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# Medical Workforce Development: Challenges and Opportunities for the Next 25 Years

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## Abstract

The determinants of population health are complex and draw upon factors related to educational achievement, social infrastructure, economic development and the availability of an appropriate and accessible health service. Whilst recognizing this complexity, the provision of a well-trained and skilled medical workforce is a very important component. This paper will explore the critical factors impinging upon the development and provision and training of the next generation of medical practitioners.

Fundamental to this debate is the core role of the doctor within the health care sector. Historically, professions have defined a large part of their existence as holding and maintaining a specific body of knowledge. Both because of the massive explosion in this knowledge base and also, largely as a result of the internet, of much greater public accessibility of medical information, the doctors role is changing from the holder to the interpreter of this knowledge. This will require changes in education and training of the doctor but also will result in increasing alterations in the relationship between a physician and their patient.

Much of the debate around the future role of the doctor has focused on what range of tasks should be carried out by a physician and which can be devolved or delegated to other health care workers. This process is difficult and challenging, throws up debates around the values of the cognitive skills of a doctor compared to procedural skills and is often seen as fundamentally undermining the perceived value to society of the medical profession. How this issue is dealt with will either enable or inhibit significant progress.

Changes in population demographics, increasing capabilities of the health care system and patient and health care worker expectations have all suggested that across the globe a significant increase in the numbers of physicians being trained will be required. Not all agree, pointing to the relatively weak link between physician numbers and broad measures population health. A robust debate of this issue will be required if pragmatic sustainable health care systems are to be maintained.

These issues suggest that a well-informed and robust debate is required an appropriate model for future physician training is to be produced for the next 25 years and beyond.

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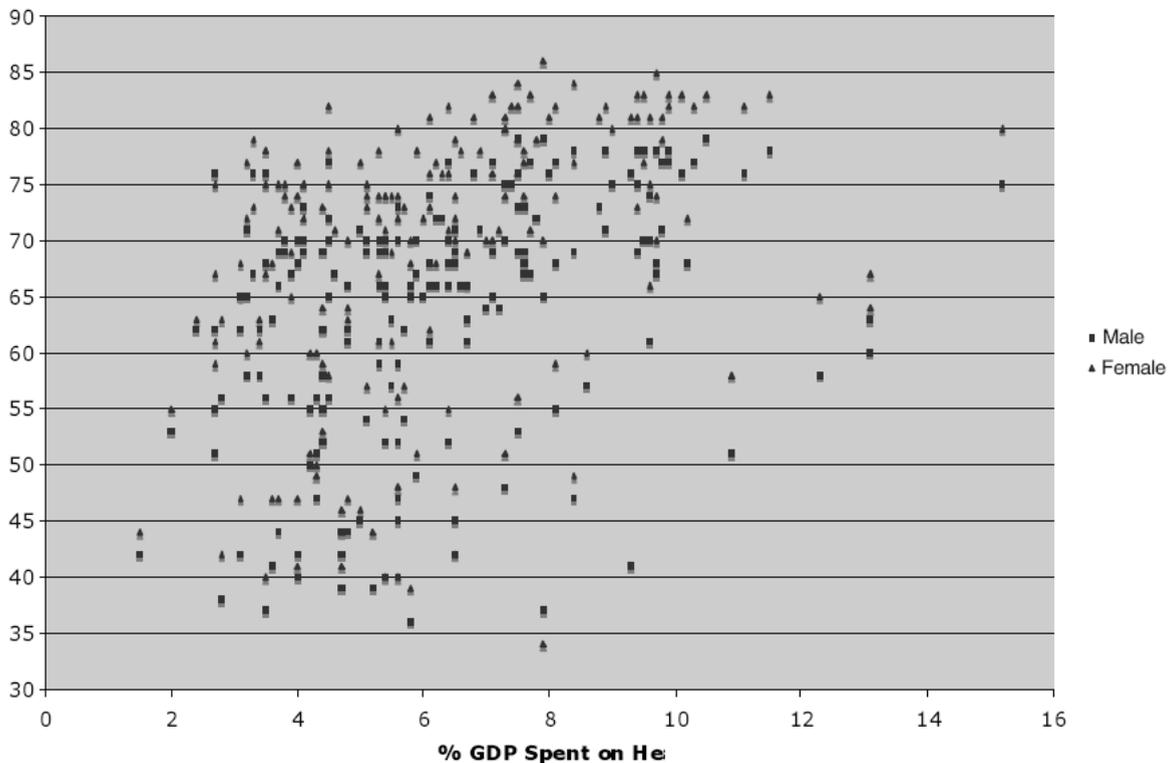
## Introduction

Few would agree that access to a high quality accessible health system is central to the development of a vibrant growing economy. Indeed the World Health Organization has the following statement at the heart of its constitution “*the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being...*” and every country in the world has at least one treaty that addresses health related rights. Whilst the determinants of

health at the level of individual, community and population level are complex and extend far beyond the provision of traditional medical services, the changes in the population demographics, increasing medical capabilities and growing expectations of individuals are posing major challenges for those tasked with delivering health services now and into the future.

