Introduction to Global Health

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Historical origins of global health

- Colonial medicine
- Missionary medicine
- Military medicine
- Tropical medicine
- International health
- Global health
1900: Walter Reed, MD, Yellow Fever

Sir Ronald Ross, Mrs. Ross, Mahomed Bux and laboratory assistants at the laboratory in Calcutta where the life history of the malaria parasite in birds was fully worked out in 1898. (Courtesy: London School of Hygiene and Tropical Medicine)
Towards a common definition of global health

Jeffrey P Kaplan, T Christopher Bond, Michael H Merson, K Srinath Reddy, Mario Henry Rodriguez, Nelson K Sewankambo, Judith NWasserheit, for the Consortium of Universities for Global Health Executive Board

Definition: global health is an area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide.

<table>
<thead>
<tr>
<th>Global health</th>
<th>International health</th>
<th>Public health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographical reach</td>
<td>Focuses on issues that directly or indirectly affect health but that can transcend national boundaries</td>
<td>Focuses on health issues of countries other than one's own, especially those of low-income and middle-income</td>
</tr>
<tr>
<td>Level of cooperation</td>
<td>Development and implementation of solutions often requires global cooperation</td>
<td>Development and implementation of solutions usually requires binational cooperation</td>
</tr>
<tr>
<td>Individuals or populations</td>
<td>Embraces both prevention in populations and clinical care of individuals</td>
<td>Embraces both prevention in populations and clinical care of individuals</td>
</tr>
<tr>
<td>Access to health</td>
<td>Health equity among nations and for all people is a major objective</td>
<td>Seeks to help people of other nations</td>
</tr>
<tr>
<td>Range of disciplines</td>
<td>Highly interdisciplinary and multidisciplinary within and beyond health sciences</td>
<td>Embraces a few disciplines but has not emphasised multidisciplinarity</td>
</tr>
</tbody>
</table>

Table: Comparison of global, international, and public health
Inequities are staggering

http://www.effectivealtruism.org/
Our Broken Economy, in One Simple Chart

By DAVID LEONHARDT
AUG. 7, 2017

But now, the very affluent (the 99.999th percentile) see the largest income growth.

The poor and middle class used to see the largest income growth.

Note: Inflation-adjusted annual average growth using income after taxes, transfers and non-cash benefits.
These 8 billionaires are as rich as half the world's population, Oxfam says

By PAN PYLAS, Associated Press
Monday, January 16, 2017 9:27am

The eight individuals who own as much as half of the rest of the planet are all men, and have largely made their fortunes in technology. Clockwise from left are Bill Gates, Michael Bloomberg, Larry Ellison, Mark Zuckerberg, Amancio Ortega, Warren Buffett, Carlos Slim Helu, and Jeff Bezos. [All photos from Associated Press, except Bloomberg (New York Times) and Ortega (Getty Images)]]
Giving What We Can is fundraising for 2017

We need your support to continue to grow our community of committed, effective givers. Help us make 2017 even bigger by making a donation to our parent organisation, The Centre for Effective Altruism.

Progress $1,942,163

Growth Target $6,440,000

HOW RICH AM I?

Location
United States

Income can't be blank
The total income for your household after tax.

People in your household
- 1 adults + - 0 children +

Calculate!
Global health offers us a chance to do address such inequities

• Regardless of any definitions, in its broadest sense, global health is about making the world a healthier & equitable place.
  • Each of us can choose to make a contribution here, regardless of our discipline, training, or specialization.
  • Even small contributions can make a big difference
• All major universities are now investing in global health
• New donors and agencies (e.g. Gates Foundation) have stimulated great interest
Why care about global health?

