



Addressing Health Workforce Maldistribution: A Medical Service Proposal

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My article describes a policy proposal to meet physician shortages in severe health physician shortage areas (HPSAs) in the United States. It represents an independent project benefiting from the feedback of many reviewers and mentors. The idea for this paper emerged from our health ethics tutorial during a section focused on approaches to correcting physician maldistribution. My interest was immediately piqued. I approached our tutorial leader, Dr. Nir Eyal, and eventually decided to write a paper on the topic for submission in the Beecher Ethics Essay competition. While my paper was not selected, Dr. Eyal and I decided to edit the paper further for publication.

I was independently involved in the literature review; draft writing process and finalization of the final manuscript draft. All drafts, including the final submission, were written with extensive support from my mentors Dr. Eyal and Dr. Kasper. Towards completing a draft manuscript I spent between three to five hours every week intermittently over six months doing a broad literature review and compiling multiple sources of data. My search terms focused on physician maldistribution, international physician workforce policies, and the National Health Service Corps amongst others. In the final draft I included sixteen core papers and excluded over ten other papers. The included papers fit standards for quality of evidence, relevance, and updatedness while the excluded papers were lacking in one of these dimensions. The final draft benefited significantly from the mentorship and support of Dr. Nir Eyal, a Professor in the Harvard University Program in Ethics and Health. In particular Dr. Eyal, a researcher in human resource maldistribution himself, was instrumental in helping me identify legitimate scholarly sources describing medical service schemes globally. Dr. Eyal also provided invaluable feedback on several drafts helping them to more powerfully articulate the argument for a mandatory

medical service scheme policy for the United States. Specifically Dr. Eyal helped me uncover data related to the success of mandatory medical service programs from other countries and helped to draw parallels to the US context.

My scholarly paper also benefited from the review and suggestions of my mentor, Dr. Jennifer Kasper. Dr. Kasper is a pediatrician at MGH and Instructor and Chair of the Faculty Advisory Committee on Global Health at Harvard Medical School. With Dr. Kasper's support I was able to refine my scholarly project arguing for a medical service scheme further. She provided extensive comments on two separate drafts that helped me include missing elements to create a more thorough scholarly project. Specifically Dr. Kasper's comment strengthened descriptions of existing programs designed to meet the needs of underserved patients (i.e. the National Health Service Corps). She also helped me think through counterarguments of why international medical service schemes may not be transferrable to the US.

Scholarly Report submitted in partial fulfillment of the MD Degree at Harvard Medical School

Date: 28 February 2016

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Scholarly Report Title: Addressing Health Workforce Maldistribution: A Medical Service

Proposal

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TITLE: Addressing Health Workforce Maldistribution: A Medical Service Proposal

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Purpose: To review the literature on medical service schemes internationally and empirically evaluate their success in achieving more equitable health workforce distribution. Furthermore this paper seeks to use this information to frame a proposal for medical service in the US context.

Methods: A comprehensive database search was used to identify major studies providing data on comprehensive medical service schemes and their success in various countries. This information was used to evaluate what kinds of medical service schemes work and what kind of policy proposal would have merit in the United States.

Results: Based on data from over seventy countries spanning different income levels and human resource availability medical service schemes successfully redistribute physicians to areas they are needed. These policies furthermore seem to improve the health outcomes of local populations.

Conclusions: A medical service scheme requiring resident physicians in the United States to provide two years of primary care service in underserved areas has the potential to effectively increase access to healthcare and improve health outcomes in these areas.

A continuing challenge to providing quality health care for all Americans is health workforce maldistribution. This paper focuses on the uneven geographical spread of physicians. At the start of 2013 there were 5900 designated Primary Care Health Physician Shortage Areas (HPSAs), up from 2736 HPSAs in 1995.^{1 2} These communities of 20,000 or more have one or fewer doctors per 3500 individuals, a minimum threshold below which populations are significantly more vulnerable to poor outcomes from infectious and chronic diseases.³ About 7500 physicians would need to relocate to HPSAs to eliminate these critical physician shortages. This number has grown and is likely to continue to grow given that 16.4 million Americans gained health insurance through the Affordable Care Act either through the health exchanges, Medicaid Expansion or the age limit increase for young adults to stay under their parents insurance as of June 2015. Based on most recent census data in 2014, about 33 million Americans remained uninsured. Many of these Americans are expected to gain insurance through exchanges or Medicaid expansion over the next few years further raising the need for equitably distributed primary care physicians.