Across the globe governments are seeing increasing proportions of their GDP spent upon the delivery of health care to the population. This reaches the extreme when USA is considered which is now spending some 15-16% of GDP on delivery of health care<sup>i</sup>. Whilst there is an increase in life expectancy at birth when GDP spend is considered the relationship is far from linear.

**Life Expectancy at Birth vs GDP Spent on**



This increasing spend upon health coupled with demographic projections suggesting that the demand placed upon health services will grow very rapidly over the next 20-50 years will place very considerable stresses on all countries planning their health services. Although a small nation, the issues faced by New Zealand mirror those faced by most developed economies. A detailed analysis of the future needs in the New Zealand health care system has suggested that the total health workforce alone will need to grow by between 40 and 70% by 2021 if the current system is to continue to provide similar levels of service to 2004 when the report was written<sup>ii</sup>.

There is consequently very considerable debate focusing on how best to deliver health care to the population. Whilst there have been many discussions on how health services should be configured, delivered and funded, all have placed an appropriately trained medical workforce centrally.

The challenge therefore for society, governments and educators is to consider how such a medical workforce should be trained and developed for the future.

## **The Role of the Doctor**

When asked most would think it a reasonably easy task to define the role of the doctor within the health care system. However, even relatively superficial analysis suggests that this role is far more complex and challenging to define. This coupled with the rapidly changing “landscape” of the system of health care delivery means that it is appropriate to consider the role of the doctor in some depth. There have been many attempts to define the role of the doctor but in the main, they all contain the domains defined by the Royal College of Physicians and Surgeons of Canada as their CanMEDS Physician Competency Framework<sup>iii</sup>.

- Medical Expert
- Communicator
- Collaborator
- Manager
- Health Advocate,
- Scholar
- Professional

The challenge is to put flesh on the bones of these domains and consider how the next generation of physicians should be trained.

### **The changing nature of the scientific knowledge base underpinning clinical practice**

There is no doubt that the medical advances of the past century have been based upon the very sound scientific base to modern medical practice. The very rapid advances in the understanding of the basis of health and disease have seen an explosion in the volume and depth of this scientific base. Whilst it has realistically been impossible for medical training to comprehensively teach the full range of health related science for more than 150 years, the rapidity of changes over the past 2-3 decades has truly brought into focus the way in which the scientific basis of medicine is taught and used.

The scientific basis of medicine must be preserved but at the same time the systems used for education and training must adapt to the very rapidly growing knowledge base. Those considering the development of medical curricula must ensure that an appropriate balance is struck between a sound fundamental knowledge base and a recognition and appreciation of the rapidly developing aspects of medical practice.

### **Interpreters rather than holders of scientific knowledge**

The origins of the medical profession are firmly aligned with the tradition of the guild. Whilst their duty to the public was clearly recognized, their duty to other members of the “guild” was regarded at least as highly. This is reflected in the way in which the knowledge base underpinning professional practice was handled. This knowledge was regarded as being “owned” by the profession and not to be shared with others. This view is reflected in the traditional Hippocratic oath:

To hold him who has taught me this art as equal to my parents and to live my life in partnership with him, and if he is in need of money to give him a share of mine, and to regard his offspring as equal to my brothers in male lineage and to teach them this art-if they desire to learn it-without fee and covenant; to give a share of precepts and oral instruction and all the other learning to my sons and to the sons of him who has instructed me and to pupils who have signed the covenant and have taken an oath according to the medical law, but no one else.

Whilst the past 100 years saw huge changes in this point of view, in the main the profession still had almost exclusive access to most of the knowledge base because the relevant books and journals were relatively inaccessible to the public. However, the past decade with the widespread dissemination of medical information across the internet has totally removed this barrier. It is far from unusual to be confronted with a patient bringing many pages of internet printouts to a consultation. This coupled with the explosion in the volume of scientific publication has changed forever the role of a physician from the “exclusive holder” of medical knowledge to the interpreter of that information.

This will change the dynamic between the physician and their patient. This change will require the training and education system to increasingly emphasize the skills required for data analysis and interpretation. The physician of the future will need to be an expert in the communication of complex data and present risk/benefit to the patient in very clear and explicit ways.

