

Global health: challenges and opportunities for Singapore

Jahncke E, Lim M K, Seow A, Chia K S, Wilder-Smith A

ABSTRACT

Over the past decade, global health has evolved from a buzzword to discipline, attracting interest from governments, academic institutions and funding organisations. Global health centres, institutes and initiatives in Western countries have increased in both size and number, aided primarily by institutional backing and supportive funding mechanisms. As the rise to prominence of global health on the public health agenda also coincides with shifts in global balances of power, Asia, and Singapore, has an expanded role to play in supporting global health teaching and research, both in the region and throughout the world. Foundations, universities, government agencies, statutory boards and the private sector all have an important role to play in moving the global health agenda forward in Singapore. Rigorous global health training and increased funding for global health research are now timely and essential in order for global health, as a discipline, to develop within Singapore and have an impact within the region.

Keywords: Asia, global health, global health initiatives, globalisation, international health, public health, Singapore, tropical medicine

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INTRODUCTION

Aided by the expansive growth of global health initiatives and the large influx of funding, global health is no longer a mere buzzword but has moved beyond being only a philanthropic target. Global health is now a full-fledged discipline around which numerous graduate-level academic programmes in the Western hemisphere have developed or re-organised themselves.⁽¹⁾ Supported by governments as a crucial component of foreign policy,⁽²⁾ global health has to be taken seriously as an entity of practice, scholarship and research. This paper reviews the background, training, funding and initiatives related to global health worldwide. We then elaborate on the potential role for

Singapore in the rapidly evolving global health scene. We discuss training, research and funding for global health in Singapore and suggest a potential road map in global health for Singapore.

GLOBAL HEALTH – WORLDWIDE

Defining global health

Conceptually and historically, global health is derived from public health and international health, which in turn evolved from bodies of knowledge surrounding “hygiene” and “tropical medicine”, respectively.⁽¹⁾ Global health shares a similar concern as public and environmental health for the health of populations with a preventive focus, with concentration on poorer, underserved and marginalised populations.⁽¹⁾ Drawing from a diverse range of disciplines, global health also shares multi- and interdisciplinary approaches to health issues as well as the recognition that the achievement of health is a public good, requiring the involvement of multiple stakeholders, institutions and organisations.⁽³⁾ Globalisation has revolutionised the approach to public health. With the speed of modern worldwide communication and the integration of global trade, finance and technology,⁽⁴⁾ globalisation holds far-reaching implications not only for trade and international relations but also for many public health issues that transcend national borders. Public health professionals and policy-makers alike now draw attention to the global dimensions of health threats as well as the need for concerted global action.⁽⁵⁾ The advent of high-profile public-private partnerships, such as the Bill and Melinda Gates Foundation (henceforth referred to as the Gates Foundation) and the Global Fund to Fight AIDS, tuberculosis (TB) and Malaria, as well as the United Nations’ Millennium Development Goals (MDGs), which spend billions of dollars on international health initiatives and research, has undoubtedly contributed to global health’s rise to prominence.⁽¹⁾ However, it is essentially the realisation that global problems require global solutions that has fundamentally reframed the way we think about the health of Earth’s six billion inhabitants.

There is still no universally accepted definition of global health, but the US-based Consortium of Universities for

Department of
Epidemiology and
Public Health,
National University
of Singapore,
Yong Loo Lin School
of Medicine,
16 Medical Drive,
Singapore 117597

Jahncke E, MPH Tutor

Lim M K, MBBS,
MPH
Consultant and
Associate Professor

Seow A, MMed, MD
Consultant and
Associate Professor

Chia K S, MBBS,
FAMS
Professor and Head

Wilder-Smith A, MD,
PhD, MIH
Consultant and
Associate Professor

Correspondence to:
A/Prof Annelies
Wilder-Smith
Tel: (65) 6516 6705
Fax: (65) 6779 1489
Email: epvws@pacific.
net.sg

