SOCIETY OF ACTUARIES

Article from:

The Actuary

October/November 2011 – Volume 8 Issue 5

DOCTORS, NURSES AN

WILL THERE BE ENOUGH FOR OUR AGING

D HOSPITALS

POPULATIONS? LIVING TO 100

THE THIRD IN THE SERIES FROM THE 2011 LIVING TO 100 SYMPOSIUM, THIS ARTICLE EXAMINES THE GROWING CONCERN ABOUT DOCTOR TO PATIENT RATIO.

BY RONORA STRYKER WITH CONTRIBUTIONS FROM WILLIAM PECK, DOUG ANDREWS AND NOREEN SIBA

OVER THE PAST YEAR, I have been an active participant in the U.S. health care system having experienced a long hospital stay and numerous follow-up physician visits. I am fortunate to live in an urban area where I have access to many providers. When there were times I could not get in to see a doctor when I wanted, I was usually referred to other physicians for treatment.

When I share my health care experience with my family members, often I discover that they do not share my views. Many of my family members live in less populated areas where they talk about traveling long distances to see a specialist or complain about the wait times needed to see their physician or have a medical test done at the local hospital.

Given my family's mixed health care experiences, one of the highlights for me at the 2011 Living to 100 Symposium was a session on the demand for and supply of health care providers in developed countries given the increasing aging population. Among the questions addressed by the presenters include:

- Is there currently a shortage of providers?
- What factors influence supply?
- What might the delivery of health care look like in the future and will there be a provider shortage in the future?
- What changes to provider supply are countries considering to meet expected demands?

This article summarizes the three country viewpoints that were provided by the distinguished panel of:

Canada: Doug Andrews, FSA, FCIA, FIA, senior lecturer at the University of Southampton, who is a member of the Canadian Institute of Actuaries' Health Committee;

United Kingdom: Noreen Siba, managing director, International Longevity Centre-UK; and

United States: William Peck, M.D., Alan A. and Edith L. Wolff Distinguished Professor of Medicine and director for the Center for Health Policy at Washington University.

CANADA VIEWPOINT

Canada is in the midst of a dramatic demographic shift. Currently only 13 percent of the total population is over age 65. However, within 20 years, this figure is expected to climb to 20 percent. Given the demographic change and increasing life expectancy, the demand for health care services is increasing. Yet, Andrews did not offer a definitive answer to whether there would be enough medical providers to meet the health care needs of the aged as there are many factors influencing supply. He identified the following factors which may cause demand to exceed supply.

Currently in Canada there are 1.95 physicians and 10 nurses per 1,000 patients. While the number of nurses is probably adequate, there might already be a physician shortage as two physicians per 1,000 patients is considered to be a sufficient level.

Surveys have shown that Canadians want shorter waiting times for health care services and are even willing to pay in order to not have to wait as long. So continued pressure on governments or the provincial health plans to decrease wait times could impact the demand for and supply of services. In fact, governments are currently examining what are considered appropriate wait times.

Canada has a very large geographic mass, which increases the difficulty in delivering health care on a uniform basis to all the populations. While access to care is good in the four large urban centers, it varies considerably in other parts of the country. How medical services get distributed across the country is a consideration for determining whether supply is sufficient, but it is likely that certain rural parts of the country will be underserved.

However, Andrews went on to identify a number of ways in which demand and supply imbalances may be addressed.

The increase in the number of physicians and nurses is impacted by government support. An increase in governmental spending on medical schools could increase the supply but it is difficult to measure the magnitude. Even though the Canadian government reduced funding levels in the early 1990s, Canada has not experienced a large reduction in the number of physicians. There is some evidence, however, that government might be increasing spending as some medical schools have reported an increase in the number of graduates and some universities

are requesting the right to establish medical school programs. In addition some medical schools are considering modifying their curriculum so that individuals can graduate in three years instead of four.

Another factor influencing the number of physicians in Canada is emigration. Doctors that are trained in Canada often migrate to the United States. There have been articles recently indicating that the trend might be changing. The articles have reported that there are not as many physicians as in the past going to practice in the United States and that physicians are actually starting to return to Canada to practice.

Moreover, the immigration of physicians could also impact the supply. Canada has experienced high immigration in recent years. A number of immigrants are qualified health professionals in their home countries but are not eligible to practice in Canada. The licensing of qualified immigrants to perform some medical services on a quicker basis would increase the number of physicians. Currently the licensing process for immigrant physicians is rigorous and involves working with a licensed Canadian provider and writing a series of exams.

