

Existential Challenges to Global Health

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CENTER ON INTERNATIONAL COOPERATION

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Existential Challenges to Global Health

Introduction

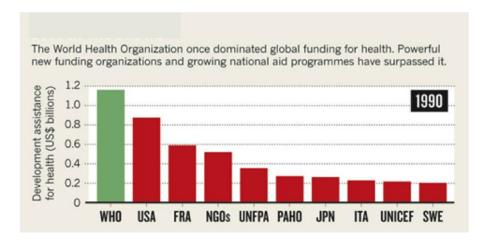
Regardless of which priorities are adopted as targets for the post-2015 world, the constellation of agencies and initiatives that constitute "Global health" face five existential challenges, any one of which could torpedo the lofty, often extraordinarily successful goals and achievements of the collective endeavors. Two of these challenges boil down to money: The search for sustainable support; and the impact inequitable access to funds has on individual health. A third challenge concerns the increasingly obvious mismatch between the structure of "Global health" and the mission's looming priorities. And the fourth and fifth possibly insurmountable challenges reflect the planetary environment within which global health practitioners are operating. Leaders and institutions that are key to Global health have barely recognized these five existential threats, much less develop policy solutions or adaptations.

Global health is a comparatively new multilateral enterprise, built atop a far less ambitious, poorly funded set of mid-20th Century programs that fell under the rubrics of "tropical medicine" and "international health," largely overseen or guided by the World Health Organization (WHO). Tropical medicine was a colonial field, executed by well-intended wealthy governments, physicians and scientists from the northern hemisphere, working in the colonized outposts of the southern. Tropical medicine aimed its science and public health ventures at ailments not then plaguing temperate northern hemisphere climes: Malaria and other parasitic diseases, pellagra, vaccinepreventable childhood scourges and the like. Over time those involved in international health envisioned a less condescending, post-colonial political world, and recognized that the notion of disease targets as "tropical" was ecologically limiting and medically incorrect. Though it straddled the Cold War, international health conceived of grand targets, such as polio and smallpox eradication, executed from the top (Geneva, Moscow, Washington and London) down to poor countries all over the world.

By the early 1980s the moniker "global health" gained popularity, reflecting a vision of worldwide solidarity in which solutions and actions for health defied the 20th Century obstacles of the Cold War, imperialism, colonialism and traditional North/South divides. As the 1990s supercharged "Davos World" of globalized economics surged forward, the phrase "global health" came to signify movement of technology and resources on a massive scale from wealthy nations to poor, to eliminate a set of diseases, especially HIV/AIDS, malaria and tuberculosis. Those global health ambitions were solidified in 2000 with United Nations endorsement of the Millennium Development Goals, three of which were clear health targets; two more had obvious impact on human health.

From 1990 to the present, the constellation of actors involved in global health has changed dramatically: from domination by the UN's World Health Organization (WHO), to a confused network of global actors, to reliant on the US government and Gates Foundation. Today - in the midst of negotiations for what follows the MDGs - these actors face five existential challenges, any one of which could torpedo the lofty, often extraordinarily successful goals and achievements of the collective endeavors. Two of these challenges boil down to money: The search for sustainable support; and the impact inequitable access to funds has on individual health. A third challenge concerns the increasingly obvious mismatch between the structure of "global health" and the mission's looming priorities. And the fourth and fifth possibly insurmountable challenges reflect the planetary environment within which global health practitioners are operating. Leaders and institutions that are key to global health have barely recognized these five existential threats, much less develop policy solutions or adaptations.

Figure 1 - Development assistance for health (US\$ Billions)



The Evolution of the Global Health Architecture

In 1990 the global health world was dominated by the World Health Organization, both in terms of funding and strategic planning and guidance. The total global health budget, including contributions made by poorer countries for their own people's healthcare and disease prevention, totaled \$5.6 billion. Most of the targets were public health goals, such as provision of safe drinking water, parasite control, vector eradication, child immunization and nutrition. Of the roughly \$5.6 billion dedicated to global health in 1990 the WHO garnered almost \$1.2 billion – just over 20 percent.

No other institution came close to claiming such resources, or delineating the strategic and scientific directions of global health. Combined, the various US government foreign assistance agencies and Centers for Disease Control ran about \$850 million worth of health programs, mostly on a bilateral basis. France ranked third in funding and influence, with a government budget of nearly \$600 million. Nongovernmental and private sector donors, combined, expended about \$500 million on global health in 1990, and the remainder of the externally applied support of health in poor countries came from other UN agencies, Japan, Italy and Sweden. The architecture of global health in 1990 was quite simple: Nearly every scheme and modicum of financing flowed from the top, down: From Geneva, Atlanta (headquarters of the US

Centers for Disease Control) and Washington, to the rest of the less-wealthy world.¹

However, though HIV had been claiming lives all over the world for more than a decade, and the AIDS pandemic was clearly out of control, the global HIV budget was less than \$300 million. Prevention of the virus' spread was such a low priority at WHO that the agency's staff openly attacked funding for AIDS programs as robbing higher concerns, such as child diarrheal disease control. In 1994, WHO officially abandoned the AIDS pandemic, shutting down its Global Program on AIDS. There were an estimated 15 million people living with HIV infection that year, nearly a million died of the disease in 1994, and 3.2 million were newly-infected. The virus had spread over the entire world, the pandemic was surging almost without any sign of hope on the medical, scientific or prevention fronts – yet, WHO walked away from it.

In 1995 the United Nations AIDS Programme (UNAIDS) was born: the first of many new multilateral agencies that would come to challenge the authority and funding of WHO, created out of the necessity to address the catastrophic pandemic. UNAIDS bridged the activities of seven UN agencies in an effort to create a harmonious, urgent response to the pandemic. The following year researchers from multiple drug companies and academic institutions announced to standing ovations at the International AIDS Conference in Vancouver that various combinations of

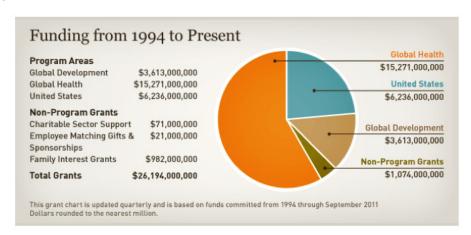
^{1.} The chart is available online at: http://www.healthmetricsandevaluation.org/tools/data-visualization/development-assistance-health-channel-assistance-global-1990-2011#/overview/explore

anti-HIV drugs, taken in daily cocktails, brought the burden of viruses in individuals' bodies down to zero-detectable, offering hope of effective treatment of the disease, if not a cure. Within weeks tens of thousands of Americans and Europeans that had been facing certain death to AIDS went on the new therapies, with miraculous results. By 1997 it was obvious that HIV+ men, women and children in wealthy countries could survive the disease, perhaps even live normal life expectancies, but the complexity of the treatments and drug costs were tens of thousands of dollars beyond the thresholds of attainability for Africans, Asians and Latin Americans living with the disease.

Since then the landscape of actors involved in global health has transformed. American philanthropists Bill and Melinda Gates launched a foundation in 1998 that named global health as its primary concern, dispersing \$1.2 billion for health the following year. Though the Foundation aimed its generosity at a long list of health

In 2000 former South African President Nelson Mandela characterized African access to anti-HIV medicines as a fundamental moral imperative, calling for both drug price reductions and donor support for AIDS prevention and treatment efforts. By the time Mandela delivered his remarks a vast, far-flung activist community was demanding universal, affordable access to anti-HIV drugs. Among the chief targets of this growing activism were the Western pharmaceutical companies that held patents on the life-sparing drugs, setting anti-HIV treatment costs prohibitively high for most of the world's needy populations. For many of its adherents, including ACT UP, Médecins sans Frontières and OXFAM, "global health" became synonymous with defiance of the World Trade Organization's patent protection provisions: Confrontations between health activists and the innovative pharmaceutical industry would become a source of division for nearly all aspects of global health.

Figure 2 - Funding from 1994 to Present

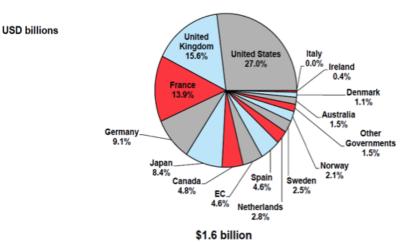


targets, its chief one was child immunization. The Gates were personally moved to create their foundation after seeing African children suffering and dying from diseases that no longer plagued the wealthy world, especially vaccine-preventable ones such as measles and polio. Overnight the philanthropic world was awed by the scale and ambition of the Gates Foundation. By 2003 Bill Gates would be the keynote speaker at the annual World Health Assembly, with many at the Geneva gathering speculating that the computer billionaire might hold more sway over global health policy than the WHO.

