Does Having More Physicians Lead to Better Health System Performance?

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THE US HEALTH SYSTEM FACES ONGOING CHALLENGES in addressing its shortcomings in access and quality.[1] Against a foreground of uneven and fragmented care lies a bleak background of unrelentingly accelerating costs. Although the problems of quality and costs are long-standing, several organizations have recently asserted that there is a new impending health care "tragedy"[2]: the physician workforce shortage. In contrast to the extensively documented problems of quality and affordability, the inference of a physician shortage rests on a less robust set of analyses. Assertions of a physician shortage warrant a critical examination because more physicians will compete for new resources against already well-documented health system needs.

From Surplus to Shortage

Ten years ago, the consensus was that there were too many physicians, particularly specialists, in the United States. In the 1990s, the Council on Graduate Medical Education (COGME) promoted policies to reduce the overall number of residency training positions while shifting more of these positions to primary care specialties.[3,4] Congress partially implemented these recommendations in 1997 by capping the number of residency positions funded by Medicare but did not enact legislation that would have fully reshaped the physician workforce to COGME's goals.

Cooper et al[5,6] challenged the surplus consensus, arguing that the supply of physicians per capita was historically and cross-sectionally correlated with the gross domestic product (GDP) per capita. If the United States failed to maintain this correlation in the face of an increasing GDP, the authors contended, individuals in the United States would perceive a shortage of physicians.[5,6] Based on projections of economic growth, Cooper et al called for the United States to increase the number of residency graduates by more than 10 000 annually.[2] Shortly after they published their analyses, COGME reexamined its own position and recommended a 15% expansion of medical school enrollment and a lifting of the Medicare graduate medical education funding cap.[7] The council cited the aging of the population and the increasing volume of physician visits per capita as factors increasing the demand for physicians; it also projected declining physician productivity because of more female physicians in the workforce working fewer hours and physicians overall seeking more balanced lifestyles. The COGME models predicted a difference between supply and demand of 90 000 physicians by 2020, about a 10% deficit. The Association of American Medical Colleges expanded on the recommendations from Cooper et al and COGME, calling for 30% more US medical school graduates annually coupled with additional federal funds to support more residency training positions.

These calls have been met by medical schools' plans to expand enrollment by 17% by 2012.[8] Because the United States currently has about 25% more first-year residency positions than the annual number of US medical school graduates, increasing the number of US medical school graduates will likely simply displace the international medical graduates who fill many of these additional residency positions and not result in a net gain for the nation's physician workforce. The advocacy efforts of the Association of American Medical Colleges therefore now focus on promoting increased federal funding of graduate medical education.[2]

Relation of Physician Supply to Patient Outcomes

Notably lacking in this approach to workforce planning is any explicit statement of the expected patient or societal outcomes that would result from training more physicians. Neither the Cooper et al model nor the COGME model directly addresses the problems that drive patients' frustration with health care, making it difficult to evaluate the value of a workforce expansion.

An alternative approach is to agree on the goals for the performance of the health system and to consider how likely this performance would be affected by investment in more physicians per capita as opposed to other types of investment in the health system. This approach avoids viewing historical correlations or current usage patterns as normative at a time when society is disappointed with the health care status quo.

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Improvements in the following domains are the desirable ends of workforce policies and initiatives: access to care when it is wanted and needed, care that is technically excellent and personally compassionate, care that improves the health and well-being of patients and populations, and care that is affordable to the patient and society.

What is the evidence that these outcomes are sensitive to physician supply? The inconvenient truth in workforce planning models is that research shows a weak link between patient outcomes and physicians per capita, with the exception of studies of primary care physician supply. Health care regions are remarkably adaptable to 2- and 3-fold differences in overall physician supply across similar populations, achieving comparable outcomes despite large variation in supply. The 10% "shortfall" in physicians per capita in 2020 predicted by COGME and the Association of American Medical Colleges is dwarfed by the current 200% difference in the supply of physicians across hospital referral regions, adjusted for differences in population age and sex.[9] The wide range in physician supply across these regions is not explained by a few outlier regions that have very few physicians, but rather by the large variation in physician supply at levels well above the minimum threshold that qualifies communities for federal designation as physician shortage areas. What can be learned from studying the marked variation in physicians per capita?

Differences in patient needs do not explain variation in physician supply across locales. For example, the age-sex adjusted regional supply of cardiologists is unrelated to the incidence of acute myocardial infarction among Medicare beneficiaries.[10] The Macon, Georgia, region is in the top quartile of acute myocardial infarctions per Medicare beneficiary but has a per capita supply of cardiologists in the lowest quartile. In contrast, the Arlington, Virginia, region has one of the lowest rates of myocardial infarction and a high supply of cardiologists. At the other end of the age spectrum, the supply of neonatologists is not greater in regions where newborns have a higher incidence of low birth weight, prematurity, or any other measure of neonatal risk suggesting a greater need for neonatologists.[11] To date, no study has reported that variation in physician supply is explained by patient needs or preferences. In fact, studies show just the opposite: physician supply tends to be lower in communities with high proportions of minority and low-income residents with greater health needs,[12] a pattern of resource distribution dubbed the "inverse care law."