A Policy Proposal to Address Physician Shortages

This essay suggests a policy for the United States that exists in some form throughout the world: assigning second-year residents to an HPSA for two years as a board certification requirement. These two years will be built into residency programs at existing public healthcare sites and designed to maintain the current length of residency programs. Salaries for residents will be based on local cost of living and board certification will require each resident to fulfill the two year requirement. A matching process accounting for practice location preference and need for physicians would be used. This proposal holds significant

¹ Dowling, Patrick. "Health Professional Shortage Area, Health Status and Reform." Archives of Family Medicine 4.7 (1995): 677-79. Print.

² Primary Care Health Professional Shortage Areas (HPSAs) 2012". The Henry J. Kaiser Family Foundation. Primary Care Health Professional Shortage Areas (HPSAs), 2012. N.p., n.d. Web. 26 May 2013.

³ Kohrs, FP, Mainous AG III. The relationship of health professional shortage areas to health status. Implications for health manpower policy. Arch Fam Med. 1995; 4:681-685.

promise for meeting health care needs in the United States. Its potential as well as legitimate concerns are addressed below.

Medical Service Schemes Worldwide

More than seventy different countries have instituted compulsory service programs. These programs span low and high-income countries across all continents. The outcomes suggest medical service schemes have been successful in increasing public access to health care.⁴ Puerto Rico's compulsory service program increased the number of municipalities with a full-time doctor from 16 out of 78 to 78 out of 78.⁵ South Africa's compulsory service program resulted in better staffing in rural hospitals, shorter patient wait times and more visits to remote clinics by health workers. Thailand has narrowed urban-rural health worker disparities.⁶ In Norway, one and a half years of medical service are required for physician licensure and about a fifth of Norwegian physicians stay in their assigned communities.⁷ A comparable figure for the United States would mean significant redistribution of the physician workforce to under-supplied communities. For example, if across one year even ten percent of US residents decided to continue practice in their assigned communities that would add three thousand residents to HPSA zones. Though it is hard to assess what percentage of residents will choose to continue practice in their assigned communities, even small percentage shifts in physician distribution can make a huge difference.

What is the current policy approach to addressing physician shortages?

Currently the main public program attempting to increase the number of physicians in underserved Health Physician Shortage Areas (HPSAs) is the National Health Service Corps. This

⁴ "Compulsory Service Programmes for Recruiting Health Workers in Remote and Rural Areas: Do They Work?" WHO. N.p., n.d. Web. 26 May 2013.

⁵ Ibid 4.

⁶ Ibid 4.

⁷ Ibid 4.

program is essentially a loan repayment offer (or for those on minimal to no loans a scholarship incentive) for medical students committing to practice in HPSAs as board licensed physicians. Individuals matriculating at a US medical school and those about to graduate are eligible for the loan repayment or scholarship program. Matriculating medical students can have their medical school tuition, fees, room and board covered for the number of years they commit to serving as a primary care doctor in an HPSA. Graduating medical students can have their loans re-paid by NHSC in a similar fashion. Currently about 3,800 primary care doctors have been located to HPSAs through the NHSC and there are about 4,900 more NHSC jobs available in HPSAs that are unfilled⁸. While there has been a political call to increase the amount of funding for NHSC which the Obama administration has answered the problem remains that rising medical students and resident physicians are not choosing to participate in high enough numbers. Indeed, as mentioned, only 3800 primary care doctors have been placed yet 4900 spots remain. Furthermore NHSC has not expanded itself to meet all HPSAs across the country. The proposal offered in this paper follows a distinct ideological approach, avoiding the empirical flaw that enough of an incentive will bring more doctors to underserved areas. It makes medical service in HPSAS an essential requirement to board certification.

How will the policy address physician shortages in the United States (and beyond)?

