Three ages of global health assistance

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In honor of Stephen R. Leeder
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The Widening Gap Between CD and NCD or, Where is the Future of Global Public Health?
Three ages of global health assistance

- Humanitarian—1945-1990
- Non-communicable diseases—2011→
Stage 1: Humanitarian

• Foreign aid part of a plan to avoid the post-WWI revenge-based disaster
• Foreign aid was a political tool in the cold war
• Established with donors and recipients
• Central policy determination and limited local input
• In spite of Alma-Ata, selective primary care model
• Focus on maternal-child health, fertility, sanitation, and infectious diseases
Stage 2—HIV/AIDS

- HIV/AIDS transformed global assistance
- International aid became global health in an interdependent world
- Patient advocacy, political activism and human rights were incorporated
- Trade and IP rules were changed
- Merged public health and patient care
- Funding increased by orders of magnitude
- Donor-recipient boundaries blurred
- Local constituencies assumed “ownership”
Stage 3—Non-communicable disease

- Introduced by Omran in 1971!
- Now coming into its own: a) 2009—Global Alliance for Chronic Disease. b) 2011—UN General Assembly High Level meeting on chronic disease; c) 2012—Release of the GBD 2010 data set; d) 2013--Lancet Commission on Health 2035.
- If we proclaim it, it will exist!
Timeline of support of chronic disease as an area of global concern

- Major disease pattern known for 4 decades (Omran, 1971)
- Confirmation with global data (Global Burden of Disease, 1996)
- Profound economic impact will emerge within the next 2 decades (Raymond, 2003)
- Dominant impact in working age populations in less developed economies (Race against Time, 2004)
- Risk factors and precursor illnesses such as hypertension have the same impact everywhere; the Interheart study (Yusuf 2005)
- Global Alliance for Chronic Disease--2009
- UN General Assembly embraces CD (2011) In May 2012, a target is set: a 25% reduction in premature NCD-related deaths by 2025 or “25 by 25”.
- GDB, updated—and open access on line-2012
- Lancet Commission on Health 2035--2013
The 21st Century Paradigm

Distribution of Funding for Programs in the U.S. Global Health Initiative, by Sector, FY 2001- FY 2010*

FY 2001
$1.7b
17%
22%
8%
35%
6%
8%

FY 2004
$3.3b
10%
12%
6%
51%
17%
6%

FY 2007
$5.9b
7%
7%
3%
12%
3%

FY 2010*
$8.6b
6%
9%
2%
64%
10%
2%

*FY 2010 represents the President’s budget request only.
Note: The GHF was created as an initiative in FY 2009 and FY 2009 and FY 2010 amounts are included in its proposal. All prior years represent the same programs and accounts which were not yet referred to as the GHF.
Any NCD, CVD money included in “other”

Figure 2: Global Health Budget Request By Sector, FY 2014

Total = $9.0 billion

Notes: Global health funding represents accounts in the Global Health Initiative (GHI) only.

Kaiser Family Foundation-2013
Why is innovation thwarted?

“There is no evidence that the present system of subsidizing innovation—government and foundation grants—works any better than that of kings and queens of earlier times; the same committee is always sitting at the gate.”

Barzun, J. From Dawn to Decadence; p99; Harper, 2000
A few words about HIV/AIDS

The epidemic is here to stay
It has changed the patterns of global health assistance, and for the better
The progress is stunning
It can no longer be the “cutting edge” of academic public health.
Access to antiretroviral treatment by region
December 2010

Percent on ARVs as of end 2010
(of those in need in low- and middle-income countries)

- Total: 47%
- Sub-Saharan Africa: 49%
- Latin America/Caribbean: 63%
- East/South/South-East Asia: 39%
- Europe/Central Asia: 23%
- North Africa/Middle East: 10%

Estimated Need = 14.6 million

5-Year adherence rates for ART (Vastly better than for CVD, post-MI, or HBP)
The world is paying its HIV bill

GLOBAL INVESTMENTS FOR AIDS - 2011

Low- and middle income countries: US$ 8.6 billion

International assistance: US$ 8.2 billion

UNAIDS
What does UNAIDS tell us?

