

What aspects of leadership in the 21st century can contribute most towards a global ambition of ‘improving health and saving lives’?

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”We need to be the change we wish to see in the world.” – Mahatma Gandhi

The 21st century heralds a new age of technology, communication and opportunity. Despite these advancements, significant health inequalities still exist, both within societies and across borders, some of which are continuing to increase. In affluent countries, heart disease and cancer are among the leading causes of death: medical research, increased awareness and the initiation of public health interventions have successfully lowered the prevalence of some of the now well-established causes, such as tobacco smoking. Nevertheless, the new century has spawned new challenges in these economically developed countries, including increasing rates of obesity and diabetes mellitus, which in turn contribute to the rates of non-communicable diseases. In poorer countries, millions die every year due to infectious diseases, such as HIV, malaria and diarrhoea. Malnutrition, infection and the lack of access to healthcare amenities are related to the prevailing conditions are a direct result of poverty. Tragically, these diseases cause premature death in children and young adults, but to worsen matters further, non-communicable chronic diseases are emerging as a significant healthcare issue in these populations. In this century more than any other, it is widely acknowledged that global collaborations are required to tackle the significant health care challenges that exist. The first challenge lies in diagnosing the illnesses and their contributing factors, and then focussing on the interventions that, both as an individual and as a population, will play significant roles to remedy them.

Although it is essential that the medical profession plays an important role in confronting health problems, collaboration must be multi-disciplinary and in order for this approach to be successful, it will need to draw upon various aspects of leadership. This will not only require the participation of associated health professionals and policy makers but also the engagement and contribution of other stakeholders in society such as leading minds in the economic and financial sectors who have not traditionally taken a role in this process. This is not just true for charitable initiatives, such as the Bill and Melissa Gates Foundation, which aim to apply commercial wisdom philanthropically to neglected areas of the healthcare agenda. Businesses use their expertise at local (and as their size grows), national and international levels, and pooling of skills across sectors can be used for health as well as fiscal improvement. Obviously, from a pecuniary viewpoint, ‘improving health and saving lives’ is a worthwhile investment for society, as the former stops you working and the latter stops you buying, but what do individual organisations stand to gain from using their resources in this fashion, rather than their primary goal of profit? The answer is more obvious in healthcare-related fields, such as pharmaceutical companies and healthcare providers, who directly benefit from collaboration and involvement. However, other financial organisations stand to gain by applying their nous in these areas and actively engaging in the community, with resultant new skills and collaborations. Although there are many facets to leadership in the context of global health, one of the key aspects is learning lessons across disciplines – in particular, medical professionals applying economic principles and business concepts in order to improve health. Another key leadership challenge is engaging fields other than medicine to realise that they actually play a key role in this process, and must help to contribute even more.

"Is the rich world aware of how four billion of the six billion live? If we were aware, we would want to help out, we'd want to get involved." - Bill Gates

Poverty leads to famine, poor living conditions and inadequate access to treatment, and is potentially the number one determinant of global health: any strategy to alleviate the burden of poverty will no doubt require strong political (and public health) leadership. Although deaths in childhood mortality throughout the world have decreased in the last century, a substantial amount of deaths in this age group still occur due to preventable causes such as perinatal death and infections, including diarrhoea and pneumonia. There has been progress in this area – for example, implementing the use of oral rehydration solutions throughout the world, especially in areas afflicted by drought and famine, have helped saved many young lives. However, despite such medical advances, tragically up to 1 million young deaths occur annually due to vaccine-preventable diseases, many of which are cheap and readily available.

The important role that market forces play in global health is significant for many diseases, including heart disease, cancer and infectious diseases (HIV springs to mind), but can perhaps most clearly demonstrated in the treatment of malaria (which causes in excess of 1 million young deaths per year). The majority of deaths due to malaria occur in young children in rural Africa: most of whom have limited access to health clinics (and hence, practitioners). Malaria often presents with easily recognisable symptoms such as fever and malaise, but allows little time to access healthcare, yet alone to make a formal medical diagnosis. The problems have also been exacerbated by rapidly spreading resistance to the currently available single antimalarial treatments, as well as counterfeiting. Although the mainstay of prevention has been the use of vector controls such as insecticide sprays and bed-nets, there is an urgent need for cheap, effective and accessible treatments in these remote areas which can be used before diagnosis is confirmed (by which time, for example, many children will not be able to swallow tablets). Such an agent already exists – oral artemisinin combination therapy: this has few side effects, requires short courses of therapy, is readily absorbed by children in standard preparations, and crucially, is available cheaply. However, the challenge lies in the application of an economic strategy to make it more readily available to those who need it most.