Two years later US President George W. Bush stunned the world, announcing creation of a multibillion dollar US HIV effort, executing much of what Mandela had called for in 2000. The President's Emergency Plan for AIDS Relief, or PEPFAR, unrolled swiftly, bringing anti-HIV drugs to more than a million people by early 2004, and 5+ million by 2011. Simultaneously a new multilateral – the Global Fund to Fight AIDS, Tuberculosis and Malaria (The Global

Figure 3 - International AIDS Assistance: Donor Governments as Share of Global Fund Contributions by Donor Governments, 2010





Fund) was born, offering an unprecedented mechanism for channeling billions of dollars into country and NGO programs.²

On a separate track, WHO created the Commission on Macroeconomics and Health, which in 2001 released a landmark analysis of global health trends and the costs various diseases levied upon societies. When the Report was released, total global health spending pegged at \$6 billion, according to its authors, who insisted the real spending need was \$27 billion annually by 2007. (By 2007 global health spending would reach \$20.4 billion.) The Report was instrumental in design of the Millennium Development Goals, setting targets for conquest of HIV and estimating the economic burden of malaria worldwide.

Excitement over global health reached the annual Davos meeting of the World Economic Forum, the UN General Assembly, the G8 annual summits and dozens of other gatherings of the wealthiest and most powerful people on Earth. By 2004 every major gathering of ministers of finance, the World Bank and global leadership included world health issues on its agenda, with HIV and malaria programs at the front of the queue. By mid-2008 annual dispersements for global health, combining private,

PEPFAR, Global Fund, developing country tax-derived increases, and all other donor support, reached some \$26 billion, or <u>roughly</u> five-fold the total for 1998.

The heady, jaw-dropping pace of growth in financial support spawned two fundamental changes in the architecture of global health governance. First, WHO was supplanted from its top leadership position, and its stature and share of donor support have steadily diminished since 2002. And second, thousands of new NGO and UN-related players entered the field, spawning confusion, complexity, even <u>anarchy</u> in the governance of global health.

The spectacular growth of global health was propelled by urgency and activism, chiefly directed to the AIDS pandemic. Metrics of success typically focused on funding, and victories were declared when the US Congress approved multi-billion dollar expenditure or former US President Bill Clinton rallied a few hundred million dollars' worth of corporate commitments. Missing from the metrics of success was the primary target of health: Lives saved. The paucity of clear standards of prevention and care for targeted diseases and health problems, coupled with disappointing, poor, even absent, outcomes data left the burgeoning global health enterprise vulnerable to attack. By 2008 it could be characterized as anecdotally

 $^{2.\} http://www.actupny.org/reports/durban-mandela.html$

Figure 4 - Very Generous Growth 2000-2007

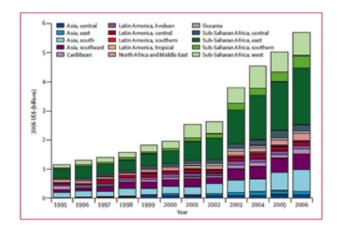
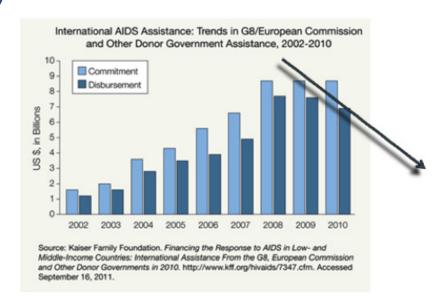


Figure 5 - Funds Decline Sharply



enormously successful, but statistically, concretely, unable to account for precisely donor funds saved lives, prevented ailments, or averted epidemics. Nobody was clearly in charge, and many NGOS and multilaterals openly battled one another over reputations and cash. Hooked on growth, global health had become a political movement, expert at lobbying the G8 and OECD for cash, and determined to reap larger financial harvests every single year.

The Effects of the 2008 Financial Crisis

The financial crash of September 2008 sowed panic across global health programs, though actual funding for most programs did not decline for two more years. The overall net of global health support remained over those two years in the neighborhood of \$26 billion, but the sources of support shifted more heavily toward the US as Europe faced dissolution of its economic union, and the potential bankruptcies of some of its states. By early 2011 the two Washingtons - Seattle and the District of Columbia were calling the shots. The Gates Foundation was the undisputed leader of all private support, and the US government thoroughly dominated public sector giving.

As <u>funding declined</u>³, global health implementers have focused on efficiency and integration, finding ways to

^{3.} http://blogs.worldbank.org/health/putting-humpty-dumpty-back-together-again, and http:// www.businessweek.com/news/2012-01-17/financial-crisis-may-kill-in-congo-as-global-health-

and http://www.irinnews.org/report.aspx?ReportId=94781

and http://www.un.org/apps/news/story.asp?NewsID=41059&Cr=UNICEF&Cr1 and http://content.healthaffairs.org/content/31/1/228.full.pdf+html

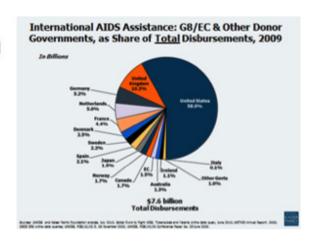
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Figure 6

The US government gives 58% of all HIV support...

The Gates Foundation gives 68% of all private donations for global health, worldwide.

And 52% of all global health, generally.



get more programmatic success out of every donor dollar (or yen or euro). Scandal rocked the Global Fund, which was unable to account for how millions of dollars had been spent in several countries. The Fund closed 2010 \$5 billion short of meeting its grant commitments. In 2011 the Fund's leadership requested \$4.5 billion in replenishment for 2012 from donors, and an overall \$20 billion to achieve the MDG targets by 2015. Angry donors committed just \$11.7 billion for 2012-15 and called for reform. Financial support dropped precipitously, and the Global Fund's Board was compelled to cease review of new grants, topple its executives, and dramatically reorganize. However, the Fund was responsible for twothirds of all malaria prevention and treatment programs in the world, and three-quarters of tuberculosis efforts. Many countries' dependency on the Fund was so great that its possible collapse was simply unconscionable: Millions of lives would be lost, especially to malaria and tuberculosis.

Meanwhile, the WHO (which operates on 2-year budget cycles) also faced a <u>shattering financial crunch</u>. Its 2011/12 budget had a shortfall of more than \$1 billion, and Director General Margaret Chan was forced to lay off 20 percent of her staff. Throughout the WHO spending was

cut, the ambitions of programs were scaled back, and the institution struggled to define its missions. Making matters worse for the two Geneva-based organizations, currency speculators ran from the US and Euro-zone recessions, selling off dollars and euros and snapping up Swiss francs. In the summer of 2011 the value of the franc soared 32 percent, making it difficult for the institutions to make payroll and cover school fees for Switzerland-based employees. Morale within both WHO and the Global Fund plummeted, as the once-heady momentum of 2000-2007 screeched into reverse gear.

The <u>decline</u>, <u>overall</u>, <u>in global health funding</u> forced heightened efficiency and accountability for all its actors, from tiny NGOs to the mighty multilaterals. The key exception was GAVI – the Global Alliance of Vaccines and Immunization. GAVI grew in the early 2000s thanks to strong support from the Gates Foundation, and faced its own leadership and structural scandals before the world financial crunch was fully felt in health circles. By the time WHO and the Global Fund were reeling from scandal and declining donor support, GAVI had restructured, hired a popular new CEO, and created transparent databases offering evidence of its achievements, framed as children

vaccinated and lives saved. As a result, in 2011 GAVI won far stronger support from donors than it requested, thanks in large part to UK Prime Minister David Cameron's decision to <u>shift</u> much of the UK's foreign assistance to the vaccination alliance.

Despite a drop in funding, a number of laudable improvements have resulted from the 2008 financial crisis. There have also been rocky shake-ups, especially at the Global Fund to Fight AIDS, Tuberculosis and Malaria, and a raft of leadership changes across the nongovernmental sector. While times have proven challenging4, the aggregate impact so far on these international organizations has been improvement, with major donors striving to enhance recipient-country ownership and engagement in health programs, NGOs generally demonstrating attention to waste and exorbitant overhead, and more policy focus given to universal health coverage and health systems infrastructure. In parallel, many poorer countries that were key targets for global health programs in the early 2000s have prospered post-2008 due to resource extraction industries, South/South investments, shifting cheap labor markets and the success of some local development schemes, allowing some increases in country spending on public goods, including health.