- The global, and SSA, incidence is plummeting
- HIV mortality is falling and survival is increasing—and survival is nearly symptom free
- Mother-to-child transmission is starting to fall significantly
- ART penetrance, globally, is skyrocketing
- Sexual behaviors that fuel the epidemic are changing
- Emerging economies are paying to eradicate the epidemic

And the message

What’s the next challenge?
What might UNAIDS not be telling us?

- There are regions with woeful under reporting of HIV/AIDS
  - Russia—USAID tossed out—not a career option
  - Central Asia—In 2014 EU & U.S. depart; Russia goes in. (see above)
  - India—They will tolerate aid but do not need it; they need commitment
  - Iran—MDs getting grants for HIV prevention jailed
  - North Africa—currently has other priorities
The Economist-28 September 2013
Now even the man on the street knows the good news

“In the battle between (HIV) virus and people; people are winning”
What else happened in the current decade beyond crossing the HIV/AIDS tipping point?

The world became more urban, more focused on health, wealthier, and more open. These are the 4 major drivers of the emergence of global NCDS.
Urban
Global population trends: 1950-2030
## Population shifts (Rural/Urban) 1950-2030

<table>
<thead>
<tr>
<th>Country</th>
<th>1950</th>
<th>2000</th>
<th>2030</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>919 (34%)</td>
<td>5143 (62%)</td>
<td>9799 (75%)</td>
<td>Urban</td>
</tr>
<tr>
<td>Cameroon</td>
<td>1795</td>
<td>3174</td>
<td>3235</td>
<td>Rural</td>
</tr>
<tr>
<td>Cameroon</td>
<td>417 (9.3%)</td>
<td>7428 (50%)</td>
<td>16320 (71%)</td>
<td>Urban</td>
</tr>
<tr>
<td>Mongolia</td>
<td>152 (20%)</td>
<td>1413 (57%)</td>
<td>2220 (66%)</td>
<td>Urban</td>
</tr>
<tr>
<td>Oman</td>
<td>609</td>
<td>1084</td>
<td>1161</td>
<td>Rural</td>
</tr>
<tr>
<td>Oman</td>
<td>39 (8.5%)</td>
<td>1748 (72%)</td>
<td>3094 (76%)</td>
<td>Urban</td>
</tr>
<tr>
<td></td>
<td>417</td>
<td>694</td>
<td>959</td>
<td>Rural</td>
</tr>
</tbody>
</table>
Figure 3.3. The relation between urbanization rate and infant mortality rate for 182 countries (World Health Organization, 2005)
Urbanicity

Figure 3.2. The relation between urbanicity and infant mortality rate for 182 countries (World Health Organization, 2005)
Global Fertility Rate 1955-2015

A staggering decline
World fertility rate*, five-year average

Source: United Nations  
*Live births per woman  
†Forecast

Economist October 22, 2011
Thoughts on Culture and Urbanization

• Usually driven by economics and the lure of the good life
• Moving to town disrupts many cultural patterns: diet, family relationships, access to disposable income, heterogeneity of contacts, limits on behavior.
• However, because cultural equipoise is tilted in so many spheres, it is possible to introduce new drivers of behavior that can lessen disease burden.
More focused on health
Trends in U5 Mortality 1990-2010

The Lancet 2012; 380:2071-2094
Figure 5. In many countries at early stages of economic development, women who complete secondary school average at least one child fewer per lifetime than women who complete primary school only, as measured by the total fertility rate. The absolute levels of fertility vary widely from country to country. Murphy and Carr (2007), as redrawn.
Military vs Health Expenditures

Other than the Middle East and South Asia, health spending is 3 ½ to 5 x that of the military.
The Window of Demographic Opportunity

- For 20 y, dependency will decline with ↓ BR.
- Then ↑ not 0-15 but in 65+ people.
- Person >65 costs 3X child.
- Window to re-invest from productive labor is now, and closing.
Wealthier
Changes in LIC (and population) over time
The world is getting richer

Lancet 2013;382:1898-1955
Global Mortality by National Income

Top 10 causes of death in low-income countries 2011

- Lower respiratory infections
- HIV/AIDS
- Diarrhoeal diseases
- Stroke
- Ischaemic heart disease
- Prematurity
- Malaria
- Tuberculosis
- Protein energy malnutrition
- Birth asphyxia and...  

