Blended learning for healthcare workers: Closing the gap in global health
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door

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Dear Dean of the University,
Dean of the Academic Medical Center of the University of Amsterdam,
Colleagues of the Faculty of Medicine,
Students,
Dear Board members,
Friends and family,
Thank you for attending this inaugural address today.

First of all, I would like to express my gratitude to the leadership of the Faculty of Medicine for creating a chair in Global Health Education – the first chair devoted to this subject in the world. We live at a time when information flows via social networks and through the Internet. As a result, higher education is moving more and more from local institutions providing face-to-face teaching and learning in classrooms, to a combination of teaching and learning at a range of locations and the use of online courses and exams.

To discuss the scope of global health education, we first have to define what global means in this context and how global health relates to public health. The Consortium of Universities for Global Health\(^1\) defined ‘global health’ as ‘an area for study research, and practice that places a priority on improving health and achieving equity in health for all people worldwide’. Global, as used in the term ‘global health’, implicitly includes the most developed, as well as the least developed, areas of the world. However, there is a close connection between the state of development of a continent or country and the level of medical training based on current scientific knowledge that is provided in each region. As a consequence, one of the prime goals of Global Health Education must be to enhance the level of know-how required to improve the health of the local population as best one can – initially, where such knowledge is needed most, but at a later stage, everywhere that it is required.

Therefore, Global Health Education has to focus on training healthcare workers in the developing world, using the gross domestic product (GDP) ranking and the World Bank’s health indicators as a way of assessing each country’s educational need\(^2\), \(^3\). From an epidemiological perspective, the greatest gain in life expectancy has been achieved by reducing child mortality. In 2013, the lowest GDP rankings and the highest mortality rates (per 1,000)
in under-5 year olds are found in countries in sub-Saharan Africa and South Asia. Global Health Education’s first mission, therefore, has to be: to bring state-of-the-art, evidence-based knowledge on the most relevant topics to healthcare workers in sub-Saharan Africa and South Asia.

We must, however, also pay attention to the emerging economies, such as China, India and Indonesia, as well as the developed world, such as the USA and Europe. Accurate and current Global Health Education is dependent on the most up-to-date information on prevention and treatment being available in the institutions of the emerging countries – because they have the most recent institutional memory of decades of impressive change – as well as knowledge in those institutes and universities of the developed world that are leaders in collecting and analysing data about the most effective public health interventions. But, that is not all. In the more developed countries, health education pays relatively little attention to the health issues that affect the most vulnerable groups in these countries.

The disparity in people’s vulnerability to poverty-related diseases and their access to health care is an increasingly important factor in the developed world, where the distribution of wealth and income varies considerably amongst the population. The World Health Organization states: ‘Poverty – and its common consequences such as malnutrition, homelessness, poor housing and destitution – is a major contributor to vulnerability’. The health risks that accompany vulnerability affect, in particular, pregnant women, children, the unemployed, elderly people and other marginalized groups such as, most recently, immigrants and refugees. Many factors contribute to this form of inequality. In both the USA and Europe, the differential runs according to a north-south axis.

The NGO, Doctors Without Borders, recently published a special report entitled: Migrants, Refugees and Asylum Seekers: Vulnerable People at Europe’s Doorstep. This explains how vulnerability in economic terms translates into public health threats. According to the report of the Council on Foreign Relations entitled ‘Europe’s Migration Crisis’, the ‘EU member states hardest hit by the economic crisis – Cyprus, Greece, Italy, Malta and Spain – have also served as the main points of entry for migrants and refugees because of their proximity to the Mediterranean Basin’. The majority of the refugees come from sub-Saharan Africa and war zones, such as Syria, and these immigrants experience the health risks both from their areas of origin and during their voyage to Europe; attention has to be paid, in particular, to pregnant women and children. In the EU countries of entry, health facilities are under strain because of the economic crisis. Global Health education is needed for these
regions, such as Southern Italy, with a particular focus on the health risks that affect immigrants from the developing world.