- There is an ethical imperative to ensure health as a fundamental right for all — but this is far from reality for millions.
- Globalization has truly made the world flatter, and communication tools & travel have shrunk distances/time.
- Health is tightly linked with economic and social development in a highly interdependent world.
We can move the needle a lot, if we focused on the poorest and most vulnerable

100x Multiplier: We are about 100 times richer than the poorest billion people in the world, and we can do several hundred times more to help them than we can to help others in the rich countries we live in.

http://www.effectivealtruism.org/
BURDEN OF DISEASE
First, the good news

• Trends in global poverty
• Trends in life expectancy
• Trends in under 5 mortality
• Trends in maternal mortality
• Progress in polio & guinea worm eradication
The World as 100 People over the last two centuries

### Extreme Poverty

- 6 not living in extreme poverty in 1820
- 94 living in extreme poverty in 1820
- 90 not living in extreme poverty in 2015
- 10 living in extreme poverty in 2015

### Democracy

- 56 living in a democracy in 2016
- 44 not living in a democracy in 2016

### Basic Education

- 83 have not attained any education in 1820
- 10 living in extreme poverty in 1820
- 14 have not attained any education in 2015
- 86 have basic education or more in 2015

### Vaccination

- 86 vaccinated
- 14 not vaccinated
- 0 vaccinated

### Literacy

- 12 are able to read in 1820
- 88 are not able to read in 1820
- 15 are not able to read in 2015
- 85 are able to read in 2015

### Child Mortality

- 43 die before they are 5 years old
- 96 survive the first 5 years of life
- 96 survive the first 5 years of life
- 1 die before they are 5 years old

Data sources:
- Education: UNESCO data are available for 1980 to 2010 – the CPI Education was licenced in 1998.
- Literacy: OECD for the period 1960 to 1999; UNESCO for 2014 and later.

Democracy: Polity IV index (own calculation of global population share)
- Child mortality: up to 1990 own calculations based on Gaps and Take: World Bank thereafter

All these visualizations are from OurWorldInData.org an online publication that presents the empirical evidence on how the world is changing.

Licensed under CC-BY-SA by the author Max Roser.
Life expectancy at birth in countries around the world 1540-2011 – Max Roser

The author Max Roser licensed this visualization under a CC BY SA license. You are welcome to share but please refer to its source where you find more information: OurWorldInData.org/data/population-growth-vital-statistics/life-expectancy

http://ourworldindata.org/
Child mortality

Child mortality by world region – by Max Roser
Children dying before the age of 5 per 1,000 live births.

Falling faster
Number of deaths of under-5-year-olds*, m
- Actual
- At 1990-2000 trend
- At 1996-2001 trend

Source: Brookings Institution
*Developing countries

© The Economist Newspaper Limited, London, September 27, 2014
Maternal mortality

http://ourworldindata.org/
We have seen big drops with some infections
On this day in 1980, the WHO announced that Smallpox had been eradicated. Here's how:

[Link to TED talk](https://www.ted.com/talks/julian_mack_inquiry_into_1980_smallpox_era)
Polio

PROGRESS AGAINST POLIO

1988

http://edition.cnn.com/2015/08/19/health/nigeria-polio-eradication-vaccine/index.html#b08g25t20w15
Malaria
This year, so far, there have been only 7 human cases

BUT A LOT OF WORK TO BE DONE

5.9 MILLION
UNDER 5 CHILD DEATHS IN 2015

1.8 MILLION
TB DEATHS IN 2015

1.1 MILLION
AIDS DEATHS IN 2015

303,000
MATERNAL DEATHS IN 2015

2.1 MILLION
NEW ADULT HIV INFECTIONS IN 2015

807-1,121 MILLION
PEOPLE INFECTED WITH ROUNDWORM IN 2013
Lancet 2035

Unfinished agenda
- High rates of avoidable maternal and child deaths & infectious diseases

Emerging agenda
- Demographic change and shift to NCDs and injuries; pandemics; AMR; environmental health & climate change

Financial protection agenda
- Impoverishing health expenditure and increasing costs
~300,000 mothers and ~6 million children die around the time of birth, largely in poorer countries
Still Too Many

In 2015, 2.6 million children died in their first month of life.

Causes of death

- 29% Prematurity
- 27% Encephalopathy (asphyxia and trauma)
- 13% Sepsis and other infections
- 9% Congenital birth defects
- 7% Other neonatal disorders
- 6% Pneumonia
- 9% Other

Source: IHME
Growing concern over antimicrobial resistance
Out of the world's estimated 7 billion, 6 billion have access to mobile phones.