Besides increasing the number of physicians to meet the increasing health care demands, there are other actions that may increase services provided. Health care delivery is likely to change in the future. More and more nurses may be trained to provide services that have been traditionally performed by physicians. Recently, Canada had the first graduation of specialty nurses that can fulfill some of the services that a general practitioner physician does. Even though they did not have trouble being placed within the health care system, it is yet to be seen if physicians are willing to release some of their responsibility to them.

Another change being considered is having private alternatives to the medically necessary services covered by the provincial health plans. While this may not increase supply, it may help address some of the urgency issues.

Another idea to make the system more efficient is to reduce dependence on fee-for-service medicine. As the structure changes away from fee-for-service, there may be more emphasis on delivering preventative care.

Lastly, having more 24-hour services available through group practices or other providers might make the system more efficient. Currently Canadians typically have to go to the emergency room, which is often an expensive way to use valuable resources and creates the appearance of shortages.

UNITED STATES VIEWPOINT

(As provided in Dr. Peck's own words)

Many factors contribute to the overall demand for health services, including among others population growth, advances in diagnostic and therapeutic technology, the predominant approaches to insuring for and providing health care services, and the burden of illness in society, particularly chronic disease. It is the older population that is particularly prone to chronic illness.[1] A significant percentage of elderly patients have multiple chronic illnesses—20 percent have as many as five.[2] Chronic illnesses are responsible for as much as 80 percent of health care expenditures. The first baby boomers become 65 years old in 2011; baby boomers will significantly expand the elderly population and demands for clinical services.

By increasing the insured population, health care reform (the Patient Protection and Affordable Care Act (PPACA)) will stimulate demand as well. It mandates health insurance for all Americans (unless the courts find this law unconstitutional). An estimated 32 million previously uninsured individuals will

receive subsidies for private insurance or become Medicaid-eligible.

The availability of America's medical work force, physicians and other health professionals, must satisfy the high and rising demand for services. However, there is strong evidence for a current numerical shortage of physicians that is predicted to worsen over the next 10 to 15 years.[3,4,5] Whereas shortages have emerged in many medical specialties and subspecialties, the shortage of primary care physicians (PCPs) who care for adults has received the most attention—family practitioners, general internists, geriatricians. Other specialists provide less frequent primary care services. PCPs offer first contact and ongoing care for patients with a wide variety of conditions, orchestrate and coordinate their subsequent management long term, and care for the majority of patients with chronic illness. The bulk of evidence indicates that patients fare better when they have a PCP.[6,7,8,9]

Some regions appear to have a sufficiency of PCPs and even an excess, at least as judged by documented overuse of health care facilities.[10] However, there are severe regional shortages now, for example in rural America, and it is most likely that a nationwide shortage will emerge in the future, absent corrective action.

The current and expanded future shortage of PCPs has multiple causes. There is a substantial, progressive decline in the number of medical school graduates pursuing PCP careers since the late 1990s,[5,11,12] et al., although a small increase has appeared in the past several years. The average PCP retirement age and the hours spent in actual practice may be declining as well.[13,14]

Among the major contributors to this decline are money, an unsatisfying practice environment, an educational process that favors other specialties and other factors.[15,16,17,18,19,20,21,22]

The majority of American medical graduates carry significant debt—approximately 20 percent owe $200,000 or more.[23,24,25] Annual and lifetime earnings of PCPs are well below most other practitioners. Dealing with multiple insurance companies, each with its own time-consuming authorization, billing, collecting and appeals process contributes significantly to practice inefficiencies and dissatisfaction. Since the majority of PCPs do not have access to electronic records, they rely on time-consuming paper records to keep abreast of their patients.[26] PCPs are generally reimbursed on fee-for-service, which places the physician in the position of seeing more patients in shorter visits. Given these constraints, devoting sufficient time to the preponderance of patients with chronic illness requires more time and represents a very real challenge.

Lack of interest in the field, followed by financial challenges and the desire for a more controllable lifestyle are the main reasons for declining pursuit of PCP careers.[20]

Residency training, funded in large part by the federal government, is required for new graduates to practice medicine in America—and the number of residency positions has been capped for more than 10 years. America will not be able to mitigate the physician shortage until the number of positions is increased.[4,27]

Recognizing the emerging PCP crisis, medical schools have increased their class sizes, and new medical schools and Colleges of Osteopathy have opened.[28] Learning environments are being modified to enhance student interest in PCP careers. We continue to depend on international medical graduates to round out our medical work force. But the fixed number of residency positions virtually prevents overall workforce expansion.