This year, in 2015, a continuing stream of immigrants is entering western and northern Europe through the Balkan route. This extends the need to pay attention in global health research and education to these new health risks presenting unprecedented challenges for the whole of Europe.

Special programs are needed with emphasis on posttraumatic stress disorder (PTSD) symptoms and other mental health problems due to repeated exposure to war or violence. In addition we have to actively monitor if diseases endemic in the countries of origin travel in significant numbers with their host to the accepting countries in Northern and Western Europe.

Global Health Education starts with the design of an appropriate curriculum and the development of a program of courses. It is defined by the demographic similarities and dissimilarities in the global burden of disease (GBD). Public Health Indicators and Interventions are the fundamentals of Global Health Education. The epidemiological and mathematical modelling community has struggled over the last decades with the best way to represent and compare the health status of people in different countries and on different continents. Three distinct measures are currently used:8

1. Years of Life Lost (YLLs), which quantify premature mortality by weighting the deaths of younger people more than deaths of older people.
2. Years Lived with Disability (YLDs), which are estimated by weighting the prevalence of different conditions based on their severity.
3. Disability-adjusted Life Years (DALYs), which quantify both premature mortality (YLLs) and disability (YLDs) within a population.

Globally, rates of non-communicable diseases and injuries are generally on the rise, while communicable diseases, maternal, neonatal, and nutritional causes of DALYs are generally on the decline9. To illustrate the different perspectives on the global burden of disease, I will look at all three sets of parameters for two countries: Uganda in sub-Saharan Africa and Indonesia in South Asia, countries in which the Dutch Non-Governmental Organization, Health [e]Foundation, has educated thousands of healthcare workers over the last decade. These data are from the year 2010.

In Uganda10, the top three causes of Years of Life Lost due to premature mortality are HIV/AIDS, Malaria and Lower Respiratory Infections. In terms of Years Lived with Disability, which measures premature severity of disease, the top three conditions are very different: iron-deficiency anaemia was the most important condition, followed by major depressive disorder and low back pain was third in importance. Combining the two measures into DALYs
results in the same ranking as Years of Life Lost. This demonstrates that the level of disability during a lifetime is not adequately represented in the DALYs assessment. Global Health Research and Education needs to address this issue.

In Indonesia, a similar phenomenon was observed. The top three causes of Years of Life Lost and Disability-adjusted Life Years were different from those in Uganda: Stroke (or cardiovascular disease), Tuberculosis, and Road Injury. However, and this may surprise you, the causes of Years of Life with Disability were the same for both Indonesia and Uganda, but were ranked differently: first was low back pain; second was major depressive disorder; and third was iron-deficiency anaemia. The first two conditions are recognised all over the world as major causes of disability, thus confirming the need for more emphasis in both Global Health Research and Education on subjective, patient-reported impairments of wellness and health; on pain; and on mental illnesses and psychological stress in reaction to the environment and disasters. Again, the focus of Global Health research and education should be on the most vulnerable populations.

The developed world will not escape the impact of importing developing world health threats: the conditions and illnesses that we all thought had been conquered and were now only of historical interest are a growing public health problem. This issue concerns both Europe and the USA. Tuberculosis (TB) is becoming a major problem in Southern Italy. A recent report found an association between TB and HIV status in foreign-born individuals – a relationship that we are all too familiar with in sub-Saharan Africa – and an association between multidrug-resistant tuberculosis and immigrant status. The report concluded that ‘effective control of TB risk factors among immigrants is crucial to obtain the goal of TB eradication’.

Another country of major concern in the EU is Greece. For the period 2009-2012, Bonavas and co-workers reported increased mortality due to influenza during the pandemic and the first post-pandemic seasons; the emergence and spread of West Nile virus; the appearance of clusters of non-imported malaria; and an outbreak of HIV infection among people who inject drugs. Taken together with the strains on the economy of Greece, the relationship between the economic state of affairs of a country and the health risks of economic downturns should be an area of concern for Global Health Research and Education.