Rather than subsidising the costs completely, which could make the market liable to cheap counterfeits and hoarding of the drugs, what has been proposed is a new approach of “high-cost” procurement (~ \$1) and “low-cost” distribution (~ \$0.1) of artemisinin combination therapy. [1] This procurement policy ensures competition between suppliers (of validated high quality treatment) by imposing subsidies for application high-up in the drug distribution chain, while the distribution mechanism curbs higher point of sale prices. This would actually undercut the price of conventional antimalarial monotherapy, with the added benefit of less resistance emerging in the future. As well as wider rural access, the costs to the end-user could be ~ \$0.1 - 0.2 instead of the multiple dollars in an unsubsidised retail environment. In return for these subsidies, participating countries would continually audit the mechanisms of distribution and rates of malaria. Although this method requires formal validation in real-life settings and may be difficult to apply to other disease models (due to the rapidity of clinical features of malaria, for example), it is an example of practical leadership that overlaps both medical and economic strategies. The economic burden of malaria in emerging nations runs into billions of dollars and this strategy could save thousands of young lives at much lower costs. It also reflects a paradigm shift in medical therapies, especially those of emerging countries, which may be best served by dissemination of relevant treatments to enable access in the community without the direct hands-on intervention of doctors.

"Death in old age is inevitable, but death before old age is not... For this promise to be properly realised, ways must be found to limit the vast damage that is now being done by tobacco and to bring home, not only to the many millions of people in developed countries but also the far larger populations elsewhere, the extent to which those who continue to smoke are shortening their expectation of life by so doing." - Sir Richard Doll

The burden of healthcare in developed nations has shifted from infectious disorders in the beginning of the 20th century, to that of chronic diseases, including cardiometabolic disorders and cancer, in the current day and forthcoming years. It is only by rigorous scientific research, such as the seminal work by Doll and colleagues (as well as others) that the significant, and now widely known, risks of cigarette smoking were first established. [2] Smoking is now recognised to have caused hundreds of millions of deaths worldwide, and is one of the leading causes of heart disease and lung cancer, as well as other conditions. These factors that independently raise the risk of disease are important at both an individual and population level, but one needs to be aware that a myriad of suspected agents have been implicated to cause disease, often without thorough epidemiological study. Well conducted and ethical research is required to highlight problems and take global health forward: little over a century ago, diseases were thought to be transmitted by bad smells, and harmful substances such as mercury were given as treatments for illness. Thorough attention to statistical detail in large scale studies has shown the importance of hazards such as smoking, as well as diabetes mellitus, dyslipidaemia and raised blood pressure in vascular mortality. They have also given valuable information to the individual patient, including the contribution to premature mortality ("the number of years lost") and the benefits of cessation ("stopping smoking works"). The focus of leadership on tackling smoking and other big causes of morbidity and mortality will enable us to reap the largest rewards in terms of global health.

This is even more significant in emerging countries, where these known perilous behaviours, such as cigarette smoking, are still highly prevalent and can be aggressively marketed. As well as adopting the malign aspects of richer nations' lifestyle (including those of overconsumption and physical inactivity) with a substantial chronic disease burden in larger populations, these countries have the double burden of tackling infectious disease and malnutrition as well. History often has a habit of repeating itself: the rates of tobacco smoking and proportions of mortality in China in 1990 mirror those of the USA forty years previously. [3] Nevertheless, though it is widely known that tobacco leads to significant numbers of deaths, research is still required to highlight the disparities in order to effect changes. Large scale studies can demonstrate that the patterns of disease in different populations are distinctive. For example, in India, there is a particularly strong interaction with tuberculosis and smoking: smoking is predicted to kill around one million adults per year by 2010 alone. [4]

As the global economy allows other nations with larger populations, such as China and India, to play more of a role, with fiscal gains, health improvements will follow. While it is true to say that the socioeconomic infrastructure of poorer nations will likely improve, with resultant healthcare benefits, we nevertheless need to make effective treatments more widely accessible worldwide. This includes the treatments for malaria, as well as chronic disease mortality due to vascular and cancer deaths. For example, many medications that are of proven benefit to patients who have had a heart attack (myocardial infarction) are now available throughout the world off-patent, but many patients, especially in poorer nations, do not have access to them. These could be combined to create a 'polypill' including medications to stop the platelets sticking together (such as aspirin) and treatments for blood pressure and blood lipids and could potentially be given at low cost (less than \$1 per month): there are potential survival and health benefits, especially for patients who already have evidence of disease (secondary prevention). There are many millions of people who have had a heart attack or stroke throughout the world currently go without such treatments due to prohibitive costs in their regions. To this end, large scale international studies to ascertain its

risks and benefits are underway. Identifying risk factors for disease is important, but there is a need to identify causes that are additively important and can be practically treated.

