

The Art of Public Health in the Context of a Paradigm Shift

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Despite advancements in medical technologies, the art of medicine based on a one-to-one doctor-patient relationship has remained largely unchanged. Hippocrates, the founder of medicine, said this in the 4th century BC, “Cure sometimes, treat often, comfort always”. Sir William Osler, father of modern medicine also said in the 19th century that, “The practice of medicine is an art, based on science.” More recently, Harriet Hall, retired American family physician and former United States (US) Air Force flight surgeon wrote, “Medicine is not an art like painting. Neither is it a science like physics. It’s an applied science.” It is now generally accepted that medicine is more than just the application of scientific biomedical knowledge and skills, it is also about exhibiting good communication skills and empathy, being professional, and respecting the values and emotional feelings (including spiritual) of the patient. To the public health practitioner, the art of medicine extends beyond the one-to-one to the one-to-many setting. Charles Edward Winslow’s (Professor of Public Health at Yale University from 1915 to 1945) insightful definition of public health in 1920¹—“the science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organised community efforts”—highlights the hallmarks of public health practice. In 1985, the late Geoffrey Rose, an eminent epidemiologist, published his classic paper on “sick individuals and sick populations” which remains highly relevant to modern public health policy and practice until today.² High-risk individual and population approaches to improving health are fundamentally different and achieve different aims. The individual strategy focuses on reducing the disease risk factors of high-risk individuals, in contrast to the population strategy that aims to control the causes of incidence through shifting the entire distribution of a disease risk factor in the population. As public health practitioners, we must ensure that the art of our practice keeps up with the times, particularly in the context of

a rapid paradigm shift.^{3,4} The public health paradigm is always changing^{3,4} from the challenge of improving environmental sanitation, housing conditions, food and water safety during the Industrial Revolution, to the discovery of pasteurisation and antibiotics during the 19th and 20th centuries, and to the recent threat of emerging and re-emerging infectious diseases and the increasing burden of chronic diseases in the 21st century. As public health practitioners of today, we need to learn how to assess the risks of such challenges to the population, communicate them effectively and timely as well as develop strategies to deal with them.

In the context of communicable diseases such as human immunodeficiency syndrome (HIV) and sexually transmitted infections (STIs), where development of effective vaccinations is still on-going (except for human papillomavirus), the main preventive strategy is still to minimise exposure and promote safe sexual behaviour.⁵ Although educational programmes on HIV/STI prevention have shown some success through a marked increase in condom use among the brothel-based sex workers in Singapore, the challenge remains to promote consistent condom use among the other hard-to-reach population groups such as men who have sex with men, female entertainment establishment workers and intravenous drug users.⁶ Dengue fever is an example of a re-emerging infectious disease that is endemic in the tropical world.⁷ To the patient and the clinician, dengue fever is a clinical diagnosis. However to the public health practitioner, he or she would be more concerned with the social and economic cost to society, breaking the chain of transmission by surveillance of on-going dengue cluster, stepping up vector control interventions, and preparing the healthcare system for the potential surge in dengue cases. In the absence of an effective tetravalent vaccine for dengue fever, vector control is a crucial preventive measure,⁸ meaning that we have to modify public behaviour to stop

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breeding mosquitoes.

Other than changing human behaviour, risk communication is also another important aspect of the art of public health. Effective and timely risk communication plays a vital role in mitigating the adverse impacts of a public health emergency.⁹ The recent Middle East respiratory syndrome (MERS) and the severe acute respiratory syndrome (SARS) outbreak in 2003 have shown that risk communication is an art. MERS had spread fear among the public community in South Korea, as schools were closed temporarily and consumer spending dipped.¹⁰

The world has seen an unprecedented burden brought about by non-communicable diseases (NCDs), and changing lifestyle behaviour is increasingly at the heart of healthcare. Although tobacco use is the single most preventable cause of death,¹¹ tobacco use still costs the world US\$200 billion and results in nearly 6 million deaths annually.¹² The tobacco epidemic continues to expand because of the addictive nature of nicotine, the on-going industry marketing and population growth in countries where tobacco use is increasing.¹² Though strong evidence of the harmful public health consequences of tobacco use have been established decades ago, we are still advocating for tobacco control today. Why is this so? There is no easy solution, as with majority of the public health challenges that are plaguing today's society. Changing lifestyle behaviour, including smoking behaviour, is more than just producing the scientific evidence. The greatest challenge lies in how we promote and sustain behavioural change among the smokers and at the same time prevent uptake of smoking among the youth in the totality of the tobacco industry and commercial market, which continues to maintain the marketability and profitability of the product despite its clear undesired public health effects.

Similarly, the rapid spread of obesity within a few generations globally indicates that we have on hand a very complex issue.¹³ From a public health perspective, the aetiology of obesity is not only multifactorial, but involves complex interactions of biological, psychological, cultural, behavioural, social, economic, environmental, technological, and political factors.¹⁴ To complicate matters, the tactics and strategies used by the food industries are extremely creative and adaptive to the changing needs of the population. The challenge continues for the public health practitioners: are we striving to develop our art to adapt to this rapidly changing paradigm?

