services become more flexible, they can help to avoid shortages and surpluses of physician services by moderating the effects of demand and supply on one another. Thus, a relatively small supply of physicians should lead to rising prices, which should cause demand to fall to the point at which it is equal to the supply of physician services, thereby relieving the shortage of physicians. This example shows that the extent to which our system of health care financing allows price to play a moderating role in resolving shortages and surpluses is an important factor in deciding the “right” number of physicians. The example also raises the specter of price increases that impair access to care. Policymakers will have to take this possibility into account when they consider both changes in health care financing and initiatives to stimulate physician supply. For our present purposes, the uncertainty about the role of price in future health care markets is one more example of the difficulties in predicting the right number of physicians.

We need to pay attention to Dr. Cooper’s argument that population growth, an expanding economy, and declining productivity of the physician workforce make it important to plan for a possible physician shortfall. We also need to be cautious when we set targets for physician supply, despite the economic forces that may adjust for some of our mistakes. We know far too little about future changes in the supply, demand, and price of health care to conclude that we will be better off with 200,000 more physicians in 2020. As a country, we haven’t thought deeply about the content of health care and the role of physicians in 2050. Using the results of a simple workforce forecasting exercise to set targets for the future physician workforce can easily lead us to make costly mistakes with long-lasting repercussions. A greater supply of health care, including physicians, could easily push medical expenditures higher without producing better outcomes. Underestimating the future need for physicians could mean that care will be difficult to obtain and affordable only for the wealthy.

What, then, is a sensible policy toward the physician workforce in the United States? We have tried to show that many factors are likely to influence the future relationship between a nation’s economy and the “right” number of physicians. We need to think carefully about how these factors may change and how to use health professionals, including physicians, nurse practitioners, and physician assistants, more effectively. In short, we’ve barely begun to do the necessary homework before we start building new medical schools. Even when we have done our homework, increasing the supply of physicians gradually, in small increments—ones that would not require major new investments in capital or teaching personnel—is a prudent strategy.
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