Top 10 causes of death in lower-middle income countries 2011

- Ischaemic heart disease
- Stroke
- Lower respiratory infections
- COPD
- Diarrhoeal diseases
- Prematurity
- HIV/AIDS
- Tuberculosis
- Diabetes mellitus
- Road injury  

Top 10 causes of death in upper-middle countries 2011

- Stroke
- Ischaemic heart disease
- COPD
- Trachea bronchus, lung...
- Lower respiratory infections
- Road injury
- Diabetes mellitus
- Liver cancer
- Hypertensive heart disease
- Stomach cancer  

Top 10 causes of death in high income countries

- Ischaemic heart disease
- Stroke
- Trachea bronchus, lung...
- Alzheimer disease and o...
- COPD
- Lower respiratory infections
- Colon rectum cancers
- Diabetes mellitus
- Hypertensive heart disease
- Breast cancer  

S. Mendis, WHO 2013
In China diabetes follows the money

Science 2013;342:advertisement for Shanghai Clinical Center for Endocrine and Metabolic Diseases
Determinants of total health expenditures

- Rising income *
- Changes in medical technology
- Population aging
- Higher prices
- Changes in financing and management of health care

CGD, Working paper 358; March 2014
SES: The Millennium Preston Curve
National life expectancy by income

Lancet 2006;368:2081
Bull WHO 2003;81:833
Observations on health care expenditures

• The way people value health is unique
• Demand for health service is a demand for health
• Unlike most consumption, utility of health not likely subject to declining marginal returns (The sky’s the limit!) 1% ↑ national income = 1.1-1.5 ↑ health spending
• Health services are a “superior” good

CGD-Working paper 358; March 2014
Life expectancy vs. health care spending

Organisation for Economic Co-operation and Development, November 2011 data.
More open
Not just a good idea
Number of democracies*

Source: Polity IV Project

*Countries with population >500,000

The Economist 2013; Nov 23rd: p5
The Roles of a Civil Society

- Advocates and promotes, influencing public opinion
- Builds networks, alliances and coalitions
- Provides evidence-based information to inform policy decisions
- Monitors, as a watchdog, government activity meeting goals, and reports this publicly
- Provides services such as counseling, screening, and even treating select populations
- Hence, a common denominator is that civil society works for the common good
Early attempts to ban tobacco

1632: Christian IV of Denmark banned tobacco in Norway to protect his citizens there.
1633: Sultan Murad IV banned tobacco in the Ottoman Empire
1635: Hongtaiji, Manchu Khan, banned tobacco in the empire
1639: Emperor Chongzhen banned tobacco in Beijing, China
1643: Vatican banned smoking by priests in or near churches

None of these edicts was effective

“It (smoking) is a custom loathsome to the eye, hateful in the nose, harmful to the brain, dangerous to the lungs, stinking fumes thereof nearest resembling the horrible stygian smoke of the pit that is bottomless.”
James I of England (1604)

Brook T. Vermeer’s Hat; 2008:Bloomsday Press, NY
Societal influence on diet

- **Policy/Legislation**: tax/subsidies on local/imported food; food standards (i.e. safety, salt); national guidelines; industry regulation
- **Public Information**: Labeling; school programs; advertising restrictions; point of sale information; media attention to dietary issues.
- **Societal norms**: body image norms; portion size; role of eating out; role of alcohol; role of family meal.
- **Neighborhood environment**: Cost; availability of fresh food; breadth of choice in stores; restaurant variety; quality of school/work meals.

Int J Epi 2009;38:1580
Predictions

• The explosive rise in NCDs in emerging economies will focus local attention on them (PCVD issue on CVD in SSA)
• The demand for comprehensive primary care will increase—~40 years after Alma Ata—the usual incubation period for social change
• Imaginative transformations of the health-delivery work force will occur
• A far greater focus on surgery, and hence health systems will be required
• Telehealth will assume a larger and more central role
• Much of the change will emerge from South-South assistance
A few snapshots
## Stroke rates by regional incomes