In recent years, rapid advancements in genomic medicine have revolutionised our understanding of new approaches to prevention and therapy for chronic diseases. Genomic medicine is a potential tool to tailor the delivery of chronic disease care at the individual level by using patients' genomic information to design more effective drugs,

to prescribe the best treatment for each patient as well as to identify and monitor individuals at high risk from disease.¹⁵ Despite the promises brought about by genomic discovery, we must not forget that lifestyle behaviour still plays a major role in the development, aggravation, and perpetuation of chronic diseases.¹⁶

Behaviour change has become a central theme in public health practice, of which prevention has an increasing role to play in the delivery of health services at different levels. It should be clear that the public health practitioner is no longer dealing with simple systems that can be predicted and controlled, but complex adaptive systems with multiple points of equilibrium that are always interacting with one another. To perfect the art of public health practice, we must shift our mindset from that of dominion and independence to greater interdependence and collaboration. As the highest member of the biological order, we are also the most complex, not just physically, but psychologically, socially and spiritually. This is also apparent in the way we define health. The most commonly quoted definition of health is that formalised by the World Health Organization (WHO) in 1946, "a complete state of physical, mental and social well-being, and not merely the absence of disease or infirmity".¹⁷ Given the rising chronic health problems and increasing life expectancy, critics of the WHO definition have called for a more appropriate definition. However the search for a consensus definition continues as the following questions remain to be answered: Should health be viewed as a continuum from ill health to well-being? Is well-being equivalent to non-disease? Is there a level of health that is optimal? In trying to maintain and promote the health of our people, medical care is doing a great job taking care of the sick patients. But that is not enough. The rest of the community which is not in hospital is not necessarily well.

It is long overdue that the public health practitioner must move from a disease-centric approach of health towards a more socioecological perspective as the profession continues to perfect its art. This is particularly crucial in the context of the new care model and the regional health system in Singapore where we talk about integrated care to maintain a healthy population, from preventive care to primary, secondary and tertiary care. To continue to attain the mission of keeping healthcare affordable for all in Singapore, the public health practitioner must strive to develop his or her art by promoting preventive measures through behavioural change and ensuring right-siting of care so that hospitalisations are kept to the minimal. Often, our real need is not to have more facts, but better ideas to control the problems. The task of changing human behaviour is one that requires much creativity and ingenuity.

REFERENCES

1. Winslow CE. The Untilled Fields of Public Health. *Science* 1920;51:23-33.
2. Rose G. Sick individuals and sick populations. *Int J Epidemiol* 1985;14:32-8.
3. Hanlon P, Carlisle S, Hannah M, Reilly D, Lyon A. Making the case for a 'fifth wave' in public health. *Public Health* 2011;125:30-6.
4. Davies SC, Winpenny E, Ball S, Fowler T, Rubin J, Nolte E. For debate: a new wave in public health improvement. *Lancet* 2014;384:1889-95.
5. Holmes KK, Levine R, Weaver M. Effectiveness of condoms in preventing sexually transmitted infections. *Bull World Health Organ* 2004;82:454-61.
6. Wong ML, Sen P, Wong CM, Tjahjadi S, Govender M, Koh TT, et al. Human immunodeficiency virus (HIV) prevention education in Singapore: challenges for the future. *Ann Acad Med Singapore* 2012;41:602-9.
7. Bekerman E, Einav S. Infectious disease. Combating emerging viral threats. *Science* 2015;348:282-3.
8. Ooi EE, Goh KT, Gubler DJ. Dengue prevention and 35 years of vector control in Singapore. *Emerg Infect Dis* 2006;12:887-93.
9. Fitzpatrick-Lewis D, Yost J, Ciliska D, Krishnaratne S. Communication about environmental health risks: a systematic review. *Environ Health* 2010;9:67.
10. The Economist. South Korea and MERS. Available at: <http://www.economist.com/news/asia/21653731-fear-air>. Accessed on 25 August 2015.
11. World Health Organization. WHO Report on the Global Tobacco Epidemic, 2008: The MPOWER Package. Geneva, World Health Organization, 2008. Available at: http://www.who.int/tobacco/mpower/mpower_report_full_2008.pdf. Accessed on 25 August 2015.
12. World Health Organization. WHO report on the global tobacco epidemic, 2011: warning about the dangers of tobacco. Geneva, World Health Organization, 2011. Available at: http://www.who.int/tobacco/global_report/2011/en/. Accessed on 25 August 2015.
13. Mitchell NS, Catenacci VA, Wyatt HR, Hill JO. Obesity: overview of an epidemic. *Psychiatr Clin North Am* 2011;34:717-32.
14. Amarasinghe A, D'Souza G. Individual, social, economic, and environmental model: a paradigm shift for obesity prevention. Available at: <http://www.hindawi.com/journals/isrn/2012/571803/>. Accessed on 25 August 2015.
15. Kumar D. From evidence-based medicine to genomic medicine. *Genomic Med* 2007;1:95-104.
16. Egger G. In search of a germ theory equivalent for chronic disease. *Prev Chronic Dis* 2012;9:E95.
17. Üstün BT, Jakob R. Calling a spade a spade: meaningful definitions of health conditions. *Bull World Health Organ* 2005;83:802.