In the immediate term each of the nearly six thousand HPSAs will have two to three additional second-year residents providing essential primary care services to low-income groups. Physicians with the National Health Service Corps (NHSC), a public program offering conditional funding to residents locating in HPSAs, had 48.5% Medicaid or uninsured patients relative to only 28.5% for non-obligated physicians.⁹ Past experience suggests that a larger physician workforce may result in a virtuous cycle:

⁸ "National Health Service Corps." National Health Service Corps. <<http://datawarehouse.hrsa.gov/topics/nhsc.aspx>>. Web. 28 Feb. 2016.

⁹ Pathman, Donald E., Thomas R. Konrad, Tonya S. King, Donald H. Taylor, and Gary G. Koch. "Outcomes of States' Scholarship, Loan Repayment, and Related Programs for Physicians." *Medical Care* 42.6 (2004): 560-68. Print.

improving health outcomes and infrastructure, which thereby attract more physicians to the area. These physicians then continue the cycle.^{10 11} This positive feedback effect can improve long-term physician density.¹²

Further, this policy may address doctor shortages by shaping the culture of medical education in two ways: (1) A service requirement will likely shift the medical school applicant pool to include more socially-motivated individuals and (2) medical residents, professors and deans, shaped by their own two-year service term, may be more likely to promote underserved primary care. Eventually, as the policy is universalized, every clinician would have experienced caring for underserved populations. In these ways this policy could normalize medical service as an inherent part of doctoring.

A medical service scheme in the United States could also impact physician shortages internationally. Currently, international medical graduates fill most underserved primary care spots in the United States.¹³ In rural America, in 2006, 67.8% of international medical graduates practiced in primary care shortage areas relative to only 39.8% of US graduates.¹⁴ Indeed in 2009 international medical graduates filled forty percent of all primary care residency spots in America.¹⁵ The suggested policy will fill underserved primary care spots with domestic graduates reducing the spots available for foreign graduates and, thereby, slowing the brain drain from extremely resource strapped locations globally.¹⁶

Is a medical service scheme coercive?

¹⁰ Pathman, Donald E., George E. Fryer, Robert L. Phillips, John Smucny, Thomas Miyoshi, and Larry A. Green. "National Health Service Corps Staffing and the Growth of the Local Rural Non-NHSC Primary Care Physician Workforce." *The Journal of Rural Health* 22.4 (2006): 285-93.

¹¹ *Ibid* 9.

¹² Liu, Jiexin. "Health Professional Shortage and Health Status and Health Care Access." *Journal of Health Care for the Poor and Underserved* 18.3 (2007): 590-98.

¹³ Hing, Esther and Lin, Susan. Role of international medical graduates providing office-based medical care: United States, 2005–2006. NCHS data brief. No. 13. Hyattsville, MD: National Center for Health Statistics, February 2009. Accessed June 4, 2009, at <<http://www.cdc.gov/nchs/data/databriefs/db13.pdf>>.

¹⁴ *Ibid* 12.

¹⁵ Steinbrook, Robert. "Easing the Shortage in Adult Primary Care — Is It All about Money?" *New England Journal of Medicine* 360.26 (2009): 2696-699.

¹⁶ *Ibid* 15.

A frequent objection to compulsory medical service is that it limits the physician's *right* to choose practice location, a potential slippery slope to draconian government intrusions into private lives. However, many Western democracies – including Norway and Australia – have instituted comparable schemes while maintaining civil liberties.¹⁷ In these high-income states individuals maintain the initial freedom to pursue medical education as well as the liberty of pursuing post-residency practice location.

Importantly, the American government is *already* purchasing the services of medical residents and is therefore entitled to make conditions on their service areas, much like other employers. Public money, in the form of Medicare, funds residency salaries. In 2008 Medicare paid out \$2.7 billion in resident salaries and benefits and \$5.7 billion to teaching hospitals to train residents, effectively funding resident physician labor.¹⁸ It follows that the public has a legitimate claim in allocating resident services.