The USA is another case in point. In some regions in the USA, health risks and vulnerability are more similar to those seen in the developing world than in the rest of North America. In both the USA and Europe, a north-south gradient in health risks has been observed. In the southern states of the
USA, access to HIV medication is limited. In the USA, the burden of disease experienced by immigrants and people living in the poorer southern states should be included in healthcare strategies, and education about global health and public health is urgently needed. Although the population of the southern USA is only 37% of the country’s total, this region experiences 50% of new HIV diagnoses and 46% of new AIDS diagnoses. Specifically, Mississippi\(^\text{15}\) has the highest rates of new HIV infection in the USA; the highest numbers of AIDS deaths; the greatest number of people living with HIV/AIDS; and the fewest resources devoted to HIV/AIDS. Mississippi has the highest death rate in the country: 32.9 per 1,000 people. A Mississippian with HIV/AIDS is almost twice as likely to die as the average American infected with the virus.

Another surprising healthcare development in the USA was the return of measles in California\(^\text{16}\), indicating that cultural and social determinants may strongly influence, and might even undo, the immense success in life expectancy and health in the developed world, if new public health measures, rules and regulations are not in place and the people concerned are not educated properly.

Factors such as globalization, climate change, urbanization, increased mobility, and disasters such as civil wars, tsunamis and earthquakes, should be considered from a public health perspective and therefore must be included in a Global Health Education curriculum. To consider a few potential events: tropical infections, such as West Nile Virus, Chickengunya, malaria have changed their geographical distribution and might migrate to areas that were previously considered to be temperate zones if these regions become warmer as a result of global warming. Tick-borne diseases, such as Lyme disease continue to increase, wildlife movement and land-use changes might continue to exacerbate the incidence. However, changes in weather, particularly extreme weather, will also affect tick activity and abundance.

These changes might take the medical community by surprise and it will require training and access to appropriate healthcare to control these vector-borne diseases.\(^\text{17}\)

Having discussed the scope of Global Health Education, I will now focus on how to design and implement a Global Health Education curriculum and program, based on Health[e]Foundation’s extensive experience of providing health education over the past decade.

The prime objective for education in global health is equalizing health knowledge between the medical and nursing schools in the developed world and those in the developing world and emerging economies. The shortage of educational institutions\(^\text{18}\), as well as the lack of continuous medical education opportunities for all health professionals, in the developing world limits the
opportunities for individuals to be trained; mentored or tutored; and to stay up-to-date. The other barrier is the paradoxical fact that – considering the health risks and the people in need of health care – there are not enough doctors and nurses to be educated in many developing countries. Post-graduate training is therefore directly linked to the capacity and the quality of the local medical education. This is where joint appointments at medical and nursing schools in the developed and the developing world, exchange programs and institutional relationships are beneficial and long overdue.

The shortage of doctors, nurses and midwives is most pressing in sub-Saharan Africa. Eleven percent of the world’s population lives in these countries; however, they experience 25 percent of the global disease burden. Sub-Saharan Africa has only 3 percent of the world’s health workers despite the overwhelming need for healthcare. The capacity of most African medical schools is insufficient; the programs are hugely oversubscribed, up to levels of 70%. After admission, the student-dropout rate is extremely high, often due to inadequate high school education. Funding for the faculties is largely based on the students’ tuition fees and so salaries are too low to attract sufficiently trained professors and tutors. There are insufficient funds to supply the students with the minimum levels of infrastructure and modern equipment that are needed for appropriate training. This vicious circle can be broken by using new and innovative teaching methods that have a lower cost base. However, the formal training capacity also has to be scaled up and this is currently underway in many countries.