However, the longer-term challenges for all aspects of poor country health promise to outpace the adjustments made by global health leadership in the post-2008 era. Without significant and rather radical change in the entire perspective of global health, particularly regarding its funding dependencies, the post-2015, post-MDGs era could be grim. While some large scale restructuring ideas have been suggested by prominent leaders in the field, they do not go far enough because they fail to come to grips with the staggering changes now unfolding⁵ on the world stage.

The Current Landscape

Though most NGOS, Ministries of Health and the multilateral players struggle to deliver more services with less money, and improve their accountability and outcomes measurements, two very striking lessons have emerged from this decade's experience. First, dependency is a terrible thing, especially when it is overwhelmingly directed at a single source or nation. Secondly, spectacular changes in the architecture and aspirations of global health can occur swiftly, without rational discourse, and have unforeseen, sometimes difficult, impacts.

The most effective political fights for global health funding were waged in the US, which saw its foreign expenditures swell from roughly \$500 million during the second Bill Clinton Administration to a FY2012 budget appropriation of \$8,167,860,000 – approved by a deeply divided Congress during an American recession. (Of that sum, \$5.54 billion was earmarked for HIV/AIDS programs and support of the Global Fund.) Other donors were not as steadfast. The World Bank and IMF struggled to find means to support health, while pushed by donors to play their usual austerity strategies. In the face of recession, most European support of global health either disappeared, in the case of southern countries, or diminished⁶, increasing pressure on the US. America now faces a major domestic showdown over central government spending, the national debt, annual deficits and taxation schemes.

The first two years of the Obama Administration were wasted with in-fighting and debate over the future of all foreign assistance, culminating in 2010 creation of the Global health Initiative, a State Department-run melding of programs operated by multiple American agencies. In late 2011 Secretary Hillary Clinton called for an "AIDS-Free Generation" and signaled impatience with the GHI effort: it was abandoned entirely in the summer of 2012. In December 2012 Clinton shifted control over global health operations into the hands of US Ambassadors, creating the Office of Global health Diplomacy to oversee all HIV, malaria, TB, health systems, and other health-related programs. Polls show that Americans strongly

^{4.} SIXTY-FIFTH WORLD HEALTH ASSEMBLY A65/29 Add.1, Provisional agenda item 16.2 5 April 2012, ANNEX, Voluntary, contributions by fund and by donor for the financial period 2010–2011; SIXTY-FIFTH WORLD HEALTH ASSEMBLY A65/30

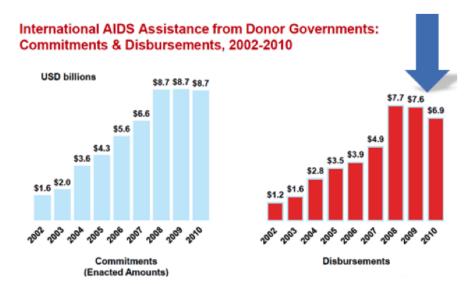
Provisional agenda item 16.3 5 April 2012, Status of collection of assessed contributions, including Member States in arrears in the payment of their contributions to an extent that would justify invoking Article 7 of the Constitution Report by the Secretariat

^{5.} Also see

http://www.aicpa.org/research/cpahorizons 2025/global forces/download able documents/global trends.pdf

http://www.trust.org/alertnet/news/funding-cuts-imperil-european-fight-against-tb-hiv/
 And http://www.ghd-net.org/sites/default/files/Health percent20Diplomacy percent20Monitor percent20Volume percent203 percent20Issue percent204.pdf

Figure 7



support spending taxpayer money on HIV treatment in Africa, child health in Bangladesh and the like. But they are deeply confused about how much of the federal budget is dedicated to such foreign aid, imagining it devours as much as 25 percent of the budget, versus the actual less-than-1 percent. This combination of Administration shuffling of priorities and structure of global health operations, with public confusion regarding their cost to taxpayers, renders the entire mission highly vulnerable to budget slashes.

Regardless of what compromises are reached for the FY 2013 budget, the long-term fiscal forecast calls for reduced US spending on everything, including foreign assistance programs. Though there has been discussion of broadening the donor base for global health programs, bringing in larger support from the BRICS nations and developing innovative financing schemes, none of these efforts are likely to bear timely fruition at a scale that could conceivably offset the loss of billions of dollars' worth of US backing. Moreover, most of the innovative financing schemes, such as the Robin Hood Tax or a currency trading fee, would create funds for which health would have to compete against hundreds of other worthy initiatives, from climate change adaptation and girls' education to agricultural development and anti-poverty programs.

The overwhelming influence of the Gates Foundation presents a related problem. After its dramatic entrance,

some that had traditionally played roles in global health withdrew or decreased their commitments, feeling the Gates Foundation was filling the space. This would remain a consistent problem for the Gates Foundation, though the Seattle-based organization would try to collaborate with other donors as it grew both in size and influence. Its vast out-scaling of other actors nevertheless means that the Gates Foundation has enormous influence on setting the global health agenda and directing initiatives, creating a danger that certain issues will be left out of the fray.

Sustainability cannot throughout the remainder of the 21st century impinge on a single political legislature or the generosity of one family. The "Two Washingtons" dilemma is dangerous, both because it puts too much policy power in too few hands, and because it renders global health financing vulnerable to the personal whims of a family, and political vagaries of a Congress that is so deeply divided that its 2011 and 2012 sessions marked the least productive in the history of the US.

The architecture and aspirations lesson is less discussed by global health advocates, but in the long run is surely as dangerous. The primary driver that propelled health budget growth was the demand for equity in access to HIV treatment, and the lions' share of funding has been directed to that end. In the process, without any serious planning or

strategic discussion, "global health" was transformed from a classic public health mission, to one aimed at provision of life-long treatment of chronic disease. Global health was, in short, medicalized.

This transformation placed immediate and severe burdens on health care systems at a time when the world had a deficit of some 4.7 million healthcare workers – sub-Saharan Africa's health human resources deficit was at least one million. As a result, the period of greatest expansion

Architecturally the expansion and then collapse of funding for global health caused a radical realignment of power and influence. Not only has WHO's influence steadily declined, eclipsed by new multilaterals, but the targeted priorities of global health have changed, following the flow of dollars. Today a fundamental realignment is underway, without a single word of public debate.

Though it is likely the US government will decrease its financial commitments and the size of its bilateral health programs, it will remain the largest single donor for the

Figure 8

The two Washingtons are calling the shots



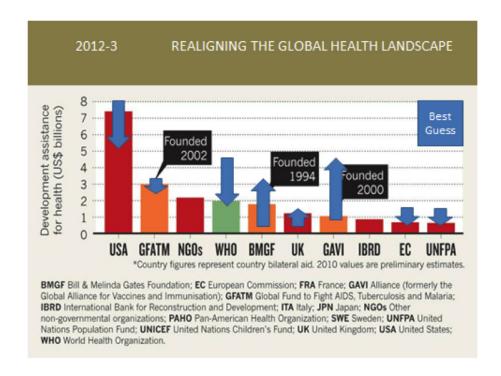


of HIV treatment services was marked by rising tension and competition between competing medical and public health needs, fighting over access to doctors, nurses, hospital rooms and all skilled medical services. Though to some degrees these tensions have eased as governments have learned how to integrate healthcare services, the strategic discussions about how best to execute medicalization of global health are still in their infancy. The 2011 United Nations General Assembly session on noncommunicable diseases has exacerbated these health systems tensions, increasing demand for human resources and infrastructure to tackle diabetes, cardiovascular diseases and cancer, and further medicalizing the very concept of global health.

foreseeable future. The Gates Foundation has steadily increased its support, and is likely to do so for years to come, with the bulk of is health funding focused on development of new technologies and their innovative implementation. The Global Fund has experienced a sharp decline in support, but with reorganization and new leadership is likely to enjoy a stable, albeit smaller, base of donor backing. WHO cannot hope to reverse its financial decline without far more core program revenue, which can only come through increased taxation of its member states – a move the World Health Assembly is unlikely to approve.

Overall, this realignment, driven by shifts in donor support, suggests a world community prepared to tackle a handful of health silos or initiatives: HIV, TB and malaria treatment

Figure 9



and prevention, child immunization, health technology research and development and to far lesser extents, maternal mortality, general child survival and perhaps health systems strengthening.

Entirely missing from this architecture is clear leadership and expert guidance for the most likely post-2015 Millennium Goal for health, Universal Health Coverage, or UHC.