Only 4.5 billion people have access to toilets.
THE NEXT PANDEMIC?
Non-communicable diseases in developing countries
Global Burden of Diseases, Injuries, and Risk Factors Study: over 1,000 people from over 100 countries put together all the world’s data on more than 1,000 different clinical outcomes

Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990–2013: quantifying the epidemiological transition

GBD 2013 DALYs and HALE Collaborators

Lancet 2015
<table>
<thead>
<tr>
<th>Condition</th>
<th>Developing</th>
<th>High-income North America</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower respiratory infections</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Diarrheal diseases</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Malaria</td>
<td>4</td>
<td>161</td>
</tr>
<tr>
<td>Stroke</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Preterm birth complications</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>Road injury</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>COPD</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Low back pain</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Neonatal encephalopathy</td>
<td>12</td>
<td>68</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>13</td>
<td>44</td>
</tr>
<tr>
<td>Iron-deficiency anemia</td>
<td>14</td>
<td>49</td>
</tr>
<tr>
<td>Neonatal sepsis</td>
<td>15</td>
<td>111</td>
</tr>
<tr>
<td>Diabetes</td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td>Congenital anomalies</td>
<td>17</td>
<td>30</td>
</tr>
<tr>
<td>Protein-energy malnutrition</td>
<td>18</td>
<td>120</td>
</tr>
<tr>
<td>Meningitis</td>
<td>19</td>
<td>97</td>
</tr>
<tr>
<td>Self-harm</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Falls</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>Cirrhosis</td>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>Neck pain</td>
<td>23</td>
<td>11</td>
</tr>
<tr>
<td>Interpersonal violence</td>
<td>24</td>
<td>28</td>
</tr>
<tr>
<td>Other musculoskeletal injuries</td>
<td>25</td>
<td>7</td>
</tr>
</tbody>
</table>

http://vizhub.healthdata.org/irank/heat.php
Great resources to explore

http://www.healthdata.org/results/data-visualizations

http://ourworldindata.org/

http://www.gapminder.org/
We really, truly live in a flat, highly interconnected world.

The world is more connected than in any time in human history. Distance no longer affords protection from disease, viruses, even epidemics.

Dr. Tom Frieden
Director of CDC
How a flat world impacts health

Easy transmission of infectious threats and epidemics

Health affects of global climate change and environmental disasters

Immigration, war, and conflicts pose continuous challenges

Trade, communications, and socio-economic development can cause positive and negative health effects
Global spread of epidemics

Global Examples of Emerging and Re-Emerging Infectious Diseases

- Antimicrobial-resistant threats
  - CRE
  - MRSA
  - C. difficile
  - N. gonorrhoeae

- H3N2v influenza
- Cyclosporiasis
- E. coli O157:H7

- Measles
- Human monkeypox
- Listeriosis
- Bourbon virus
- 2009 H1N1 influenza
- Adenovirus 14
- Anthrax bioterrorism
- Chikungunya
- Hantavirus pulmonary syndrome

- Dengue
- Zika virus
- Yellow fever
- Cholera
- Marburg hemorrhagic fever
- MDR / XDR tuberculosis

- West Nile virus
- Enterovirus D68
- Powassan virus
- E. coli O104:H4
- Drug-resistant malaria

- Cryptosporidiosis
- Ebola virus disease
- Diphtheria
- MERS-CoV
- Akhmeta virus
- Rift Valley fever
- Typhoid fever
- SFTSV
- Bunyavirus
- E. coli O157:H7
- H10N8 influenza
- H7N9 influenza
- H5N1 influenza
- SARS
- Nipah virus
- Hendra virus
- Enterovirus 71
- Human monkeypox
- Ebola virus disease
- Plague

- Lyme disease
- vCJD
- Lassa fever
- HIV

○ Newly emerging
○ Re-emerging/resurging
○ “Deliberately emerging”

September 2017

4,000+ airports in the world, with 40,000+ connections between them

“the global response to the rise of new pathogens has continued to be limited, uncoordinated, and dysfunctional. From SARS to MERS, H5N1 to H1N1 to H7N9, the story has been similar. Poor nations are unable to detect new diseases quickly and bring them swiftly under control. Rich nations generally show only marginal interest in outbreaks until the microbes seem to directly threaten their citizens, at which point they hysterically overreact. Governments look after their own interests, cover up outbreaks, hoard scarce pharmaceutical supplies, prevent exports of life-saving medicines, shut borders, and bar travel.”
Air pollution & climate change – cannot be contained


How have countries responded?