In rural areas of South Africa, Rwanda and Ethiopia, new medical schools and nursing programs have been started in order to increase the number of trained health professionals. In addition, a consortium of medical schools in Namibia, Botswana, Zambia, Mozambique and Lesotho has developed a comprehensive program to substantially improve their teaching. They jointly designed curricula that are based on competencies derived from health-system needs and contexts; they initiated transformative learning and change agent advocacy; they promoted equitable medical school admissions policies and developed strategies to keep the students motivated and prepared to complete their training. To close the health education gap even further, community health workers are trained to work in prevention programs; to provide information to patients; to use simple diagnostic and therapeutic tools; and to help train junior workers. This task-shifting strategy is particularly well developed in countries like Rwanda and South Africa. I consider that one of the tasks of Global Health Education is to assist this process of task shifting, and, for that reason, we, at Health[e]Foundation, have started and implemented training programs for multidisciplinary teams.
I realized – and now understand even better after a decade of experience – that many kinds and levels of Global Health Education are needed; and that enormous efforts by many people – stakeholders, supporters and educators – are required in order to achieve progress.

Enthusiastically, and may be somewhat naively, we started a not-for-profit foundation: Health[e]Foundation to fill part of the global health education gap. Its mission is to provide education for doctors, nurses, counsellors and other health professionals on a large scale, especially in resource-poor settings. Distance learning was the only training option. Health[e]Foundation came up with efficient solutions to the challenges of creating and implementing global health education programs. The starting point was to create the best possible series of courses by asking the best international experts in the field to be responsible for a particular topic. The development of the first educational modules (HIV and AIDS) by Health[e]Foundation was initiated in 2003, when antiretroviral therapy (ART) was initially introduced on a large scale in Africa.\textsuperscript{25} The medication was available, but healthcare workers needed training in diagnostics and the ins and outs of life-long therapy. HIV[e]Education was the first program that we developed in response to this need.\textsuperscript{26}

The HIV epidemic is now at a turning point. Globally, the rate of new infections and the number of AIDS-related deaths have decreased. More people than ever are on treatment, and the scale-up of new prevention options can help to control the epidemic. Yet, challenges remain. Health systems are under strain due to high demand and limited resources. Stigma and gender inequalities limit access to essential HIV services for those people who need them the most. In response we developed the Mental health and HIV program, and HIV and Human Rights modules. In answer to emerging challenges, we initiated programs, such as those on TB and on Ebola. Due to shifts in the Global Burden of Disease, we have also developed programs on non-communicable diseases, such as cardiovascular diseases and diabetes and started the Female and Family[e]Education program to address Sexual Reproductive Health and Rights, as well as neonatal health.

Almost all the medical conditions that we target in our training programs share epidemiologic determinants, and there are common features in the methods used to control these diseases. There is often a significant public health component to be considered, and disease prevention plays a key role in this. This is the reason that, in addition to the care programs of Health[e] Foundation, we developed the Community[e]Education programs. Health[e] Living – a prevention program for 12-16 year olds – has been developed, as well as a program entitled Health[e]Community, which implements the Female and Family program in communities. Community workers, teachers and
peer educators are trained to introduce the programs in schools and communities. Finally, I want to address how to transfer knowledge in such a way that large numbers of professionals benefit and are able to apply their knowledge in the field. As I emphasized before, new and innovative methods of education are needed to fill the education gap: the Internet and smart phone revolution, as well as the broad usage of social media, have created the appropriate learning environment. In May 2012, Harvard and MIT’s joint venture in massive open online courses (MOOCs) was introduced with the bold promise: ‘Online education will change the world.’ In the years following the initial hype surrounding MOOCs, the verdict has oscillated between massive optimism and outright scepticism. Success was claimed prematurely when hundreds of thousands of people registered for the courses and this led to the New York Times declaring ‘2012 the year of the MOOC’. However, the original optimism was seriously reduced when it became clear that only 1% of the students who had registered had completed enough of the courses to receive a certificate.

Stanford’s president, John Hennessy, suggested that two words are wrong in MOOC: massive and open. The suggested solution to the compliance failure was scaling down, not up. The new acronym SPOC (small private online course) allowed professors to fully engage a targeted and focused group of learners who, in turn, are motivated by the intensive personal setting. The change to 90 minute lectures was a deliberate move away from the MOOC usage of short, pithy and TED-talk-like lectures. The longer lectures were accompanied by a concise, but rigorous, reading list that fitted in with the lives of working professionals. The Adobe conferencing system allowed for lively classroom-like discussions on-line.