The Five Existential Challenges

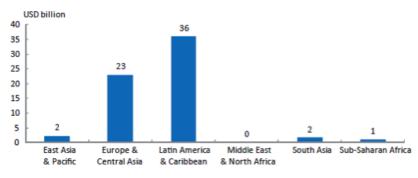
Challenge One: Sustainable Financing

Several countries that have been highly dependent on external support for their public goods, especially for health, are now trying to transition to self-sustaining implementation based on domestically generated revenues. Leading this charge is South Africa, which aims to have its entire national health effort, featuring universal access to healthcare, off external support by 2020 and perhaps as early as 2015. South Africa received about nine percent less ODA (Overseas Development Aid) in 2010 compared to its 2008 peak, reflecting the decline in the country's demand/dependency level. But the poorest

nations, especially those lacking extraction industry resources, are <u>unlikely</u> over the next decade to achieve such lofty self-sustaining goals. Domestic taxes are least likely to meet needs precisely where health exigencies are the greatest: the Middle East, South and East Asia and sub-Saharan Africa.

Even the economic superpowers of our time continue to receive aid, and demonstrate conflicting patterns. China, for example, received \$2.1 billion in ODA in 2005, but only \$646 million in 2010, when the nation actually gave back \$109 million in multilateral support. In contrast, India's ODA receipts more than doubled between 2007 and 2010, despite strong GDP growth, reaching \$2.8 billion, about 20 percent from multilateral institutions including the Global Fund. Brazil's ODA receipts jumped five-fold between 2006 and 2010, though the net was just \$551 million, about eight percent derived from multilateral donors. If these three fast-growing economies remain dependent on external donors for health and development support, it should not be surprising that far poorer nations continue to struggle with self-sufficiency.

Figure 10 - Total potential tax increase by region (annual amounts)

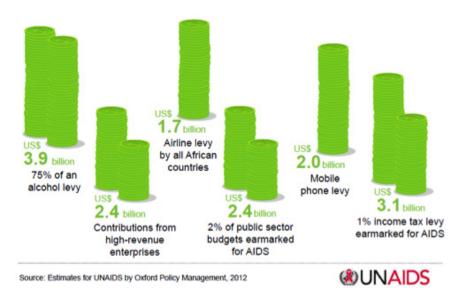


Source: Authors' calculations.

StatLink * http://dx.doi.org/10.1787/888932596251

Source: GEA 2012, chapter 19, Shonali Pachuari

Figure 11 - Options for domestic HIV financing in Africa



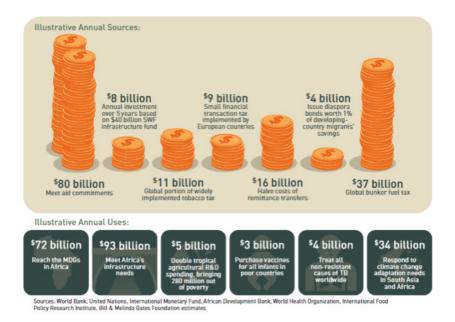
Source: Estimates for UNAIDS by Oxford Policy Management, 2012

Indeed, there is considerable debate over the impact, positive or negative, that the surge in global health funding has had on recipient countries' willingness to maintain or increase its own financial commitments to health programs. India has come under particular scrutiny as its economy has ballooned over the last decade, creating 48 individual billionaires – 10 percent of the number that reside in the US, but an enormous jump for a country that ranked two decades ago among the world's poorest. Despite the stunning rise in Indian wealth both the quality and affordability of healthcare for most of its population

remains <u>abysmal</u>, nearly half the <u>nation's children suffer</u> chronic malnutrition and stunted growth, and announced schemes for <u>healthcare reform</u> flounder amid debate over national versus local responsibility.

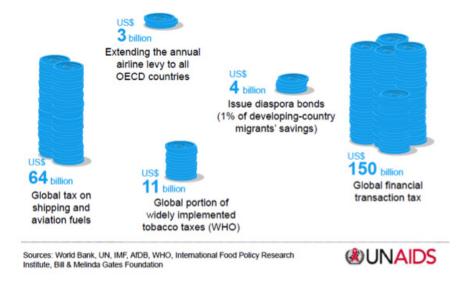
A number of donors have sought to improve self-sufficiency through innovative funding options focused on revenue generation. UNAIDS has identified domestic revenue targets for sub-Saharan African countries that could generate about \$15.5 billion annually if fully implemented. But they share problematic features: They

Figure 12 - Options for Development Financing and Spending



Source: World Bank, United Nations, International Monetary Fund, African Development Bank, World Health Organization, International Food Policy Research Institute, Bill and Melinda Gates Foundation estimates

Figure 13 - Options for domestic HIV financing in Africa



Source: Estimates for UNAIDS by Oxford Policy Management, 2012

require creation of non-corrupt mechanisms for tracking and taxing specific products and services, and they assume ministers of finance will agree that all revenues be dedicated to health, as opposed to dozens of other legitimate public goods needs or military and grand infrastructure. In addition, taxes levied on such services as mobile phones and domestic airlines are often regressive, imposing disproportionate financial burdens on poor populations.

The World Bank and the Bill and Melinda Gates Foundation have parsed several <u>innovative funding</u> options, including increased taxation of tobacco and alcohol products, the so-called Robin Hood tax, and a variety of currency schemes. But even if sufficient political will could be generated to implement these innovations, and to direct their revenues to global health needs, financial needs for existing health silos and expanded health systems and UHC targets, totaling roughly \$211 billion annually, could not be met. Combined, they might generate \$165 billion annually.

UNAIDS has suggested four innovative programs not included in the Gates/Bank estimates that might generate an additional \$258 billion annually, bringing the potential pool of resources up to \$428 billion – more than enough money to theoretically meet large global health needs. But all of these schemes have also been suggested as sources of income for competing world programs to address other pressing issues, including climate change programs, core funding for the United Nations system and peacekeeping operations. Even if – and it is a large "if" - political will could be mobilized to support implementation of these international tax systems, global health would have to get into a long beggars' queue. UNAIDS is pushing two arguments specifically in favor of increased support of HIV treatment and prevention, and that disease's ongoing exceptional financing. First, the agency argues that infusion of billions of dollars into care and treatment today is lowering country costs in the long run by keeping people healthy, contributing to national productivity and not requiring expensive hospitalization. And secondly, UNAIDS insists that saturating the HIV+ world population with anti-HIV medicines will reduce the numbers of people that have high levels of viruses in their blood so dramatically that overall contagion will plummet. Pay now, the agency argues, so that you will not have to pay later. Recent <u>data</u> on the slowing pandemic supports both UNAIDS arguments.

Increasingly global health agencies and advocates are improving their metrics for measuring operational success, and correlating dollars with lives saved. UNAIDS, for example, argues that 7.4 million lives can be saved over the next 17 years at a cost of \$4,090/life. Expression of such a calculus, assuming its credibility, forces would-be donors to ask, "What is a life worth?"

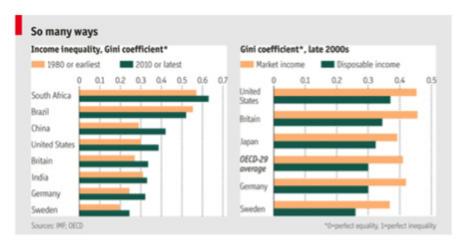
Challenge Two: The World Wealth Disorder

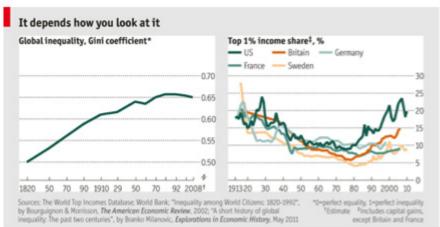
The nature of world order and economics is <u>transforming</u> radically, manipulated by supra-national wealthy interests that live all over the planet and control of the lion's share of global capital and wealth. In the world of 2012 a billionaire in Shanghai had far more <u>shared interest</u> and political harmony with financial counterparts in London, Abu Dhabi, Rio de Janeiro, London and Los Angeles than he did with most of his fellow Chinese.

Citi Bank/Knight Frank's The Wealth Report 2012, which underscores the "relentless growth of 'plutonomy' economics, a phenomenon that sees the wealth of the richest 1 percent growing far quicker than that of the general population." The Report documents the increase in individuals labeled "centa-millionaires," whose personal wealth can be calculated in the hundreds-of-millions: Collectively in 2011 they possessed \$39.9 trillion of an estimated total global wealth of \$231 trillion. Their ranks are forecast to increase by 37 percent by 2016, chiefly swelling in China, India, Russia, Singapore, Hong Kong and Brazil. By 2050, Citi predicts, the world will have been turned upside down with all money, and the power that goes with it, shifted. India will rank #1 with a GDP of some \$86 trillion: China #2 with \$80 trillion: the US a distant third at \$39 trillion followed by, in order, Indonesia, Brazil, Nigeria, Russia, Mexico, Japan and Egypt. Missing entirely from the projected top tier is Europe.