Alma Ata, MDGs, and now SDGs
Alma Ata, 1978

The International Conference on Primary Health Care calls for urgent action by all governments, all health and development workers, and the world community to protect and promote the health of all the people of the world by the year 2000.
But many countries hardly invest anything in health
MDGs: 2000 - 2015

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development
THE MILLENNIUM DEVELOPMENT GOALS (MDGs) ARE THE MOST SUCCESSFUL GLOBAL ANTI-POVERTY PUSH IN HISTORY. LET’S STEP UP ACTION TO THE 2015 MDG TARGET DATE AND BEYOND.

MDG 4: REDUCE CHILD MORTALITY

17,000 FEWER CHILDREN DIE EACH DAY THAN IN 1990

6 MILLION+ CHILDREN STILL DIE BEFORE THEIR FIFTH BIRTHDAY EACH YEAR

LET’S STEP UP
The Millennium Development Goals (MDGs) are the most successful global anti-poverty push in history. Let's step up action to the 2015 MDG target date and beyond.

MDG5
Improve maternal health

Maternal mortality fell by 45% since 1990

Let's step up

Only half of women in developing regions receive recommended health care during pregnancy.
On September 25th 2015, 193 world leaders committed to 17 Global Goals.

Goal #3 is: Good Health and Well-being

http://www.globalgoals.org/
Universal health coverage is top priority for new WHO chief

Tedros Adhanom Ghebreyesus speaks at the London Summit on Family Planning. (Russell Watkins/Department for International Development)

The next head of the World Health Organization has yet to take office, but he is already talking about his top priority: universal health coverage.

“All roads should lead to universal health coverage,” Tedros Adhanom Ghebreyesus said in his first press conference since being elected to replace outgoing WHO chief Margaret Chan.

“What the world promised when WHO was instituted in 1948 – health for all – is true (as a goal) today, but half of our population still does not have access to healthcare, universal health coverage,” Tedros said. “I think it’s time to walk our talk. The whole world is asking for that...health as a rights issue, an end in itself.”

While globalization poses major challenges, it also offers exciting opportunities...
How can you have a global health impact?
Education/expertise can help make an impact

• Medicine?

• Public health?

• Nursing?

• Allied health sciences?

• Engineering?

• Management/MBA? Law?

• Basic science research?
Global health goes well beyond medical/clinical care...
HPV vaccine: discovery to scale-up: took a long time & several stakeholders
International health: old paradigm
Global health: new paradigm
Odón device
Oral rehydration salts
Kangaroo mother care
Training lay health workers to treat childhood pneumonia
So, no matter what specific field you pursue and where you work, you can make an impact!

“Go out there build a society of givers, not takers. For me a taker is someone who has no choice. If we have a choice, be a giver.”
Joanne Liu, President, MSF
McGill Alumna
**STEP-UP: Ingredients for success in global health**

- **Strategy and soft skills**: getting the big picture, understanding the politics & diplomacy; communication and interpersonal skills (humility, cultural awareness, respect for partners and diversity, ability to listen, learn & adapt, ‘do no harm’)

- **Excellence**: You have to excel in your chosen field & and develop expertise (which includes learning from partners & communities)

- **Team work**: Large scale problems require interdisciplinary teams; impact can never be achieved by individuals

- **Perseverance**: it is not easy to improve health & earn the trust of partners, and you need to be patient and be in it for the *long haul*

- **Unrelenting Optimism**: you need to believe that you *can* make a difference and learnt to overcome failures

- **Passion**: You need to be really excited about the field and have a *vision* for making a positive contribution
"What Makes Global Health and the People Who Practice It Special?"

William Foege, MD, MPH
Emeritus Presidential Distinguished Professor of International Health
Rollins School of Public Health
Senior Fellow, Bill and Melinda Gates Foundation

Emory University

194 views
Caveats & schisms (to be covered separately)

• There are many criticisms of and problems in global health
  
  • Global health is a Western construct
  • It is still unequal – in power, flow of money, information, etc.
  • It perpetuates colonialism (‘neocolonialism’)
  • It has done little to improve the underlying poverty & health systems in many low income countries
  • It enriches western philanthrocapitalists & institutions
  • Global health matters only when it threatens health or security of rich countries
Global health @McGill
Support from Global Health Office

- Travel Awards—fall and spring cycles
- McGill Global Health Scholars, Grads, Fellows program
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