

## Chapter 1.2.6

### HEALTH OUTCOMES AND THE BALANCE OF PRIMARY CARE PHYSICIANS VS SPECIALISTS

**Tom E Norris**

*University of Washington, United States of America*

---

#### Introduction

Optimally functioning health care systems must comprise of adequate numbers of physicians<sup>1</sup>, the most advantageous proportions of specialists and primary care physicians, and their best possible geographic distribution. In much of the developing world, as well as in some developed countries, overall shortages of physicians create challenges for patients who need medical care, especially disadvantaged patients who lack financial resources.

In many countries where the general number of physicians is adequate, however, the ratio of primary care to specialty care physicians is unsatisfactory. Health systems with inadequate numbers of primary care doctors, coupled with excessive specialists, not only result in poor primary care and overall health outcomes, but also result in substantially higher costs. It means that many people do not have a personal primary care physician, resulting in inadequate preventive health services, scarce capabilities to manage chronic diseases, and deficient or chaotic organisation of referrals to specialty physicians. A system that has too few specialists is also inefficient, however, requiring primary care physicians to practice outside of their areas of expertise, thus disadvantaging patients. The optimal ratio has not been precisely determined, but a system in which at least half of the physicians are primary care doctors has been shown to have better health outcomes.

Over the last 65 years, the United States health system has evolved from having inadequate numbers of physicians, most of whom were generalists, to having adequate numbers of physicians, although characterised by excessive specialists, inadequate numbers of primary care physicians, and overall geographic maldistribution. The results of this unfortunate evolutionary occurrence have been very high costs coupled with unimpressive outcomes on almost all health metrics.

---

<sup>1</sup> A 'physician' here (and in North America more broadly) is another term for 'doctor' or general practitioner, while in countries like South Africa and Australia, a 'physician' is a specialist in internal medicine.

## **The case for primary care physicians**

Starfield and her colleagues have carefully reviewed the evidence for the hypothesis that adequate numbers of primary care physicians - defined as general internists, family physicians, and general pediatricians - are associated with better health outcomes (1). They considered a number of health metrics, including total and cause-specific mortality, low birth weight, self-reported health, and others. These metrics were examined with consideration of the linkages between the supply of primary care physicians and health metrics at different geographic levels in the United States (US).

### ***In the United States***

Starfield noted that Shi and colleagues (2,3) showed that those US states with the highest ratios of primary care physicians to population had better health outcomes for multiple causes of mortality, including heart disease, cancer, stroke, infant mortality, low birth weight, and self-reported health. These findings persisted even after controlling for the patients' socio-demographic measures and lifestyle factors. In 1998 Vogel and Ackerman demonstrated that adequate supplies of primary care physicians were associated with both longer life spans and fewer low birth weight babies(4). Starfield's work has catalogued a large number of increasingly sophisticated studies confirming that higher percentages of primary care physicians are positively associated with better health metrics.

2003 analyses reported by Shi and colleagues showed that, over time, the supply of primary care physicians in the US was significantly associated with lower all-cause mortality, whereas a greater supply of specialty physicians was associated with higher mortality. When the supply of primary care physicians was further disaggregated into family physicians, general internists, and pediatricians, only the supply of family physicians showed a significant relationship to lower mortality (5). In further exploration of this finding, Shi and colleagues demonstrated that the rate of stroke, the rate of low birth weight infants, and the rate of infant mortality are directly proportional to the number of primary care providers in an area (6, 7). In Florida, Campbell found that a one third increase in the supply of family physicians was associated with a 20% decrease in the mortality rate from cervical cancer. These changes were seen with increases in both family physicians and general internists, but they were not seen with increases in obstetrician-gynecologists (8).

Starfield and colleagues consistently found that more and better primary care resulted in better health metrics, lower all-cause mortality, and longer life expectancy. They calculated that an increase of one family physician per 10 000 patients, or a 12,3% increase, would result in a 5,3% improvement in overall health, or a decrease of 127 617 deaths per year in the US. (9). This finding clearly supports the notion that in the US, more primary care physicians, coupled with a larger proportion of primary care physicians present in the total count of physicians, would result in improved health outcomes.