While absolute national wealth measurement will display this radical shake-up in the world order, measurement

Figure 14 - Options for domestic HIV financing in Africa





of GDP per capita and purchasing power parity will by 2060 rank the world very differently, according to the OECD. The US will rank #1, followed in order by Canada, Germany, the UK, Japan and France. At the bottom of the Top 20 economies, when ranked in this manner, will be China, followed by India. Much of the future of global health, climate change, resource access and dozens of other transnational issues will be decided by which macroeconomic metric proves a more decisive reflection of global power – absolute national wealth, or the relative equity of wealth distribution.

Overall the world is witnessing a widening wealth <u>gap</u> in most countries, with assets concentrating in an oligarch top 1 percent, or even <u>0.1 percent of the population</u>. Middle classes in Western societies are shrinking both in size and comparative personal wealth. In contrast, the middle classes are swelling in China, India, Indonesia and

much of Southeast Asia, as the respective economies grow, but their collective wealth is insignificant compared to the amount of wealth within the top 1 percent. The middle classes are running to catch up, but the goal posts of the rich keep moving.⁷

The source of this top-1 percent wealth growth in the US is what Nobel laureate Michael Spence calls the "nontradeable sector" where services such as financial management and insurance are not traded overseas (versus "tradeable" production such as planes, trains, automobiles, computer chips and furniture). The <u>result</u> is divorcing employment and stock dividends from economic prosperity. In the US, for example, corporate <u>profits</u> have <u>soared</u> since 2008, while unemployment has <u>remained</u> high and stock dividends have sunk. Wealth expansion for the top 1 percent in the emerging economies is derived

^{7.} Chart source http://www.economist.com/node/21564414

from two principle resources: Cheap labor, and extraction of energy, mineral, forestry and food resources.

This set of macroeconomic trends poses a conundrum for global health and development efforts, which have long painted countries as poor, emerging, or wealthy. A more accurate painting of the planet finds the colors blended within nations, and few countries easily designated "poor" or "rich." Dr. Bernhard Schwartlander, chief scientist for UNAIDS, told the XIXth International AIDS Conference this summer that, "in 2000, when we began the fight for universal access to prevention and treatment and the creation of the Global Fund, 70 percent of people with HIV lived in low income countries. Eight years from now, it will be only 13 percent.

"In this new and complex world, although poverty is as big a problem as ever, the days when we had a simple world of rich countries and poor ones are gone," Schwartlander continued. "And with it, we should abandon the concepts of dependency and charity, as well as habitual ways of thinking and acting."

As money shifts worldwide, concepts of public goods and global governance are similarly transforming, predominantly in despairing forms. The super-rich are investing in tangible goods that do not generate significant employment, such as art, real estate, jewelry and yachts. Absent the Warren Buffet/Bill Gates phenomenon, the new super-rich are not philanthropically inclined to prioritize problems like diarrheal diseases in Southeast Asia, malaria in West Africa, HIV treatment in sub-Saharan Africa or diabetes management for poor Latina Americanas. While they may give generously to their local art museum or cancer-fighting group, the nouveau riche is not inclined to underwrite causes that are highly complex, benefit poor people located far away, or are viewed as government responsibilities.

Finally, the world is in a liquidity trap, as both super-rich individuals and emerging market countries have removed cash assets from the global economy. A recent McKinsey Company estimate <u>reckons</u> as much as \$32 trillion is currently hidden in tax havens, representing the personal wealth of just 10 million individuals. If the estimate is

accurate, 13 percent of world wealth is out of circulation, creating no jobs, products or tangible assets. In addition, emerging market economies that have grown in the post-2008 world have cautiously stowed liquidity in sovereign funds, spending modest sums in recent years. By 2010 these funds totaled \$3.5 trillion, and had expanded by 9 percent in a single year. The largest funds were held by Asian and Middle Eastern countries, and about half of the world's sovereign wealth was "parked" in 2010 in real estate investments, including vast agricultural land-grabs across fertile regions of the world. By 2012 the funds had soared in size, topping \$4.6 trillion. As the world struggles with localized recessions, is threatened with worldwide stagnation, some 15 percent of global capital is out of circulation.

The next stage of the battle for global health must abandon what has essentially been an old-fashioned North-to-South charity mindset. Impoverishment of public goods may become universal, in wealthy and poor countries, alike, as capital and wealth concentrate in an ever-smaller percentage of the planet's population. Where development has succeeded, the health needs have grown more complex and costly amid rising noncommunicable disease challenges.

A UNICEF survey of its field officers worldwide found dire concern that the expanding wealth gap in societies constitutes the paramount threat to child health in this second decade of the 21st Century. The prominent NGO Save the Children issued a report in late 2012 stating that, "in our 32 sample countries, children in the richest decile have access to 35 times the income that is available to children in the poorest decile...The richest 10 percent of people has access to 17 times the incomes of the poorest."

Another recent analysis discovered a clear correlation between widening wealth disparity and child survival rates, demonstrating that concentration of wealth in ever-smaller segments of populations was actually killing youngsters in poor families.⁹

^{8.} chart comes from this report: http://www.savethechildren.org.uk/sites/default/files/images/

 $^{9. \ \} chart\ comes\ from\ this\ report:\ http://www.savethechildren.org.uk/sites/default/files/images/Born_Equal.pdf$

Figure 15 - Labor and Dividend Income 1959-2011

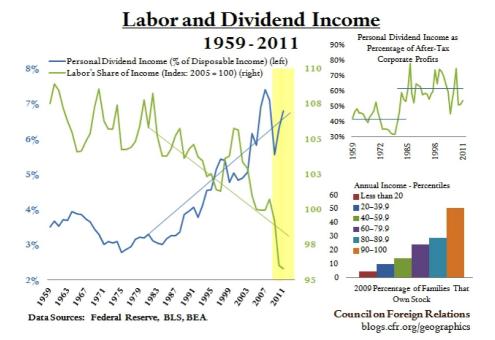


Figure 16 - Economic growth is rapidly changing the world order - 2020

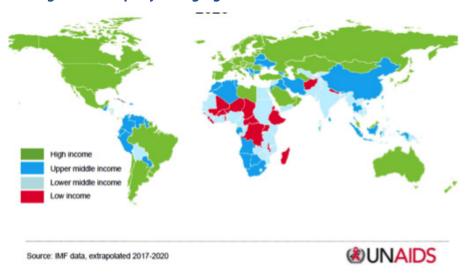


Figure 17 - Aggregate Sovereign Wealth Fund Assets under Management, 2008-2012

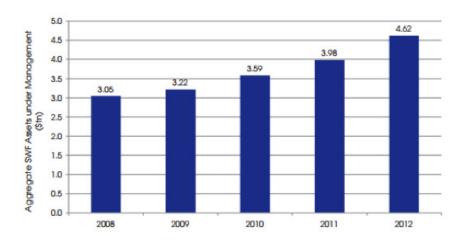
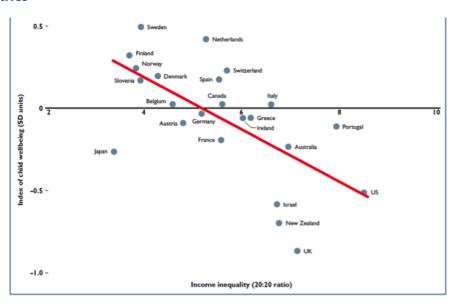


Figure 18 - Correlation between income inequality and the UNICEF index of child wellbeing in 23 rich countries



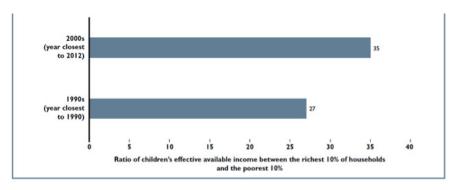
Source: Pickett KE and Wilkinson RG, British Medical Journal, 2007; 335:1080

A 2012 World Bank <u>survey</u> of 70 countries offers a distinct challenge to proponents of health equity. In contrast to expert opinions, populations within rich and poor countries tend to place higher priority on the quality and innovation in health services, versus equity of access to said services. As the study authors put it, "Our results indicate that residents of these countries may not favour the prioritization of within-country health equality and fairness to the same degree as residents of high-income countries." Populations seem to consider the quality of

services available to those with greatest ability to pay a more important measure of society's medical success than the equitable <u>distribution</u> of those services.