The distribution of physicians may not be fair, but perhaps patients benefit if they live in places with more physicians. Studies examining outcomes associated with higher supply demonstrate that although a very low supply of physicians is associated with higher mortality, once supply is even modestly greater, patients derive little further survival benefit.[13-16] These findings have been confirmed in a study of cohorts of elderly patients with chronic disease receiving care at academic medical centers.[17] Rates of clinical physician full-time equivalents per patient in the last 6 months of life varies by more than 100%. Patients receiving end-of-life care at UCLA Medical Center receive the efforts of 16.9 physician full-time equivalents per 1000 patients, whereas patients at Strong Memorial Hospital in Rochester, New York, receive the efforts of only 8.1. These are similar patients with the same outcomes, but there are large differences in patterns of care and use of physician resources.

Studies that examine other outcomes have reached similar conclusions. Medicare beneficiaries residing in areas with high physician supply do not report better access to physicians or higher satisfaction with care. Measures of technical quality, such as prescribing of β-blockers after myocardial infarction, do not show better results in regions with more physicians[16] or at academic medical centers characterized by particularly high physician labor input.[18]

These studies should not be misinterpreted to mean that physicians are unimportant. Appropriate medical care can provide important beneficial effects for patients and populations. But the number of physicians is just 1 factor within complex environments that include other health care workers and the way in which microsystems of care are organized to deliver care. Higher physician supply per se does not amount to better access, quality, or outcomes.

Lessons From Previous Growth in Physician Supply

Past experience shows that further increases in the number of physicians per capita will do little to redress the inverse care law that governs the location of physicians. Between 1979 and 1999, the per capita supply of physicians increased by 51%, but regional differences in physician supply changed little. For every physician who settled in a low-supply region, 4 physicians settled in regions with already high supply.[9] Increasing overall supply is a blunt instrument for increasing supply in underserved communities, a need better addressed by focused reforms of medical education and financial and other practice incentives to change physician settlement patterns.

Even with a lack of evidence of clear health benefit from higher physician supply, might it be prudent for the nation's health planners to hedge their bets with respect to the size of the physician pipeline? Increasing the number of physicians entering the health care system requires years of investment in training programs, making it difficult to precisely titrate physician supply. Is there any harm in overshooting the mark?

The consequences of further growth can be predicted by the patterns of care seen in settings with a high physician supply. The care in these health systems is rife with problems. End-of-life care for elderly patients with chronic illness is most telling with high rates of hospitalization, high use of intensive care units, and many different physicians caring for each patient in an uncoordinated manner.[17,18] Prac-

tices in these high-supply regions are much more likely to consist of solo or small groups of physicians.[19] Care in these regions is very expensive, primarily because patients are receiving high amounts of hospital-based specialty services. This disordered, expensive care is not harmless for patients or populations.

The inconvenient truths of physician supply and patient outcomes make it doubtful that failure to increase the number of physicians per capita will amount to a tragedy in health system performance. What is troubling is the failure to learn from the existing variation in health care resources and outcomes across regions and systems of care and to recognize how better outcomes are often achieved with moderate resources in primary care–oriented systems.

Exception of Primary Care

One of the most durable findings from studies of physician supply is that populations tend to do better in regions and health care systems emphasizing primary care. Although some analyses indicate that simply a greater supply of primary care physicians across regions is associated with better outcomes,[20-23] the organization of care may be just as important. Research suggests that health systems with primary care as the foundation of care provide the best outcomes at the lowest costs. In these primary care–oriented systems and regions, Medicare beneficiaries have fewer specialists involved in an episode of care and more visits with primary care physicians, spend fewer hospital days in intensive care, and have lower health care costs. Such high-performing health care systems include prepaid group practices, integrated delivery systems in fee-for-service payer environments, and other models organized around primary care.[17]

Conclusion

Improving health care in the United States requires deliberate, evidence-based decisions about additional investments in the health care system. Many types of care have been proven to be effective in improving outcomes but remain incompletely implemented.[24] Insurance coverage for children is known to improve the accessibility and quality of children's health care.[25] A primary care medical home that provides patient-centered care over time remains underfinanced.

Investing in a major expansion of the physician workforce is a distraction from what has already been shown to be effective. Additional government appropriations would be better spent on providing coverage to uninsured children and reforming Medicare physician payments to shore up the collapsing infrastructure of the primary care medical home than on a carte blanche increase in medical education funding. If the goals for a health system are access, quality, better outcomes, and efficiency, indiscriminately aiming for more physicians per capita is unlikely to move the system toward better performance.

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