### ***Internationally***

Studies of international settings have revealed similar findings to those seen in the US and have allowed comparisons between the health metrics in different countries based on their primary care physician workforces.

In an extensive time-series analysis of 18 industrialised countries, Machinko and colleagues found that the stronger a country's primary care orientation, the lower the rates were for all-cause mortality, all-cause premature mortality, and cause-specific premature mortality from several common diseases. This relationship persisted even after allowances were made for GDP per capita; total numbers of physicians; percentage of elderly; alcohol and tobacco consumption; and other population related factors (10).

Interestingly, the US scores over the time series rose slightly, although they were still low compared to the other countries. This was almost entirely due to increased participation of US patients in health maintenance organisations using a higher proportion of primary care physicians (11).

Much attention has been paid to the role of primary care physicians in dealing with populations with health disparities - and the findings have been similar. In socially deprived areas the number of primary care physicians per population, as well as the ratio of primary care physicians to the total number of physicians, has a direct bearing on the health of the population. Shi and Starfield found that income inequality and primary care were significantly related to self-reported health, but the overall supply of primary care physicians substantially reduced the impact of income inequality on self-reported health (12).

**Costs**

In addition to a clear relationship to better health and better health outcomes, the supply of primary care physicians is directly related to lower health care costs. Baicker and Chandra have shown a linear decrease in Medicare spending in the US, along with better quality of care, as the number of primary care physicians in an area increases. Conversely, the supply of specialists was associated with more spending and poorer care (13).

**Overall benefits**

Starfield has postulated that six factors may be responsible for the benefits seen with larger numbers and greater proportions of primary care providers:

1. greater access to needed services;
2. better quality of care;
3. a greater focus on prevention;
4. early management of health problems;
5. the cumulative effect of the main primary care delivery characteristics; and
6. the role of primary care in reducing unnecessary and potentially harmful specialist care.

The overall situation - based on the data that have been presented with regards to health care outcomes, costs, number of physicians, and ratio of primary care physicians to specialists - can be summed up in the following table:

**Table 1:  
Costs and effects of the distribution and types of physicians**

| <b>Number &amp; Type of Physicians</b>  | <b>Overall Health &amp; Health Metrics</b> | <b>Cost of Care</b> |
|---|--|---------------------|
| *Low physician to population ratio  | Decreased overall health                   | Low                 |
| *Adequate physician to population ratio<br>*Adequate proportion of primary care physicians<br>*Adequate proportion of specialist physicians | Improved overall health                    | Moderate            |
| *Adequate physician to population ratio<br>*Low proportion of primary care physicians<br>*High proportion of specialist physicians          | Decreased overall health                   | High                |

### ***The case of the United States***

One might wonder, then, why the situation in the US is quite different from much of the world which has good overall health and health metrics with reasonable health care costs as a result of having adequate numbers of physicians, coupled with proportions of primary care physicians to specialists.

The fundamental difference seems to be that in most countries, health care is a basic service provided by the government, while in the US health care is treated as a commodity that is mostly provided by businesses. In the US there are substantial economic rewards associated with becoming a specialist, particularly much higher salaries and prestige, compared to those associated with becoming a primary care physician.

Recently the overall cost of health care in the US, now nearing 20% of GDP, has forced both government and business to take a critical look at health care costs and quality. The situation is one in which health care costs are threatening to make the US less competitive in international business, and that may offer the incentive needed to catalyse a change in the overall US health care system.

### **Conclusion**

In summary, in order to have high quality affordable health care, people and nations need adequate numbers of physicians, with proper proportions of primary care and specialty doctors, coupled with geographic distribution that allows reasonable access to care.

A review of the data clearly demonstrates that the impacts on health, as well as health care costs, of a specialist based health care system, are negative. To avoid the negative impacts of specialty-based health systems, such as the current system in the US, health systems must be based on a firm foundation of primary care physicians.