This tendency to evaluate the quality of medical services based on provision of high technology, versus equitable access to care, poses a tremendous challenge to global health advocates in regions hard <u>hit</u> by economic recession. The perspective has long explained American public opinion surveys, which consistently find the

Figure 19 - The widening gap between rich and poor in effective available income per child since the 1990s (%)



Source: Calculations on World Development Indicators and Demographic Health Systems data

population favoring the assertion that the US has the greatest healthcare in the world, while simultaneously acknowledging that some 50 million people have no access to health insurance and medical costs are the primary cause of bankruptcy in the country. The effects of this have been felt throughout Western countries in the wake of the 2008 financial crisis. In Greece, several rounds of austerity measures imposed by the IMF and the EU led to massive reductions in public health and medical services starting in early 2009. By 2012 the Greek suicide and mental illness crisis rate had soared, pharmaceutical outages were reported all over the country¹⁰, hospital hygiene and basic services had reached such low levels that doctors advised patients not to seek inpatient care, HIV incidence was climbing, malaria was widespread for the first time since World War II¹¹, and dengue spread for the first time in nearly a century. Mortality increased in Portugal, and basic services such as kidney dialysis have become unaffordable for the country's huge unemployed population In the US 2012 polling shows that 26 percent of Americans faced grave financial difficulties due to medical costs, suicide rates rose with the recession, and 58 percent delayed treatments due to their inability to pay out-of-pocket expenses or insurance co-pays.

Will this wealth challenge persist, even worsen, over the coming decade? The Global Trends 2030 report issued

by the US National Intelligence Council (NIC) predicts two, seemingly contradictory trends: Rising numbers of middle class around the world even as the Gini Coefficient worsens, amid widening disparities. "Middle classes most everywhere in the developing world are poised to expand substantially in terms of both absolute numbers and the percentage of the population that can claim middleclass status during the next 15-20 years," the NIC forecasts. Yet the middleclass worldwide could collectively possess little compared to the spectacular wealth held by the top 2 percent richest individuals, resulting in a scenario the NIC labels "Gini Out-of-the-Bottle," wherein, "inequalities within countries and between rich and poor countries dominate. The world becomes wealthier—as global GDP grows but less happy as the differences between the haves and have-nots become starker and increasingly immutable. The world is increasingly defined by two self-reinforcing cycles—one virtuous leading to greater prosperity, the other vicious, leading to poverty and instability. Political and social tensions increase. Among countries, there are clear-cut winners and losers."

In the nearer term, angry pressure is rising all over the world in favor of higher taxation on the very-rich. The rich have in most countries responded to these calls by <u>off-shoring</u> assets, hiring lots of smart tax lawyers to legally hide assets, and financially supporting <u>anti-taxation</u> (and anti-Big Government) political movements. In the US the Tea Party wing of the Republican Party made the Federal

^{10. &}lt;a href="http://www.nature.com/nm/journal/v18/n12/full/nm1212-1719.html?WT.ec_id=NM-201212">http://www.nature.com/nm/journal/v18/n12/full/nm1212-1719.html?WT.ec_id=NM-201212

^{11.} http://www.episouthnetwork.org/sites/default/files/bulletin_file/eweb_241_31_10_12.pdf; http://wwwnc.cdc.gov/travel/notices/outbreak-notice/malaria-greece-sept-2012.htm

budget the election's primary focus, demanding <u>reduced</u> overall spending, no increase in taxation, and scheduled severe declines in both deficit spending and the national <u>debt</u>. These goals cannot be attained without radical reductions in all public goods, including those for health, both domestic and foreign. Though Republican defeat in the 2012 US elections has been interpreted as a signal that "government" and its public goods can be protected from such attack it would be short-sighted and unwise to assume that the very-wealthy worldwide are prepared to cede control of their mounting assets in favor of health and medical services for the world's needy.

Challenge Three: The Global Health Architecture versus Its New Mission

The Global Burden of Disease Study (GBD) 2010 survey, representing the largest scientific review of health trends in the world ever conducted, was released at the end of 2012. It demonstrates dramatic changes underway all over the world, with the world population living longer in nearly every region, but <u>suffering</u> poor health and chronic disease through most of its gained years of life. Thanks in large part to the great successes of global health programs, the burden of infectious disease mortality plummeted between 1990-2010, fewer children perished before the age of five, and more of humanity is now living into its seventh and eighth decades.

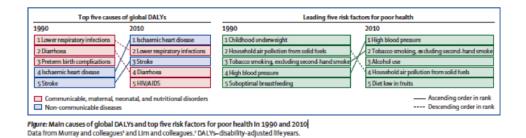
This dramatic shift in life expectancy and causes of death argues for radical new directions in global health efforts. While targeted, disease specific measures to control HIV, TB, malaria and childhood vaccine-preventable diseases

must persist lest the infectious diseases resurge, most of humanity will require a very different set of preventive and treatment priorities.

"In 2010, there were 52.8 million deaths globally," the Global Burden of Disease Study (GBD) 2010 summarizes. "Communicable, maternal, neonatal, and nutritional causes were 24.9 percent of deaths worldwide in 2010, down from 34.1 percent in 1990. This decrease was largely due to decreases in mortality from diarrheal disease (from 2.5 to 1.4 million), lower respiratory infections (from 3.4 to 2.8 million), neonatal disorders (from 3.1 to 2.2 million), measles (from 0.63 to 0.13 million), and tetanus (from 0.27 to 0.06 million). Deaths from HIV/AIDS increased from 0.30 million in 1990 to 1.5 million in 2010, reaching a peak of 1.7 million in 2006. Malaria mortality also rose by an estimated 19.9 percent since 1990 to 1.17 million deaths in 2010. Tuberculosis killed 1.2 million people in 2010. Deaths from non-communicable diseases rose by just under 8 million between 1990 and 2010, accounting for two of every three deaths (34.5 million) worldwide by 2010." The data argues for focus on tobacco control, diet, and health systems capable of handling millions of chronically ill individuals suffering from diabetes, cancer, cardiovascular disease, mental illnesses and senility.

As debate over the post-2015 Millennium Development Goals advances, the front-runner health target is Universal Health Coverage(UHC). In December 2012 the UN General Assembly formally <u>endorsed</u> UHC, in much the same form as was <u>backed</u> in 2011 by the World Health Assembly. Should UHC targets be set for the 2020s, most countries

Figure 20 - Main causes of global DALYs and top five risk factors for poor health in 1990 and 2010



Source: Data from Murray and colleagues and Lim and colleagues. DALYs = disability adjusted life years

in the world will need guidance for their achievement, covering such things as retention and training of healthcare workers, health systems management, medical financing and insurance, outpatient services and chronic diseases' care.

But the architecture of global health currently mirrors disease-specificsilos offinancing for HIV/AIDS, tuberculosis, malaria, maternal health, and the like. WHO has a very thin bench of expertise in health management and financing, and even the World Bank lacks the intellectual power at this time to help countries meld public and private health services, affordable insurance models and quality care with disease prevention and healthy living priorities. Prior to the 2010 scandals at the Global Fund there was discussion of transforming that institution into an all-health provider, but that would seem, given its weaknesses, to be unwise.

If the UN ultimately settles on UHC as its next major health target a spectacular reorganization of the entire architecture of the multilateral sector in health will be necessary. Politically, such a reshuffling will be extremely controversial, particularly regarding donor/recipient relations and the future of HIV, TB and malaria control efforts.

History demonstrates that with increasing attention to medical care delivery the power and prioritization of public health deteriorates. Given the fragility and brevity of success in such classic public health efforts as child immunization, water safety, well baby interventions, epidemic detection and response, basic nutrition and smoking eradication it would seem premature, even dangerous, to shift global health a priori to worldwide medical care delivery. Despite all rhetoric people are still dying of AIDS in New York City, regardless of fully insured, sophisticated medical care. Tuberculosis multidrug resistance is on the rise, not decline, so that the absolute burden of TB cases may be ebbing, but the numbers dying of virtually untreatable disease are soaring. And grand achievements in malaria control and treatment have been made, thanks largely to use of artemisinin combination therapies and bed net distribution, but disturbing pockets of parasite resistance¹² to the newer drugs have emerged,

and <u>mosquitoes in West Africa</u> are, through mysterious means, "learning" how to outwit bed nets.

Public health wars are rarely won; they are merely pushed to low level stalemates with the enemies. Any relaxation in humanity's defenses will result in resurgence of old scourges, often in new, deadlier forms. It would be sheer folly for the world community to repeat the great error made in the late 1970s by American public health leaders, declaring infectious diseases defeated, even as HIV lurked unnoticed in the country's gay community and blood supply.