### Task delegation

In designing the health system of the future, many analysts have suggested that it would be beneficial to delegate to other health care workers many of the tasks currently undertaken by physicians. This change would, it is proposed, free up a scarce and expensively trained resource to be better utilised carrying out tasks that truly require the depth and breadth of medical training. These changes have been advocated alongside a need for the medical profession to move to a model of care delivery much more closely integrated with a broad based health professional team.

This area is complex and challenging to develop because of the fundamental challenges that some of these changes will produce within the medical system.

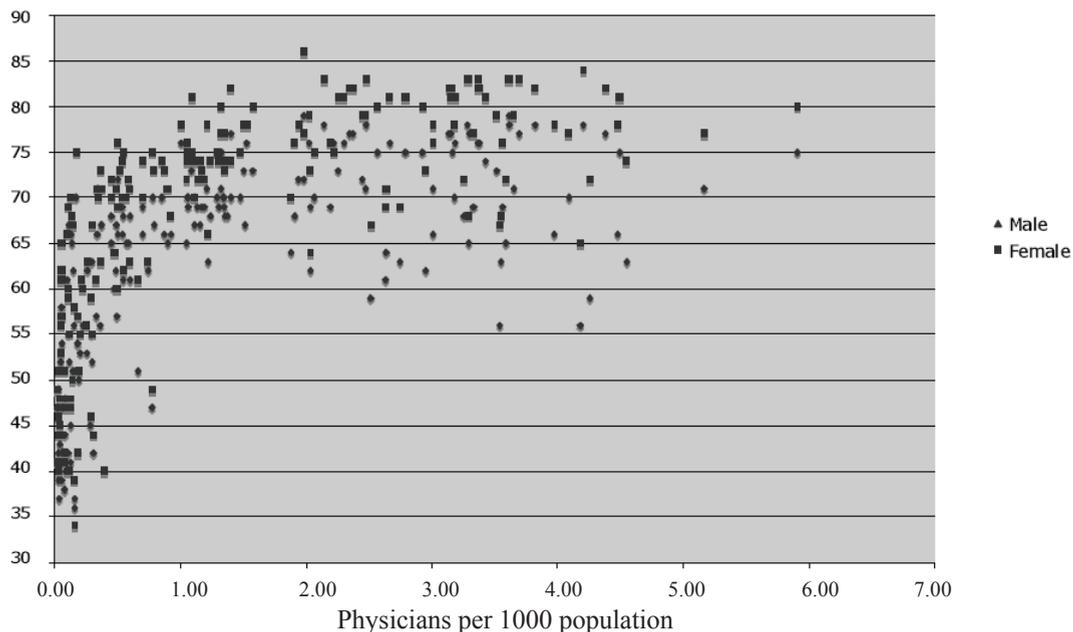
### How many physicians do we need in the future?

Across the OECD there are between 2 and 3.5 doctors per 1000 population and there is very little correlation between these numbers and other system parameters. There has been very considerable debate on the number of doctors that the system needs to produce in order to efficiently deliver a high quality health service. Given the long lead time (12-15 years) between starting a first medical degree and completion of specialist training, planning for the future is at the same time both extremely difficult and extremely important. How should the education and health systems begin to analyze this need?