<table>
<thead>
<tr>
<th>GBD-2010 Data: all ages</th>
<th>1990</th>
<th>2005</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke incidence/100K-HIC</td>
<td>246</td>
<td>221</td>
<td>217</td>
</tr>
<tr>
<td>Stroke incidence/100K-L/MIC</td>
<td>251</td>
<td>277</td>
<td>281</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GBD-2010 data: age &lt;75</th>
<th>1990</th>
<th>2005</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke incidence/100K-HIC</td>
<td>153</td>
<td>142</td>
<td>139</td>
</tr>
<tr>
<td>Stroke incidence/100K-L/MIC</td>
<td>164</td>
<td>180</td>
<td>183</td>
</tr>
</tbody>
</table>

*Lancet 2014;383: 245*
Stroke incidence in Tanzania - 2010

![Bar chart showing stroke incidence by age group and location: Northern Manhattan blacks, Hai, Dar-es-Salaam. The chart illustrates a significant increase in stroke incidence with age, particularly in the 85-94 age group for Dar-es-Salaam.](image-url)
Hypertension in Tanzania

In 1960’s and 1970’s prevalence of hypertension in rural areas was 2-3%; by 1996 it was 31%.

Hypertension defined as blood pressure \( \geq 140/90 \text{ mmHg} \) or known hypertensive on anti-hypertensive treatment, control defined as blood pressure \(< 140/90 \text{ mmHg} \).

Health Workforce in Five Countries, According to Type of Health Worker, 2011.

South-South Aid
Old, New, or Different?

• Initial stimulus likely Bandung Conference, 1955
• Hosted by Burma, Ceylon, India, Indonesia, and Pakistan
• Pivotal meeting of “non aligned” nations during the Cold War, annoying both sides for being “disloyal”
• Encouraged, economic cooperation, technical assistance, and exchange of ideas and experts
• Motivation on a desire for mutual cooperation and economic development
• S-S-A fell after wall fell; now returning with vigor and a new focus
Randomized Kenyan study of HIV treatment impact by mobile phone or clinic follow up

Lancet 2010;376:1838
How has academic public health responded to this?

By doing nothing!
(at least in the US)
An evaluation of global non-communicable disease in public health curricula

Stephanie Shiau, MPH
Stephen R. Leeder, MD, PhD
Henry Greenberg, MD

December 6, 2013
Objective

To evaluate the availability of global NCD courses in public health curricula.
Methods

• 50 schools
  – MPH Degree
  – ASPPH schools accredited by CEPH
  – As of July 1, 2013
• Collected information available on websites
• Questionnaire
  – Availability of a global or international health department or track as well as requirements
  – Availability of chronic disease or NCD track
  – Relevant coursework: NCDs, NCD risk factors, CVD, or global NCDs, global health infrastructure.
Results

- All 50 schools had coursework available for viewing online

Percentage of CEPH-accredited ASSPH schools offering certain tracks/courses
Caveats

• Focused solely on MPH programs
• Only online material
• Did not look at
  – Doctoral programs
  – Post-doctoral positions
  – Seminar series, short courses
  – Newer programs (not ASPPH schools)
  – Double degree programs
Conclusions

• Although more than half of CEPH-accredited public health schools offer a global health focus for MPH students, few have a global NCD course available
• Schools have the capacity and the faculty to develop a program capable of training public health professionals to meet current and future needs
• This can include curricular initiatives that highlight the epidemic and their complex cultural and societal risk factors
• The need to align public health education with global public health realities is an ongoing issue
Let’s look at one example of academic indifference
The Trans-Pacific Partnership Agreement

Could this be the greatest current threat to the global control of chronic diseases?
Participants in Trans Pacific Partnership
Sources of information about the TPPA

LEAKS!