Although public health measures have helped to decrease the prevalence of cigarette smoking in countries such as the United Kingdom, there are still The tobacco companies initially used a number of strategies to ensure that the now-well known facts about the hazards of smoking did not affect their profits. These include a combination of scientific misinformation, intensive political lobbying and culturally resonant arguments that smokers must stake a personal responsibility for harms they incur. [5] It represents one of the most paradoxical stories that the single most dangerous legal product consumed by the population in the United States has evaded federal regulation (the Food and Drugs Administration [FDA]) for more than half a century. Even the recently passed Family Smoking Prevention and Tobacco Control Act, which authorises the FDA to restrict harmful additives and strengthens advertising restrictions, still has many detractors. Federal regulation could potentially bring new respectability to the tobacco industry, whose companies are now focussed on other developing markets. In the past, tobacco companies actually favoured such legislation as a defence against litigation. With the World Health Organisation (WHO) estimating that in the past century, 100 million smokers have died of smoking-related diseases, but that this will increase tenfold to a shocking 1 billion deaths in the 21st century if smoking rates are maintained, the stakes have never been higher. The implementation of regulatory controls and public health measures is an important step, and although measures such as the Framework Convention on Tobacco Control by the WHO has been signed and ratified by more than 150 countries, tellingly this does not include the current administration of the United States of America.

Businesses have a vested interest – to make profits - and the concern is that the alcohol and pharmaceutical medicine lobbies, for example, could be prone to the same biases (and practices) as that of tobacco. For global health to progress, all are agreed that resources are required to carry out medical and scientific research as well as clinical practice and teaching. The contradiction is that these non-academic groups have the financial and expertise to undertake this work out but are often accused of influencing the objective scientific results; conversely academics require these resources but industry influences can influence the validity and implementation of their work. Almost every field of medicine has had scientific and public confidence hampered by adverse stories of this nature. Due to practical considerations, namely funding and resources, scientists and doctors need to work with these companies, or else nothing would get done, but we need to ensure that the balance is not too much in favour of their interests, to the detriment of science and public health. One of the key global health challenges in the next millennia is creating the framework for academic medicine to work with business practices in an independent fashion. Many of these practices have become ingrained, but the best way forward could be collaborative ventures, whereby both parties work together on projects, each supplying relevant skills and funding, but there is a definitive arms-length approach with regards to substantive outputs. The delineation of responsibility is also crucial to ensure that academia can work towards health improvements without becoming solely a mouthpiece for industry.

“Education is the great engine of personal development. It is through education that the daughter of a peasant can become a doctor, that the son of a mineworker can become the head of the mine, that a child of farmworkers can become the president of a great nation. It is what we make out of what we have, not what we are given, that separates one person from another.” – Nelson Mandela

Global health depends on multi-disciplinary working across fields. Physicians need to use their skills to diagnose and treat problems: similarly other professionals need to utilise their skills in a similar vein. The key to implementing this cross-disciplinary approach hinges on the provision of hitherto exceptional educational establishments that foster such thinking. These institutions will help draw together individuals from diverse fields to learn lessons and deepen understanding across a range of topics including medicine, business and public health policy. In the past, the study of medicine has been focussed on this diverse and considerable subject alone, but it is now appreciated that a greater understanding of its interaction with other fields is vital to its role in global health. Universities are the ideal forum for leading these educational aspects for global health across arenas, and teaching the policymakers and practitioners of the future. For example, a recent study in the high impact medical journal *The Lancet* from the University of Oxford highlighted the discrepancies and lack of transparency in global health funding. [6] This topic is obviously of significant importance to medical researchers, but did not originate from the Medical Sciences Division, but in fact from the Department of Politics.

Education will also allow people to appreciate the different skills that different sectors, organisations and individuals offer towards a global ambition of ‘improving health and saving lives’. Some people are born leaders, some have leadership thrust upon them, but all have been taught leadership in some manner. In the context of global health, leadership will hinge crucially on identifying what the big problems are, and the courage and conviction to develop and facilitate practical interventions to treat them. As well as focussing on problems in the here and now, global health in the next millennia will critically depend on the education of the future health leaders of tomorrow.

“I thought, I'm only going to be on this planet once, and only for a short time. What can I do with my life that will lead to permanent benefits?” – Sir John Templeton

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