PPACA addresses the shortage in multiple ways.[29] These include streamlining practices by supporting uniform and more rapid billing and collecting, pilot programs to test improved methods of reimbursement, continuing promotion of health care information technology, grants to enhance primary care education, federal loans for practices in underserved areas, increased Medicare payments of those pursuing primary care, support for the formation of improved PCP practice models such as medical (health) homes and accountable care organizations that will also improve patient care. Increasingly, hospitals and health systems are employing PCPs (and other specialists). These organizations can provide more effective and efficient practice environments—including access to electronic health records, availability of time-sparing physician assistants and advanced practice nurses, ready access to specialty and subspecialty care and other efficiency-promoting approaches.

It is impossible to predict how medicine will be practiced in 10 to 15 years. Advances in fundamental and applied medical science, new health care organizational entities, increased use of non-physician health professionals, expanded availability of sophisticated information technology and possible improvements in personal responsibility for health may limit the need for substantial workforce expansion.

UNITED KINGDOM VIEWPOINT

Unlike Canada and the United States, in the United Kingdom there is not as much uncertainty about a current or future physician shortage. Siba noted the U.K.'s National Health Service (NHS) is widely believed to be understaffed in comparison to other international health systems. While the number of doctors per thousand population has been rising steadily, the number remains below the Organisation for Economic Co-operation and Development (OECD) average. In addition, temporary or "locum" doctors are appointed to cope with the shortfall in the United Kingdom and the cost of hiring the doctors has increased substantially in the past few years.

Certainly the graying population is influencing the demand for services. By 2033, 23 percent of the population will be over age 65 and only 18 percent will be 16 and younger. The number of individuals over 80 will increase by about 75 percent than current levels. Given the increasing aging population, the current physician shortage, people's expectations for care, and increasing costs to the NHS system, there will not be enough doctors and nurses to cope with the shifting demographics. Without new funding sources NHS rationing of services and waiting lists will continue.

CERTAINLY THE GRAYING POPULATION IS INFLUENCING THE DEMAND FOR SERVICES.

In the United Kingdom older people's care is seen not just as a health issue but also as a social issue. While diseases like cancer are covered under NHS, a problem like dementia is seen also as a social ill so the care could be self-funded. To help address the needs of the population, NHS reform is being studied. A new Commission on the Funding of Care and Support has been established to define the care (health and/or social) to be provided in the future and suggest who will pay.

In addressing the supply and demand for health care providers, other questions need to be researched besides how to increase the number of providers. As populations age, do their increasing health needs have to be met just by increasing the number of health care providers, or alternatively looking at the role of formal and informal careers?

Studies in the United Kingdom have shown that medical practices employing the most registered nurses per number of patients often provide the best quality of care. Investigating the role and effectiveness of nurses in delivering more health care services is important and might lead to quicker service for individuals and cheaper health care costs overall.

Researchers recently investigated deaths of patients older than 80 that took place in U.K. hospitals. Among the findings included that in the majority of cases, patients were treated by very junior doctors without review by geriatric physicians; many patients were malnourished before they arrived in the hospital and while in the hospital received poor nutrition and had serious associated illnesses; and clinically significant delays occurred in one-in-five patients between admission and operation. This study might suggest that better training and organization might be an answer in meeting older people's health care needs. Certainly more research into the relevancy of changes into provider quality and quantity in obtaining sustainable improvements in the health and well-being of older individuals is needed.

Finally, the current U.K. health care structure focuses on acute health and social services with much less focus on prevention. Yet prevention medicine might be part of the solution to provider supply and demand. More research needs to be conducted on how

preventative care might impact health care need, cost effectiveness of delivering these medical services especially to the elderly, and how might it contribute to employment and overall well-being of individuals.

CONCLUSIONS

Meeting the increasing health care needs of aging populations does not have a simple solution. While increasing the supply of medical providers may provide better access to medical treatment, it does not guarantee the improvement in the overall health and well-being of individuals. Much remains to be done in addressing the increasing demand for health care. Certainly this is a great opportunity for actuaries to assist in finding solutions such as modeling future provider workforce populations and quantifying and measuring the financial impact of preventative care and changes to traditional health care delivery and financing. To gain a better understanding of the issues and challenges in addressing societal health care needs, I encourage you to read the transcript of this panel session published in the 2011 Living to 100 monograph available at *http://www.soa.org/2011-livingto100-mono*. A

Ronora Stryker, ASA, MAAA, is a research actuary with the Society of Actuaries. She can be contacted at *rstryker@soa.org*.