3 August 2012, Leak of TPP text on copyright Limitations and Exceptions
13 June 2012, Investment Chapter
22 June 2011, United States, Proposal for Transparency Chapter - Annex on Transparency and Procedural Fairness for Healthcare Technologies
September 2011, United States, Proposal for Selected Provisions of Intellectual Property Chapter [Placeholder Text]
23 February 2011, New Zealand, TPP Text Intellectual Property Chapter
23 February 2011, Chile, TPP Submission: Preliminary Considerations for TPP IP Chapter
10 February 2011, United States, Proposal for TPP IPR Chapter
4 March 2010, United States, Proposal for Regulatory Coherence Chapter
4 March 2010, United States, Proposal for TBT Annexes on Medical Devices, Pharmaceutical Products and Cosmetic Products

Knowledge Ecology International (10/30/2013)
Public Health Implications of TTP

Proposals to extend IP rights for Big Pharma
• Serial “ever-greening” patents
• Permit patents for diagnostic, rx, surgical METHODS
• Extend patent duration to compensate for approval delays
• Eliminate rights of 3rd parties to oppose patent claims before they are granted
• Extend exclusivity periods for data so as to delay introduction of generics
Public Health Implications of TTP Tobacco

- ISDS: Investor-state dispute settlements empower foreign investors to challenge measures that adversely affect them in global tribunals stacked in their favor, i.e. national judiciaries are excluded from any role

- Indirect expropriations: packaging and branding restrictions reduce value of trademarks, limiting “reasonable” profit expectations. Grounds for ISDS case

- Fair and equitable treatment (FET): ISDS arbitrators interpret FET to entitle foreign investors to a “stable and predictable regulatory environment:” that protects “legitimate expectations” of profit
Why Is Obama Caving on Tobacco?

A “safe harbor:” provision in the TTP agreement that protects countries that adopt tobacco regulations was dumped for much weaker measures that could put at risk American and other countries anti-smoking regulations.
The Roles of Schools of Public Health

There is not one paper on the TPP with an American public health professional as an author or co-author.

• Educate public health professionals to recognize these issues as threats—none produced
• Lead organized protest/information campaigns to curtail TPP excesses—not doing
• Emphasize CVD/NCDs in the curriculum—not done
• See the world through new eyes—let’s hope!
Final thoughts

- Changing culture is hard
- Opponents to change are powerful
- Asymptomatic disease management is an understudied problem that needs specific attention
- Public health will need to travel much further upstream than it has; it will need to engage policy development at the cabinet level
A few examples of cultural barriers
Meet one of the graduates
He speaks for many
Life expectancy at birth for US white males, by county, 1997-2001

CVD Mortality Eastern and Western Europe 2000-2007

Figure 2. Age-standardized CVD mortality rates (all ages, per 100,000) in East and West Europe for the period 2000–2007. A: males, B: females. Belgium was excluded because no data were available after 2000.
Can prevention be instituted? Finland: 35 years of progress

Figure 1: Observed and predicted decline in CHD mortality in men

Vartiainen Int. J. Epi: 2010;39;504
Another 3 stage categorization

Table 2: Alternative framings of international transfers for health

<table>
<thead>
<tr>
<th></th>
<th>Development aid</th>
<th>International cooperation</th>
<th>Global solidarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship</td>
<td>Dependence</td>
<td>Independence</td>
<td>Interdependence</td>
</tr>
<tr>
<td>Actors</td>
<td>Donors and recipients</td>
<td>Independent member states</td>
<td>Members of global society</td>
</tr>
<tr>
<td>Motivation</td>
<td>Charity; self-interest</td>
<td>Mutual benefit</td>
<td>Shared responsibility</td>
</tr>
<tr>
<td>Main instrument</td>
<td>Discretionary allocations</td>
<td>Pooled resources</td>
<td>Shared resources based on universal rights and duties</td>
</tr>
</tbody>
</table>

Lancet 2014;383:94-97
Public Health Implications of TTP

State owned enterprises (SOE); common in LIC and LMIC

• These create “unfair advantage” over private industry in taxes, subsidies, access to capital
• Gov’ts should give corporations same status or risk being sued.
• Price negotiations by gov’t for devices/drugs are an “unfair advantage” and corporations can sue in extra-territorial courts
• Conceivably these regs could affect Medicare, Medicaid and the VA. (Even now CMS cannot negotiate drug prices)

M. Flowers MD; Healthcare-Now
How AIDS Invented Global Health

International health became global health

• Disrupted the boundaries between public health and clinical medicine. (With HIV, Rx=Prevention)
• Elevated role of patient advocacy; now essential in new global (and neglected disease) initiatives,
• Triggered massive funding from organizations focused on economic development. (WB, Global Fund)
• Changed level of philanthropy by orders of magnitude
• Made Human Rights an essential component of global health activity