Challenge Four: The World Food Supply

As the real estate and stock bubbles expanded in late 2007, worried investors cast about in search of safer havens for their wealth. In the final quarter of the year food commodities markets witnessed an unprecedented surge in the volume of investment, particularly in crop futures markets, and in the speed of investment cycling. Hedge funds and speculation investment companies surged into churning reckonings on the forecasts for rice, wheat, corn, soybeans and other essential grains. The UN's Food and Agriculture Organization (FAO) watched helplessly as basic grain prices rose alarmingly, reaching a crisis in December 2007 when India capped all rice trade, hedging against a global crisis. The world rice market responded with instant inflation, spawning yet another Indian hording edict, followed by similar action by the Vietnamese government. By March of 2008 rice prices had risen as much as 200 percent in parts of Asia, riots broke out in several countries and the World Bank said more than 100 million people had been driven back into subsistence poverty.

Since 2008 the world has faced three more food inflation <u>crises</u>¹³, and though prices have come down after each, they have reset at a <u>"new normal"</u> that is higher than each successive pre-crisis pricing. In other words, food is on an upward trajectory, though in roller coaster <u>fashion</u>. The FAO predicts an unstoppable inflationary trend, mitigated only

and $\frac{http://www.google.com/hostednews/afp/article/ALeqM5gZqt-rYvcWve1UAEljqAj0kLS8g?docld=CNG.e4b1f2cf455cdc265fd51d4f1268045b.231$

^{12. &}lt;a href="http://www.iol.co.za/scitech/science/news/drug-resistant-malaria-on-the-rise-1.1416104#">http://www.iol.co.za/scitech/science/news/drug-resistant-malaria-on-the-rise-1.1416104#.

Figure 21 - Price rises in a single year, March 2007-March 2008

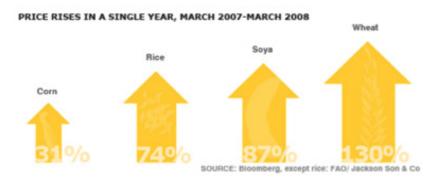


Figure 22

World Bank President Robert B. Zoellick:



"For two billion people, high food prices are now a matter of daily struggle, sacrifice, and for too many, even SUTVIVAL. We estimate that already some one hundred million people may have been pushed into poverty as a result of high prices over the last two years."

Figure 23 - May 2010 FAO Food Price Index

Figure 24

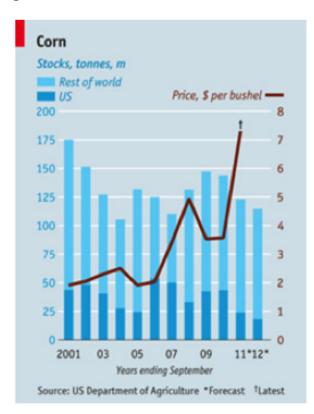
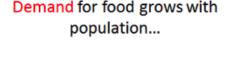
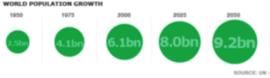


Figure 25





by careful policies that may stave off famines and global malnutrition. Clearly access to appropriate, nutritious food is essential to human health, but to date the global health architecture has failed to absorb food issues in any but a rhetorical fashion. Harmonizing long term strategies and planning with major food and development programs would seem wise, bringing such entitites as OXFAM, WHO, FAO, World Bank and thousands of food-related humanitarian and NGO groups into a shared vision. But no such drive has emerged in practical terms.

There are mutiple drivers behind food price inflation, variously amenable to mitigation. Global health advocates should understand these trends and work as allies with food and agriculture organizations to achieve reasonable food secruity protections for the 9 billion food consumers of the mid-century. Some of the causes of food inflation are also drivers of the leading sources of poor health, and therefore constitute obvious shared targets.

Prior to the 2008 first food inflation crisis the George W. Bush Administration legislated significant subsidies, luring American corn growers to divert crops for biofuels/ethanol

production. The outcome was overproduction of corn¹⁴, at the expense of cropland use for other foods, and diversion of some 40 percent of US corn to fuel gas tanks instead of stomachs. Even as corn production rose, stocks of edible supplies plummeted. Similar climate change mitigation efforts have unfolded across Europe, resulting in wider use of arable lands for ethanol production, and declines in food crop yields. The BRICS nations, particularly Brazil and China, are also diverting cropland to ethanol production and buying up arable resources in poorer countries for largescale plantings of sugar cane, rapeseed, corn and other crops easily converted to ethanol fuel.

Net food demand is rising alongside both human population increase and relative prosperity. On the overall demand side there is <u>debate</u>¹⁵ in agricultural development and investment circles regarding the global capacity to produce food, amid declining water resources, shrinking arable lands, climate change-induced temperature shifts

^{14.} source for chart on corn prices http://www.economist.com/node/21526383

^{15. &}lt;a href="http://www.globalchange.umich.edu/globalchange2/current/lectures/food_supply/food.htm">http://www.globalchange.umich.edu/globalchange2/current/lectures/food_supply/food.htm

and http://www.fastcoexist.com/1679338/what-the-global-food-supply-will-look-like-in-2021
and http://www.scientificamerican.com/article.cfm?id=foley-global-food-production-reduce-environmental-damage-maps

Figure 26

Rising middle classes want calories and meat



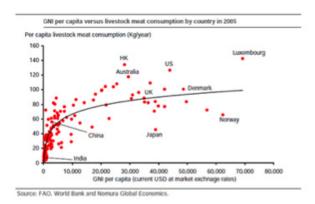
and the slow pace of modernization of farming practices. Africa, in particular, shows striking inability to improve the basic conditions of farming, and the Indian subcontinent remains extraordinarily inefficient and wasteful in its inability to get crops to marketplaces in a timely fashion. According to FAO, productivity (measured as tons of cereal harvested per acre) jumped in the US from just under 1 ton in 1961 to almost 3 by 2009 – a tripling in productivity. China soared from 0.5 tons in 1961 to 2; Europe from 0.5 to 1.5 tons. Even India has doubled its crop productivity since 1961. But African productivity has barely budged, remaining at less than half a ton per acre in 2009.

The G20 recognized the food inflation crisis in its 2009 L'Aquila Summit, reaching a series of resolutions aimed at improving agricultural development and standards of foreign assistance, especially for Africa. None of the L'Aquila commitments on food investment were realized as promised.

In addition to there being more mouths to feed, the rise in prosperity links directly to meat and net caloric consumption. According to <u>FAO</u> the Chinese average diet has more than doubled its net caloric intake since 1980, with 59 kg per capita in the form of meat consumed in 2005, versus 13 kg in 1980. The World Bank has demonstrated a direct correlation between per capita income levels and meat consumption in every major country in the world except Japan and Norway – both, predominately

Figure 27

GNI per capita and Meat



fish-eating cultures. Rising demand for meat places greater strain on cereal, land and water resources further exacerbating efforts to increase crop production for human consumption.

Increasing meat demand has at least two direct impacts on human health. First, consumption of fatty red meats is associated with cardiovascular disease, primarily through their contribution to increasing LDL cholesterol levels. More perniciously, "monoculture" livestock practices, in which genetically bred cows, chickens, swine or other animals are raised in captivity in claustrophobic settings, promote emergence of microbial diseases, particularly in drug resistant forms. The 2009 H1N1 zoonosis spread from American swine factory-farms, and control of the H5N1 avian flu virus is hampered by poultry practices throughout Asia. Multiple studies have demonstrated that widespread use of antibiotics as growth promoters in the livestock industry is the primary driver of emergence of drug-resistant bacterial diseases in human beings. Such bat viruses as SARS and Nipah have spread to humans via livestock animals and live animal markets.

Meat prices are inflating faster than cereals and grains, and will for the foreseeable future be the dominant driver of overall food price inflation. Pressure on cereals and grains diversion to feed livestock will increase. Combined with the other pressures described above, the food inflation spiral has become an alluring investment opportunity for

Figure 28



commodity speculators, further driving costs. With each weather-related (and probably climate change associated) disaster that impacts crop yields the commodities markets since 2008 have spiked. Thus, Global health finds its exigencies in confluence with those concerned about agricultural development and climate change. Thanks in large part to the efforts of Dr. David Nabarro, working as a special envoy on behalf of UN Secretary-General Ban Ki-Moon, strong bridges between food, veterinary and health multilaterals have been maintained to counter the threat of zoonotic emergence of pandemic diseases, such as H5N1 bird flu, SARS and drug-resistant bacterial infections. Learning from, and building upon these successes would seem an obvious first step toward practical, meaningful collaboration across sectors for life-saving food and agricultural policies and actions.