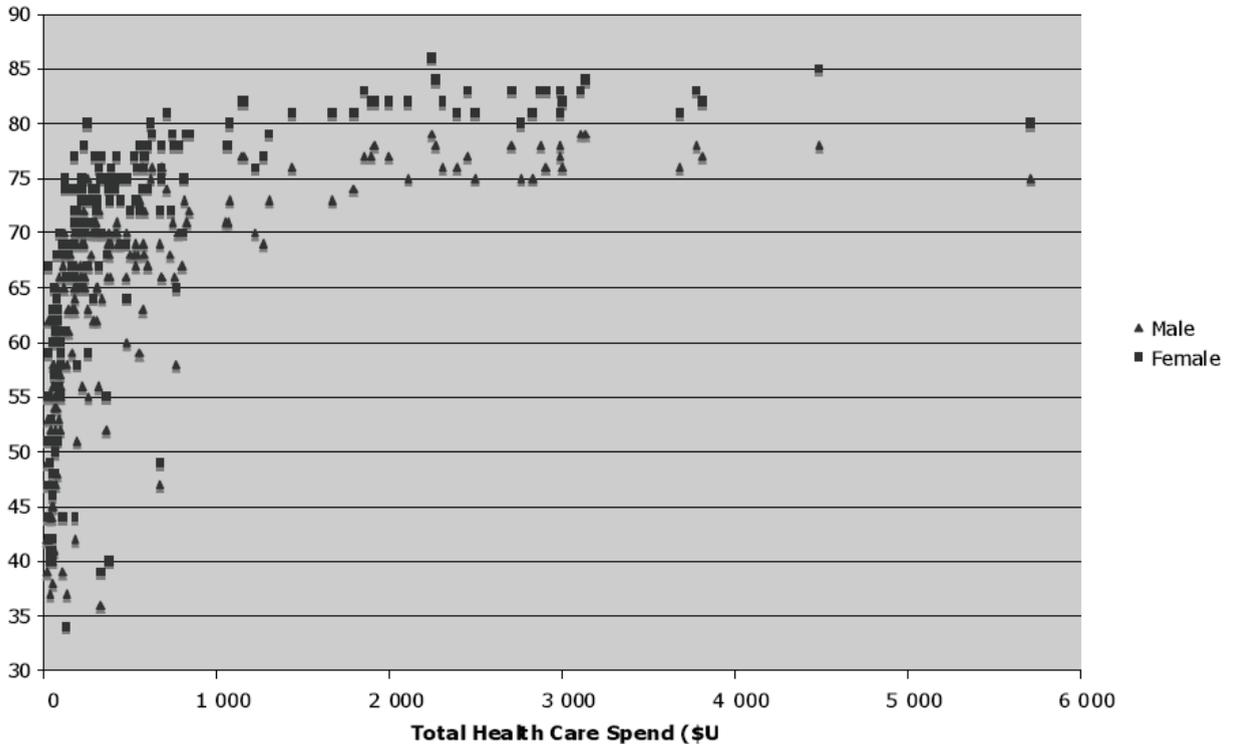
### The importance of physician population density as a determinant of population health

Whilst a relatively crude measure of population health, life expectancy at birth is still a useful comparator to compare at the national level the possible effects of system variables. Based upon World Health Organization Data<sup>iv</sup> the following graphs demonstrate the relationship between average life expectancy at birth and health care spending and the number of physicians per 1000 population.

**Average Life Expectancy vs Physicians / 1000 popul**



### Average Life Expectancy vs Total Health Care Spend



At this level of analysis it is difficult to place into context the demand for increased numbers of physicians across the developed world. A recent call by the American Association of Medical Colleges to increase US medical student numbers by 30% has been criticized by JP Weiner on the grounds that there is very little evidence that such an increase would do anything to address the health of the US population.

One difficulty with looking simply at physician numbers is that it does not reflect the nature and distribution of those doctors across the population. In a very interesting analysis of measures of quality of care in the US, Baicker and Chandra were able to demonstrate a clear relationship between the numbers of generalist physicians and quality of care<sup>v</sup>. Interestingly they also described an inverse relationship between the numbers of generalist physicians and the cost of providing health care. These results among others would suggest that not only must the system consider carefully the numbers of doctors required but also the distribution and specialist training of those physicians if the maximum benefit from the medical workforce.

It will be critical for the development of a sustainable medical training system that these factors are openly and explicitly considered in the process.

International demands for medical workforce and medical migration.

The World Health Organization in 2006 published a comprehensive overview document looking at current and future demand for the international health workforce<sup>vi</sup>. Whilst by its very nature this document was very high level, it was stark in the message that globally we are facing a massive shortfall in health workers stating that “WHO estimates a shortage of more than 4 million doctors, nurses, midwives and others” Whilst many of the shortages are in developing countries there are few jurisdictions exempt from health workforce pressure. This shortage in itself creates other pressures for the medical workforce as medicine by its very nature is a globally recognized and valued profession and physicians are potentially a very mobile group. This creates pressure for doctors to migrate to wealthier jurisdictions further exacerbating pressures in countries whom can least afford to train extra health professionals.

There is no doubt that further careful analysis is required if the education and health systems are to best make use of the resources put into medical workforce training. Weiner in his recent *British Medical Journal* paper identified 6 priority areas for this work<sup>vii</sup>:

- Forecasting and measuring supply, demand, and need
- Evolving roles of primary and specialty care
- Best way to structure and staff health care organizations to maximize population benefit
- Roles of alternative professionals
- Ways to encourage doctors to practise in less desirable settings
- Approaches for assessing and assuring provider efficiency and productivity
- Ways to predict and ethically manage patterns of international medical migration

These challenges should be strongly embraced by the University sector in ensuring that these developments are based upon high quality academic input to this debate. Given the international nature of many of these issues and the commonality of the problems international debate will be critical for the development of sustainable and high quality solutions.

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