ENDNOTES

1. U.S. Census Bureau - Table 2a; Projected Population of the US, by Age and Sex: 2000-2050; 2004.
2. Wolff, J.L., Starfield, B., Anderson G. Prevalence, Expenditures, and Complications of Multiple Chronic Conditions in the Elderly. Arch. Int. Med. 2002; 162: 2269-2276.
3. Staiger, D.O., Auerbach, D.I., Beurhaus, P.I. Comparison of Physician Workforce Estimates and Supply Projections. JAMA, 2009; 302: 1674.
4. Kirch, D.G. The Coming Collision Between U.S. Graduates and GME Slots. Reporter (AAMC) 2011; 20; 2.
5. Results of the 2010 Medical School Enrollment Survey (Analysis); Center for Workforce Studies. Association of American Medical Colleges; June, 2011.
6. Starfield, B., Shi, Leiyo, Macinko, J. Contribution of Primary Care to Health Systems and Health. The Milbank Quarterly, 2005; 83: 457-502.
7. Ferrer, R.J., Hambidge, S.J., Maly, R.C. The Essential Role of Generalists in Health Care Systems. Ann. Internal Med., 2005; 142: 691-699.
8. Friedberg, M.W., Hussey, P.S., Schneider, E.C. Primary Care: A Critical Review of the Evidence on Quality and Costs of Care. Health Affairs 2010, 29:5: 766-772.
9. Ricketts, T.C., Holmes, G.M. Mortality and Physician Supply: Does Region Hold the Key to Paradox? Health Serv Res. 2007; 42 (6 pt. 1): 2233-2251.
10. Fisher, E.S., Bynum, J.P., Skinner, J.S. Slowing the Growth of Health Care Costs—Lessons from Regional Variation, 2009; New Engl. J. Med; 360: 849-852.
11. National Resident Matching Program, Results and Data, 2009—available at *http://www.nrmp.org/data/advancedatatables2009.pdf*
12. Steinbrook, R. Easing the Shortage in Adult Primary Care—Is It All About Money? New Eng. J. Med. 2009; 360: 2696.
13. Brook, R.H., Young, R.T. The Primary Care Physicians and Health Reform, 2010; 303: 1555-1536. Shortage – Cooper, R.A., et al, Economic and Demographic Trends Signal an Impending Physicians Shortage. Health Affairs, 2002; 21: 140-154.
14. Staiger, D.O.; Auerbach, D.I., Buerhaus, P.I. Trends in the Work Hours of Physicians in the United States. JAMA, 2010: 747-.
15. Bodenheimer, T., Berenson, R.A., Rudolf, P. The Primary Care Specialty Gap; Why It Matters. Ann. Intern. Med., 2007; 146: 301-306.
16. Steinbrook, R., Medical Student Debt—Is There a Limit? New Engl. J. Med, 2008; 359: 2629-2632.
17. Hauer, K.E., et al. Factors Associated with Medical Students' Career Choices Regarding Internal Medicine. JAMA, 2008: 1154-.
18. Phillips, R.L., et al. Specialty and Geographic Distribution of the Physician Workforce: What Influences Medical Student and Residence Choices? Washington, D.C., The Robert Graham Center, March, 2009.
19. Steinbrook, R. Easing the Shortage in Adult Primary Care—Is It All About Money? New Eng. J. Med., 2009; 360: 2696-2699.
20. DeZee, K.J., et al. Effect of Financial Remuneration on Specialty Choice of Fourth-Year U.S. Medical Students, 2011. Academic Medicine; 86: 187-193.
21. Bodenheimer, T., Pham, H.H. Primary Care: Current Problems and Proposed Solution. Health Affairs, 2010; 295: 799-.
22. Weida, N.A., Phillips, R.I., Jr., Bazemore, A.W. Does Graduate Medical Education Also Follow the Green? Arch Int. Med. 2010; 170:389-390.
23. Beasley, J.W., et al. How Many Problems Do Family Physicians Manage at Each Encounter? Ann. Fam. Med., 2004; 2; 405-410.
24. The Physicians' Perspective: Medical Practice in 2008, The Physicians' Foundation Survey, Oct. 2008.
25. Morra, D. et al. U.S. Physician Practices Spend Nearly Four Times as Much Money Interacting with Health Plans and Payers Than Do Their Canadian Counterparts. Health Affairs, 2011; 30.
26. Dixon, R.F. Enhancing Primary Care Through Online Communication. Health Affairs, 2010; 29: 1364-1368.
27. Iglehart, J.K.; Health Reform, Primary Care and Graduate Medical Education. New Engl. J. Med.; 363 (6), 584, 2010.
28. Iglehart, J.K. Grassroots Activism and the Pursuit of an Expanded Physician Supply. New Engl. J. Med., 2008; 358: 1741.
29. Abrams, M., et al. Realizing Health Reform's Potential. How the Affordable Care Act Will Strengthen Primary Care and Benefit Patients, Providers and Payers. The Commonwealth Fund, Jan., 2011.