## References

1. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *The Milbank Quarterly* 2005; 83(3): 457–502.
2. Shi L. The relationship between primary care and life chances. *Journal of Health Care for the Poor and Underserved* 1992; 3: 321–35.
3. Shi L. Primary care, specialty care, and life chances. *International Journal of Health Services* 1994; 24: 431-58.
4. Vogel RL, Ackermann RJ. Is primary care physician supply correlated with health outcomes? *International Journal of Health Services* 1998; 28: 183–96.
5. Shi L, Macinko J, Starfield B, Wulu J, Regan J, Politzer R. The relationship between primary care, income inequality, and mortality in the United States, 1980–1995. *Journal of the American Board of Family Practice* 2003; 16: 412–22.
6. Shi L, Macinko J, Starfield B, Xu J, Politzer R. Primary care, income inequality, and stroke mortality in the United States. A longitudinal analysis, 1985–1995. *Stroke* 2003; 34: 1958–64.
7. Shi L, Macinko J, Starfield B, Xu J, Regan J, Politzer R, Wulu J. Primary care, infant mortality, and low birth weight in the States of the USA. *Journal of Epidemiology and Community Health* 2004; 58:374–80.
8. Campbell RJ, Ramirez AM, Perez K, Roetzheim RG. Cervical cancer rates and the supply of primary care physicians in Florida. *Family Medicine* 2003; 35: 60–4.
9. Macinko J, Starfield B, Shi L. *Quantifying the Health benefits of primary care physician supply in the United States*. 2005. Unpublished manuscript.
10. Macinko J, Starfield B, Shi L. The contribution of primary care systems to health outcomes within Organisation for Economic Cooperation and Development (OECD) Countries, 1970-1998. *Health Services Research* 2003; 38: 831–65.
11. Weiner JP. Prepaid group practice staffing and U.S. physician supply: Lessons for workforce policy. *Health Affairs* (suppl.) 2004. Web Exclusives:W4–59.
12. Shi L, Starfield B, Politzer R, Regan R. Primary care, self-rated health, and reductions in social disparities in health. *Health Services Research* 2002; 37:529–50.
13. Baicker K, Chandra A. Medicare spending, the physician workforce, and beneficiaries' quality of care. *Health Affairs* 2004; W4:184–97. [content.healthaffairs.org/cgi/reprint/hlthaff.w4.184v1.pdf](http://content.healthaffairs.org/cgi/reprint/hlthaff.w4.184v1.pdf) (accessed 29 January 2014).

This article is a chapter from the **WONCA Rural Medical Education Guidebook**.  
It is available from [www.globalfamilydoctor.com](http://www.globalfamilydoctor.com).

Published by:  
WONCA Working Party on Rural Practice  
World Organization of Family Doctors (WONCA)  
12A-05 Chartered Square Building  
152 North Sathon Road  
Silom, Bangrak  
Bangkok 10500  
THAILAND



[manager@wonca.net](mailto:manager@wonca.net)

© Norris TE, 2014.

The author has granted the World Organization of Family Doctors (WONCA) and the WONCA Working Party on Rural Practice permission for the reproduction of this chapter.

The views expressed in this chapter are those of the author and do not necessarily reflect the views and policies of the World Organization of Family Doctors (WONCA) and the WONCA Working Party on Rural Practice. Every effort has been made to ensure that the information in this chapter is accurate. This does not diminish the requirement to exercise clinical judgement, and neither the publisher nor the authors can accept any responsibility for its use in practice.

Requests for permission to reproduce or translate WONCA publications for commercial use or distribution should be addressed to the WONCA Secretariat at the address above.



**Suggested citation:** Norris TE. Health outcomes and the balance of primary care physicians vs specialists. In Chater AB, Rourke J, Couper ID, Strasser RP, Reid S (eds.) *WONCA Rural Medical Education Guidebook*. World Organization of Family Doctors (WONCA): WONCA Working Party on Rural Practice, 2014. [www.globalfamilydoctor.com](http://www.globalfamilydoctor.com) (accessed [date]).