Table I. Global health initiatives extracted from Samb et al⁽⁶⁾

The African Programme for Onchocerciasis Control
WHO Alliance for the Global Elimination of Trachoma
Paediatric Dengue Vaccine Initiative
The Campaign to Eliminate Maternal and Neo-natal Tetanus
The Schistosomiasis Control Initiative
The Global Microbicide Project
The Global initiative to eliminate unnecessary blindness
The Human Hookworm Vaccine Initiative
The Gates Foundation/University of North Carolina Partnership for the Development of New Drugs
Sleeping Sickness Initiative
The Guinea Worm Eradication Programme
Global Alliance to Eliminate Leprosy
Global Alliance to Eliminate Lymphatic Filariasis
The Global Polio Eradication Initiative
The Meningitis Vaccine Project at WHO/PATH
The Global Alliance for Improved Nutrition
The Global Alliance for Vaccine Initiative
International AIDS Vaccine Initiative
International Vaccine Institute
Malaria Vaccine Initiative
Meningitis Vaccine
The Global Outbreak Alert and Response Network
Drugs for Neglected Diseases Initiative
The Global Public-Private Partnership for Hand Washing with Soap
The Vitamin A Global Initiative
International Programme on Chemical Safety; the Consortium for Industrial Collaboration in Contraceptive Research

Global Health (CUGH) has putatively defined it as “an area for study, research and practice that places a priority on improving health and achieving equity in health for all people worldwide”.⁽³⁾ Global health emphasises transnational health issues, determinants and solutions. It focuses on problems that require a global response, such as pandemics, climate-related issues and tobacco control. Since the ‘global’ in global health refers to scope rather than location, global health not only focuses on transnational issues, but also domestic public health issues. Global health requires multidisciplinary methods and inter-disciplinary collaboration to combat a range of health issues, and perhaps in its most marked departure from traditional public and international health, also combines a population-based approach with individual-level clinical care.⁽²⁾

Global health initiatives

Global health should ideally recognise the mutuality of real partnership, a pooling of experience and knowledge, and a two-way flow between developed

and developing countries.⁽³⁾ The complexity of the interactions between the various economic, social and environmental components of disease emergence requires that integrated research strategies go beyond multidisciplinary frameworks and transcend national boundaries. Exponentially proliferating global health initiatives indicate the increased involvement of the private sector, philanthropic trusts and civil society in health care. About 100 global health initiatives (GHIs) (previously known as Global Public-Private Partnerships or Global Health Partnerships) now exist.⁽⁶⁾ Since 2000, several large GHIs have been launched, targeting those diseases with effective health interventions (e.g. vaccines, anti-retroviral drugs for HIV/AIDS, short-course chemotherapy for tuberculosis, and insecticide-treated bed nets and artemisinin in combination with other treatments for the prevention and treatment of malaria).⁽⁶⁾ GHIs have capitalised on the urgency generated by the MDGs.⁽⁶⁾ The Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), the Global Alliance for Vaccines and Immunisation (GAVI), the US President’s Emergency Plan for AIDS Relief (PEPFAR) and the World Bank Multi-Country AIDS Programme (MAP) are among the major international donors.⁽⁶⁾ In addition to the ‘big three’ (HIV/Tuberculosis/Malaria) global health initiatives, the list of GHIs now includes various North-South partnerships, initiatives, alliances and collaborations targeting both emerging and neglected diseases (Table I).⁽⁶⁾

Global health training

The growth of global health is marked by a new demand for undergraduate and graduate education. Over the past decade, an increasing number of global health departments, centres and degree programmes have been created in academic institutions throughout North America and the United Kingdom (UK). In 2009, 41 universities in the United States (US) and Canada had university institutes and centres in global health, and an additional 11 universities established global health programmes within their existing departments and divisions.⁽⁷⁾ Duke University in Durham and the University of California at San Francisco were the first two US institutions to matriculate students in a Master of Science in Global Health degree programme, and the University of North Carolina, Chapel Hill, in conjunction with its new name, the Gillings School of Global Public Health, has embarked upon an initiative to infuse more global health content in the Master of Public Health (MPH) core curriculum. In UK, the London School of Hygiene and Tropical Medicine has the Centre on Global Change and Health, while

University College London (UCL) recently launched the Institute for Global Health. Oxford University's Department of Public Health, University of Edinburgh's School of Health in Social Science and UCL offer Master of Science courses in global health. Several universities offer short courses in global health both for under- and postgraduate students. Although the development of global health programmes, centres and institutes within academic institutions has been tremendous, there is little agreement on the content of global health courses and research. To address this, the US-based Association of Schools of Public Health (ASPH) has instigated the global health core competency development project for masters-level students. Similar in process and outcome to the development of the MPH and Doctor of Public Health (DrPH) core competency development projects, the global health project aims to be completed in April 2011 and will "provide a baseline overview of the knowledge, skills and other attributes that are expected of emerging global health professionals".⁽⁷⁾ Additionally, in 2008, the CUGH was formed to "promote, facilitate and enhance the growth of global health as an academic field of study". In September 2009, CUGH held an inaugural meeting in order to develop and plan an "organisation and process by which academic global health centre representatives can meet and support each other in the development of global health and its academic programmes".⁽⁷⁾ However, until the ASPH finalises its recommendations for this field, academic institutions and their corresponding global health institutes, centres, departments and programmes accredited by the APHA's Council on Education for Public Health are free to structure the content of global health courses and research as they choose.