The coercive nature of a medical service requirement must also be viewed in the context of other medical licensure requirements and their relative clinical utility. To take one example, all medical schools teach and the first part of the physician licensing exam tests several molecular biology details relevant to basic sciences research but not clinical practice. In essence medical students are 'coerced' into spending significant amounts of time learning certain concepts (many of which arguably have less clinical utility than exposure to underserved populations and diseases).

Finally, as mentioned earlier, no one would be coerced to attend medical school. Undergraduates will be free to choose for themselves whether the constituted path of medical training, inclusive of the two-year service commitment, is right for them. Over time this new requirement will likely become normalized and viewed as inherent to the mission and training of the physician workforce, just as the third year clerkships or the fourth year sub-internship are viewed now. Finally, since the number of medical

¹⁷ Ibid 4.

¹⁸ Fuchs, Elissa (February 2009). "Overview: Medicare Direct Graduate and Indirect Medical Education Payments". AAMC Reporter (Association of American Medical Colleges). ISSN 1544-0540.

graduates is far greater than the number of physicians needed to meet severe shortages¹⁹, the recommended policy will maintain significant flexibility for resident location choice. For example, in 2015 the number of filled residency positions is 30,000. Given that the essential minimum number of physicians needed to meet Health Physician Shortage Area needs is 7500, within the first year of implementation the compulsory medical service scheme should comfortably go beyond the basic minimum while preserving resident choice of geographical location.

A popular alternative is to require medical students, instead of residents, to serve a year in shortage areas.²⁰ This might influence individuals to pursue careers in shortage areas at an impressionable point in their training.²¹ However, medical students and even first-year residents are still developing clinical skills. They require far more attention and cannot deliver quality healthcare like second-year residents. This alternative would thus threaten to further burden resource-limited clinical settings. Another policy promoted to meet local primary care needs is to expand the number of “physician extenders”, Physician Assistants (PAs) and Nurse Practitioners (NPs) that can treat a wide variety of primary care illnesses. While PAs and NPs form a crucial part of the healthcare delivery system the main limitation is the very different range of services PAs and NPs can provide. Given the multifold greater in hospital clinical exposure that doctors have complex and urgent conditions that require referral are still best handled by trained physicians.

Conclusion

Physician distribution in the United States continues to concentrate in affluent urban and suburban locations. This trend has continued unabated since data on physician distribution was first

¹⁹ "Shortage Designation: Health Professional Shortage Areas & Medically Underserved Areas/Populations." Shortage Designation: Health Professional Shortage Areas & Medically Underserved Areas/Populations. N.p., n.d. Web. 26 May 2013.

²⁰ Ibid 18.

²¹ Compton, Michael T., Erica Frank, Lisa Elon, and Jennifer Carrera. "Changes in U.S. Medical Students' Specialty Interests over the Course of Medical School." *Journal of General Internal Medicine* 23.7 (2008): 1095-100.

collected in the mid-1800s.^{22 23} Relying solely on market allocation of the health workforce has failed to correct severe physician scarcities and, according to certain data, exacerbates scarcities.²⁴ A two-year service requirement for second-year residents could work to improve physician distribution on several levels. In the immediate term, around sixteen thousand residents would practice in HPSAs to easily eliminate the most critical physician shortages. In the longer term this policy could change medical culture. Since all residents will practice in underserved areas, over time the leaders in medical education and healthcare policy will have an intimate understanding of health inequities. Some may go far to promote underserved care, having personally understood its importance. It is conceivable that within several years of this policy, major physician shortages can be ameliorated, as medical culture becomes more public service oriented.

²² Rosenblatt, Roger A., and L. Gary Hart. "Physicians and Rural America." *Western Journal of Medicine* 173.5 (2000): 348-51.

²³ *Physician Characteristics and Distribution in the U.S. 2013* / Derek R. Smart. [Chicago, IL]: American Medical Association, 2013.

²⁴ Matsumoto, Masatoshi, Kazuo Inoue, Robert Bowman, Satomi Noguchi, and Eiji Kajii. "Physician Scarcity Is a Predictor of Further Scarcity in US, and a Predictor of Concentration in Japan." *Health Policy* 95.2-3 (2010): 129-36.

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