In a way, Health[e]Foundation pioneered SPOCs by introducing the blended learning format 12 years ago. Participants enjoy both onsite training, as well as distance learning via computers. The blended learning program starts with a kick-off workshop, and is followed by self-study in the home and/or workplace for three months. During the self-study period, participants are encouraged to interact online with their peers via a participant portal and to seek e-tutor support through their personalized e-learning account. After the self-study period, a follow-up workshop takes place, during which the course is evaluated; lectures are given; and participants take part in interactive exercises. All of the participants who successfully complete the course, with a minimal pass rate of 60% per module, receive a certificate.

For each course, we start with a targeted group of 35 to 50 healthcare workers and invite them to a hotel or conference site near to their own African,
Asian or Caribbean work environment. It is made clear that they are starting a three-month training course. Participants learn to use the on-line program on their computer, using an USB stick that we supply in areas where Internet access is intermittent, or on a tablet or smartphone, depending on their circumstances. Health[e]Foundation has a learning management system in place to monitor and evaluate the progress of the participants. Their increase in knowledge can be measured via the electronic tests taken before and after each training module. During the workshops, the theoretical knowledge of the participants, for instance of the content of the HIV/AIDS module, and their attitude towards people living with HIV/AIDS is measured, respectively, by using actual clinical case studies and an AIDS attitude scale. After the initial workshop, participants study on their own for three months, working through the course, either online or on the USB stick, depending on how regularly they can access the Internet. During the self-study period, support is not only given by the e-tutor but also by the project manager via email and text messages.

The follow up workshop takes also place locally. It starts with face-to-face presentations by local experts and interactive exercises. Subsequently, the trainees participate in focus group discussions to evaluate the e-learning part of the program; this enables us to improve and adapt it, based on the local situation. In contrast to MOOCs with maximal 10% success rates, we have an 85% success rate and, in most countries, this rate is 100%. The learning curve over the modules improves by an average of 20%; in other words, the increase in know-how is significant, but there is always room for improvement. An extensive evaluation of training programs conducted over a 5 year period in Uganda, Mozambique and Indonesia\(^{33}\) showed that, as well the positive learning curve experienced by the participants, they were also better prepared for their daily work; had better interactions with colleagues; and were more confident in their ability to provide health care, resulting in better interactions with their patients. The fact that several participants who had studied an HIV [e]Education course in the past and were now senior staff members in other hospitals invited us to train their personnel, provided evidence of their satisfaction with the training and utility of our approach.

In China, we were forced to rely exclusively on Internet-based learning, combined with Skype, Facetime and Adobe online conferencing. We started by training 100 healthcare workers. We have a blended but ‘pure’ online approach, with an online introduction. During the three-month e-learning period, we have set up small groups who gather in classroom-like meetings online. Ideally, this will grow into a two-way interaction. Time will tell if this type of adapted SPOC approach, without on site classroom sessions during
the start-up and follow-up periods, produces similar results in terms of compliance and learning curves as our more traditional blended approach.

In order to further scale up the programs, more educators and teaching assistants will be recruited from medical and nursing schools during their residency periods. We need e-tutors, mentors and trainers on line and on site\textsuperscript{34} who have enough experience in clinical medicine. Therefore, we want to start a two-week course for medical residents of the AMC and VUmc.