Funding for global health initiatives

Within the context of globalisation and the shared threats of pandemics and bioterrorism, new donors have initiated unprecedented levels of funding for global health.⁽⁷⁾ Development assistance for health is presently dominated by a number of international agencies such as the World Health Organization (WHO), UNICEF, World Food Programme and the World Bank. The growth trend in global health assistance has risen steeply, thanks to the addition of GHIs to this international aid framework, thus enabling the leveraging of substantial additional financial and technical resources for targeted health interventions. Between 2001 and 2006, official development assistance for health more than doubled, from US \$5.6 billion to US \$13.8 billion per year.⁽⁸⁾ Moreover, the sources of non-official development

assistance have increased for global health, most notably with the emergence of the Gates Foundation that has committed more than US \$1 billion per year since 2000 to address the health needs of populations living in countries with inadequate resources (including making substantial contributions to GAVI and the Global Fund.⁽⁶⁾ In 2007, the Global Fund and GAVI donated US\$2.16 billion in funding for vaccine-preventable diseases, and PEPFAR donated US \$5.4 billion for AIDS programmes.⁽⁶⁾ The Gates Foundation is a major contributor to global health; its influence on international health policy and the design of global health programmes and initiatives is profound.⁽⁹⁾ A wide range of global health organisations, such as WHO, the GAVI Alliance, the World Bank, the Global Fund to Fight AIDS, TB and malaria, prominent universities and non-governmental organisations have received grants from the Gates Foundation over the past decade. US \$3.62 billion (40% of all funding) was given to supranational organisations. By 2007, the Global Fund, PEPFAR and the World Bank MAP were contributing more than two-thirds of all external funding to control HIV/AIDS and malaria in countries with few resources and have been effective in generating rapid responses to these epidemics.

Funding for global health research has also kept pace with development assistance. Approximately one third of the current Gates Foundation funding is allocated to research and development of basic sciences research, and the funding has increased steadily over the past decade.⁽¹²⁾ Additionally, the John E Fogarty International Centre supports international research and research training programmes with a current budget of US\$69 million. The current funding strategy centres upon the training of new and upcoming foreign investigators to compete in and contribute to efforts addressing global health research priorities. The Centre's research, training and capacity-building programmes extend to over 100 countries and involve approximately 5,000 scientists in the US and abroad.⁽¹⁰⁾ Similar in its approach to funding is the Wellcome Trust. While the majority of its funding remains in the UK, the trust's 2005–2010 strategic plan pledged to increase international funding for researchers in developing and restructuring countries working in the areas of public health and tropical medicine, with the goal of reaching a critical mass within the biomedical sciences in order to combat health problems of regional or global importance.⁽¹¹⁾ Growth in funding levels and status led to the convening of the first annual global health research congress in Seattle, Washington in June 2009, with the goal of informing policy by discussing

Table II. Modules for the Global Health Sub-Specialisation Track within the MPH programme at the Department of Epidemiology and Public Health, NUS in the year 2010.

Core Modules
Public Health Biology and Ethics
Lifestyle and Behaviour in Health and Disease
Quantitative Epidemiologic Methods
The Environment in Health and Disease
Principles of Epidemiology
Health Policy and Systems
Contemporary Global Health Issues
Design, Monitoring and Evaluation of Global Health Programmes
Elective Modules
Medical and Humanitarian Emergencies
Planning Health Promotion Programmes
Control of Communicable Diseases
Control of Non-communicable diseases
Survey Methods in Public Health
Maternal & Child Health, Nutrition
Independent Study Module

biomedical research results and outlining future trends in global health research.⁽¹²⁾