We are also introducing master classes, which will be provided by professors from affiliated universities in the developing world (Africa and Asia) as well as by our authors from partner institutions in the developed world, such as the many Global Health Institutes located in Europe and North America. It is critically important to educate medical students about global health in a broad context, with a focus on the global burden of disease and inequality in terms of access to health care and health measures.\textsuperscript{35}

In Amsterdam, at the AMC, we want to be able to say with confidence that we are training ‘the global doctors of the future’. To this end, the Department of Global Health will introduce an international context into the early stages of medical studies, to provide the medical student with a broad context, in line with the AMC-UvA educational view. We want to prepare students for the healthcare of the future, with a systematic and explicit focus on innovation, especially in relation to topics such as aging, multicultural populations; disease prevention; multi-morbidity and chronicity; global health; and technological advances in the healthcare sector. With this vision, the AMC Bachelor Curriculum has to offer students an international profile that goes well beyond the endpoints that were defined for a medical degree in the Netherlands before.\textsuperscript{36} In the bachelors program starting in 2016 global health education will provide students an opportunity to consider health and disease conditions in a broader and more international perspective, and familiarize with relevant concepts from other disciplines.

In the past three-quarters of an hour or so, I have presented you with my view of what Global Health Education entails and what we, as educators, need to accomplish. I am convinced that this new and broader look at what a doctor is, should know and should be able to do, will prepare the healthcare worker of the future for his or her ever-expanding task, both geographically and demographically. I am convinced that better training of doctors and nurses, both here and overseas, will benefit all, especially the people most in need of care.

There is no way that I could stand here in front of you and be able to give you this perspective on Global Health Education without the help of, and
training by, many of you in the audience and people who could not be here. I would like to pay homage to them.

Joep Lange is the first person I would like to thank. He supported my career in Global Health since it began in 2001. We started our collaboration in India. Afterwards he was the person within PharmAccess who realized the need for a strong training program. Joep and I started an e-learning program with Carlo Gianquinto, and this was subsequently continued in 2003 as Health[e]Foundation. Joep continued his support as Chair of the Supervisory Board of Health[e]Foundation and fought for the chair that is being inaugurated today. I am sure that it is not just me, or Health[e]Foundation, that misses him enormously. Everyone in this hall has his or her own memories of this great person, in whose honour the new Joep Lange Institute has been set up.

Marcel Levi – I am thankful to you for your courage and vigorous support of the creation of a chair in Global Health Education.

Elly Katabira, Praphan Phanupak, Jintanat Anonwaronich, Marcel Levi, Frank Ex, Rogier van Duyn, Maurits Schouten, Frank Cobelens and Hans van der Noordaa – I thank them all for serving diligently as Supervisory Board members for Health[e]Foundation. All of them have become my lifelong friends.

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Without Nadine Pakker, my friend and co-leader of Health[e]Foundation, we would not have been able to achieve anything, I am convinced. Thank you, Nadine for all you have done and I look forward to working together in the future. Health[e]Foundation cannot survive without you. The project managers – Lisa Gullbranson, Tirza de Lange, Jacqueline McAuley, Liesbeth de Raadt as well as the project managers from the past – I thank you all for your commitment and drive. IT is our business card – nothing would work without Marcel Santoso in combination with the innovative team of Crossmarx’ Laurens van der Klis.

I have always combined my work at Health[e]Foundation with being a practicing clinician. Since 1981, I have worked as a general practitioner at the Reguliersgracht Practice and, thanks to my colleagues Wim van Kernebeek, Onno Zeylstra and Louise Avenarius and the practice assistants, I have had the time, space and work experience to be able to divide my time between clinical practice and working and traveling for the Foundation.

My parents – who gave my sisters and brother all the chances and options in life – I thank for preparing me to be who I currently am and what I do. My dear friends – I will not mention all of the names of my big warm extended family – they all know how I cherish their love and support.

And, lastly, I thank the love of my life, Jaap Goudsmit, my sweetheart since first year of medical school and the enlightened father of our dear daughters, Judith, Leah and Keziah. We share love, joy and sadness in good times and bad times. I thank my grown up, beautiful, talented and successful daughters who have chosen a professional life outside of medicine, but have supported me with their creativity and have always stood behind my choices, endeavours and travels in many original and practical ways.

I would like to end with Nelson Mandela: Education is the most powerful weapon you can use to change the world!

Ik heb gezegd.
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