GLOBAL HEALTH – IN SINGAPORE

Global health training in Singapore

In Singapore, the graduate public health programme has been successfully run for almost 60 years.⁽¹³⁾ Between 1953 and 2006, a total of 833 medically qualified personnel from 35 countries have graduated from the National University of Singapore (NUS) with either the Diploma or Masters degree in Public Health or Occupational Medicine.⁽¹³⁾ In 2007, the MPH programme was opened for the first time to non-medically qualified candidates. Recognising the importance of global health, a “global health specialisation” within the MPH programme was introduced in 2008. Six out of 33 students opted for this track in the same year. Students specialising in global health must complete the core requirements for the MPH programme as well as 20 module credits of electives within the global health specialisation. Table II lists the current module offerings for the global health programme. Independent study modules for the global health track to date have included a mid-term evaluation of rural HIV prevention in China, a mid-term evaluation of a TB programme for migrant workers in Thailand and a teaching course on rural community development principles in South India. The Singapore global health sub-specialisation track for the MPH is still in its infancy and will require further expansion, dedicated faculty and funding. Global health

demands a wide range of expertise and skill-sets beyond the local public health and occupational medicine masters programme. Currently, the programme is led by the authors and also relies heavily on invited external teachers and speakers from overseas. We partner with Johns Hopkins University in the US and World Vision as well as individual speakers from the region and internationally to offer a broad range of expertise to the students. The challenge now is to build up a generation of local expertise in global health. The long-term aim would be to set up more short courses for MPH students and the public as well as to work towards a Diploma or Masters in Global Health.

Funding of global health in Singapore

Private foundations such as the Shaw Foundation, Lee Foundation and Temasek Foundation in Singapore have already donated large sums of money to overseas projects. Another initiative is the Singapore International Foundation (SIF). Established in 1991, SIF is a not-for-profit organisation that seeks to nurture active global citizens and friends for Singapore.⁽¹⁴⁾ SIF aims to help the development of communities outside of Singapore through the Singapore Volunteers Overseas programme. SIF facilitates the participation of volunteers in capacity-building programmes in areas as diverse as healthcare and health education, organisational and personal capacity development, empowerment of disadvantaged children, women and families, and rehabilitation of the disabled. Furthermore, countless religious groups in Singapore are involved in overseas development projects and relief missions, as are voluntary organisations such as the Singapore Red Cross and Mercy Relief, as evidenced by the humanitarian relief efforts in the aftermath of the Indian Ocean Tsunami, the Sichuan earthquake and Cyclone Nargis in Myanmar. To further enhance overseas service, new groups of people (notably civil society organisations) need to be engaged to raise the profile and funding for global health in Singapore.

In addition to these encouraging local initiatives, it is imperative that Singapore builds up expertise in its research capacity related to global health. It is in this area that Singapore falls furthest behind. We need to develop field sites and translate benchmark research into global health solutions in both simple low-tech as well as high-tech solutions. However, the current national funding mechanisms for global health research in Singapore are inadequate, as the major public sector funding agencies state explicitly that research grants must be spent in Singapore and cannot be used for overseas

research projects. Funding mechanisms for rigorous global health training and global health research are therefore urgently required in order for global health, as a discipline, to develop within Singapore and have an impact within the region.

Roadmap for global health in Singapore

The global health scene in Singapore has gaps in all three areas: training, research, and service, as well as funding mechanisms thereof. Given that the foundation of global health education, research and practice hinges upon inter- and multi-sectoral collaboration, appropriate structures and funding mechanisms must be developed to facilitate these types of partnerships. The opportunities afforded by our neighbouring countries within ASEAN (e.g. Indonesia, Cambodia, Vietnam etc) put Singapore at a unique advantage. The recommendations include:

- (1) Initiation of a strategic planning process regarding Singapore's role in global health education, research and practice: Representatives from academia, government agencies, private industry as well as the non-profit sector would participate in a series of both group and individual meetings as part of a formal needs assessment process. The culmination of this process could be the launch of a final, written report at an inaugural global health conference held here in Singapore.
- (2) Organisation of inaugural global health conference in Singapore: The purpose of this conference would be to involve other stakeholders in the development of global health both in Singapore and throughout the region. Sessions could cover topics such as exploration of workforce needs, learning from regional, global health research initiatives, partnerships and exchanges, and future development of educational programmes in global health.
- (3) Establishment of funding mechanism for global health: Using the strategic planning process final report and the conference proceedings as guidelines, the next step is the establishment of appropriate funding mechanisms for global health education, research and practice. The Fogarty International Centre's funding model for global health provides a practical example. The recent proliferation of global health institutes, centres and departments in the United States is closely linked with the development of the Framework Programmes for Global Health. The purpose of this programme is to build global health research capacity in both the US and in low- and middle-income countries through the development of multidisciplinary global health

programmes. Through this funding mechanism, "institutions create administrative frameworks to bring multiple schools (such as engineering, business, arts and sciences, law, communications, public health, medicine, environmental studies and others) together on the topic of global health and develop multidisciplinary global health curricula for undergraduate, graduate and professional school students".⁽¹⁰⁾ Additionally, calls for research proposals should closely mirror global health priorities agreed upon for both Singapore and the region. Ideally, these grants calls would not only focus on specific areas of global health research, but also include strong criteria for collaboration. Most importantly, this global health funding mechanism would have mechanisms to allow resources to be used for research outside of Singapore.

- (4) Increasing the number of academic staff with expertise in global health at NUS to provide leadership and expertise in the challenging task of raising the profile of global health in Singapore.

Challenges for global health in Singapore

American universities face at least five challenges in creating academically robust global health programmes, according to the report by the Centre for Strategic and International studies.⁽⁷⁾ These challenges are generic and apply equally to Singapore. The first is the academic challenge, where due to the interdisciplinary nature of global health, faculty working in global health can face difficulties in being promoted within their own disciplinary departments. Provost leadership that places value on interdisciplinary scholarship is essential to address such problems. The second challenge is defining and developing reliable career paths for students and faculty, while the third is in making global health a truly global field geographically.

Another challenge is determining the benchmarks and ways to measure the impact and success of programmes. Examples for such benchmarks are the number of students enrolled in various degree programmes, external grants received, and papers published in high-impact journals. Global health programmes should also measure the number of faculty working on projects abroad, the number of countries where they are working, and the number of projects being undertaken. Maintaining an exciting momentum for global health under the current global economic downturn is another major challenge.

Table III. Selected important global health websites.

Institute of Medicine: Global Health http://www.iom.edu/CMS/3722.aspx
Centre for Strategic and International Studies: Global Health Policy Centre http://www.csis.org/program/global-health-policy-center
Global Health Education Consortium http://globalhealthedu.org/pages/default.aspx
Global Health Council http://www.globalhealth.org/
Centre for Global Development http://www.cgdev.org/
Bill and Melinda Gates Foundation: Global Health Programme http://www.gatesfoundation.org/global-health/Pages/overview.aspx
Association of Schools of Public Health: Global Health Core Competency Development Project http://www.asph.org/document.cfm?page=1084

Outlook

A reference to important global health websites is provided in Table III. As the majority of graduate schools offering training in global health are concentrated in highly industrialised, high-income countries, education and training opportunities in global health in middle- and low-income countries—where arguably the need is greatest—are limited. According to one estimate, Southeast Asia has only 12 graduate schools of public health for a population of well over 1.5 billion people.⁽¹³⁾ This asymmetry is even more striking with regard to the lack of research capacity in the recipient countries and the dominance of the donor nations in the setting of research agendas. As the rise to prominence of global health on the public health agenda also coincides with shifts in global balances of power, Asia has an expanded role to play in supporting global health teaching and research both in the region and throughout the world. Singapore is geographically ideally located in Asia and already serves as a science hub. With its impressive economic achievements, excellent medical system and success in developing its biomedical sciences industry, Singapore exists within an increasingly interconnected world and stands to benefit from innovative funding mechanisms that capitalise on the country's strengths while building capacity in the region. Potential benefits to Singapore are best articulated through Stuckler and McKee's five metaphors of global health policy: global health as foreign policy, security, charity, investment and public health.⁽¹⁵⁾ A strong global health programme that is supported by academia, government, industry and the non-profit sector not only bolsters Singapore's presence and influence within the region, but also has the added benefit of protecting its citizens from ill-health. Singapore, as a

global health hub, will impact the country and its citizens economically and medically.

Singapore will benefit from establishing a formal, government-supported agency committed to international development as an important mechanism that unites all five of Stuckler and McKee's global health policy metaphors. Foundations, universities, government agencies and statutory boards, as well as the private sector, all have an important role to play in moving the global health agenda forward in Singapore. By enlisting multiple disciplines to unravel the complex determinants of health, by harnessing the passion and energy of students who benefit from formative global health education and service opportunities, and by being on the forefront of scientific discovery and health care delivery, Singapore is poised to change the landscape of global health and ultimately, to positively impact the health of the world.

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