Finally, the same pressures on the global ecology that are promoting emergence of human and animal pathogens are wrecking havoc with the agricultural world. Among the most worrying is a new mutant form of wheat rust, dubbed Ug99, that first emerged out of eastern Africa a decade ago, quickly spreading across the Middle East and into Asia. It has mutated recently into an even more virulent form with a gene conferring resistance to pesticides, rendering this a plague for wheat crops. Though control methods of crops versus people and animals differ, the roots of emergence and their predictability have much in common, offering

Figure 29



Figure 30



another potential bridging point. The NGO and academicdriven ONE campaign seeks to bring scientists and health specialists together in common pursuit of emerging diseases.

There is suggestion that elimination of growth stunting would make an ideal target for bringing these three forces together in common purpose. A growth-stunted child is a <u>malnourished</u> young person, suffering for lack of proper food. Though the physical image of stunting is short stature due to inadequate calcium and protein intake to fuel skeletal development, its invisible toll is on the brain

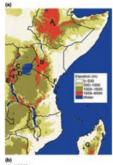
and the ability of the child to learn and develop skills, thus having direct impact on society's future human potential and productivity. At present there is no logical place in the global health architecture to realize effective targeting of stunting in appropriate collaboration with the agricultural and climate communities: Such a space should be created on an urgent and intellectually admirable basis.

Challenge Five: Climate Change

In¹⁶ addition to the food challenges described above in association with climate change, a host of crises related to global health present themselves as the planet's CO2 levels rise. The global health community's key focus in climate debates has been on the likely impact rising temperatures and rainfall will have/are having on vector populations, particularly mosquitoes. Of all likely outcomes of a 2 degree Celsius mean rise in global temperatures the health corollary that has received the most rigorous attention is malaria. For about a decade public health experts have warned that planetary warming would allow diseasecarrying mosquitoes to thrive at higher altitudes, and increases in flood and monsoon activities would enhance breeding opportunities for the insects. Both assertions have proven correct, and the phenomena are now unfolding. For example, Madagascar in 2012 experienced record numbers of malaria illnesses and deaths amid changing climate conditions. An East African survey has demonstrated vast increases in mosquito terrain due to warming in mountainous regions. Recent discovery of malaria in Alaskan birds has startled the research community. The resurgence of malaria to southern Europe, decades after its eradication from the region, has also spawned concern.

Though malaria has received the most attention, a number of other diseases are likely to be affected by climate change. Dengue Fever, a mosquito-carried viral disease that can present in deadly hemorrhagic form, has emerged in Portugal¹⁷ for the first time in nearly a century, and can be found in many locations worldwide where it either has never previously been seen, or has reemerged after a long hiatus. Cholera vibrio are carried by a number

Figure 31





Mosquitoes, Elevation and Malaria

- Malaria resurgence in high altitude regions of East Africa.
- The highland areassurrounding A–E are extensive and the sites are not spatially isolated 'highland' islands. F and G have been included so as to be comprehensive regarding cited reports of malaria resurgences in highland areas.
- Percentage change of incidence of Plasmodium falciparum malaria (1980–2000).

Data are for the longest interval that cases were reported during this period. Where possible, a five-year average annual incidence was taken at the temporal extremes of the data.

of microscopic sea creatures such as copepods, which thrive in organically contaminated warm waters. As sea levels rise, and mean temperatures go up, cholera and other dysentery-causing microbial diseases are emerging in temperate regions, and the seasonality of the disease is extending into once-colder months of the <u>year</u>. Many scientific agencies around the world have made long lists of microbial diseases that they believe are likely to surge in new locations or with different seasonality as the world warms. Some of these lists have been published by the <u>World Health Organization</u>, the US CDC and <u>national</u> health agencies.

Already proving to be of far greater consequence are climate-associated violent storm events and heat waves. In 2012 global warming trends followed the high side of prior projections, hastening the pace of ice melting and atmospheric effects well beyond UN projections. Many scientists now predict that the Arctic will be free of ice in summer months, perhaps before 2016. As ice melts from the Arctic and glacial regions of the world the albedo refractive effect, bouncing heat off the planet and into the atmosphere, is reduced, and acidic fresh water pours into the saline oceans. The pH interaction, temperature mixing of water systems, and escalating water precipitation have a combined, but poorly understood, impact on promotion of violent weather events, as well as sea level rise 19. The

cases-76522/

^{16.} Graphic comes from: http://www.sciencedirect.com/science/article/pii/S1471492202023747

^{18. &}lt;a href="http://blogs.scientificamerican.com/guest-blog/2012/09/21/arctic-sea-ice-what-why-and-what-next/">http://blogs.scientificamerican.com/guest-blog/2012/09/21/arctic-sea-ice-what-why-and-what-next/

^{19.} http://www.economist.com/node/21563278

Figure 32

1750

1800

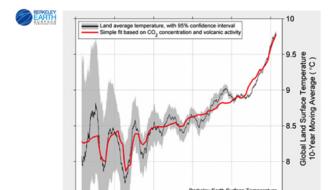
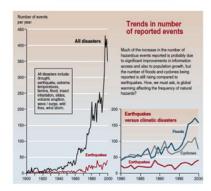


Figure 33

7.5

2000

Increased storm activity: increase in natural disasters like floods, storms, droughts, etc., but not as a high increase in earthquakes:



summer of 2012 saw <u>record melt of Arctic²⁰</u> ice systems, <u>exceeding</u> the ice disappearance rates forecast by the United Nations.

1850

1900

1950

All over the world <u>glacial systems</u>²¹ were stressed and melting rapidly, with direct impact on river systems. Amid shifting weather patterns and rising atmospheric temperatures <u>droughts</u>²² hit most of <u>North America</u> and the Indian Subcontinent in 2012, and <u>violent storms</u> were recorded in many regions. There is increasing evidence linking sea warming with <u>hurricane activity</u> in the Atlantic region. <u>Insurance companies</u> are no longer waiting for more scientific evidence: The link between climate change and violent weather is, from their corporate perspective, a done deal.

Hurricane Sandy demonstrated that rising sea levels and climate change hold dire <u>implications for coastal cities</u> and for <u>national security</u>.²³ Though there is considerable debate among modelers regarding Hurricane Sandy and the <u>role climate change played</u> in its generation, most of the <u>argument</u> is about relative contributions of various

And http://www.sciencemag.org/content/338/6109/881.full

facets of CO2-induced planetary <u>change</u>, not whether or not climate change is playing a role at all. There is strong evidence that the storm was fueled by 2012 <u>record warming</u> of Atlantic sea surfaces. Climate modelers felt sadly vindicated when damage from Sandy – particularly the extent of storm surge and flooding – followed almost perfectly a <u>2007 forecast</u>.²⁴ Following Sandy the New York Times asked, "Is This The End?"

CO2 levels are rising far more sharply than forecast, and hit record heights in 2012. A World Bank report released in 2012 predicts a 4 degree Celsius global temperature rise would displace hundreds of millions of coastal residents and severely damage food supplies. Even a less gloomy temperature forecast, imagining merely a 1.5 degree rise, would force coastal displacement of some 6 million Americans, alone. Adaptation²⁵ to climate change in North America will require spectacular infrastructure spending. For much of the world, especially the Pacific Islands nations, the only adaptive response may be migration, abandoning countries all together. The costs of adaption are already being felt, largely in emergency responses. The World Bank estimates the annual toll is \$1.2 trillion – a number derived before Hurricane Sandy slammed the eastern seaboard of North America.

And http://www.sciencemag.org/content/338/6109/864.4.short

And http://www.sciencemag.org/content/338/6109/864.3.short

And http://www.nature.com/nature/journal/v491/n7423/full/nature11566.html

^{20.} www.msnbc.msn.com/id/50063002/ns/technology and science-science/

And http://www.sciencemag.org/content/338/6111/1172.abstract

^{21.} http://www.nature.com/nclimate/journal/v2/n10/full/nclimate1592.html?W And http://www.nature.com/nature/journal/v488/n7412/full/488468a.html

^{22.} http://www.politico.com/news/stories/0912/81276.html

^{23.} http://americansecurityproject.org/featured-items/2012/climate-security-report/ and http://www.eurekalert.org/pub_releases/2012-10/uoca-cva102212.php and Climate variability and conflict risk in East Africa, 1990-2009.pdf

^{24.} and http://www.nytimes.com/2012/09/11/nyregion/new-york-faces-rising-seas-and-slow-city-action.html?pagewanted=1&hp&pagewanted=all

^{25.} http://blogs.cgdev.org/globaldevelopment/2012/10/how-to-decide-which-countries-should-get-climate-adaptation-finance.php?utm

Figure 34

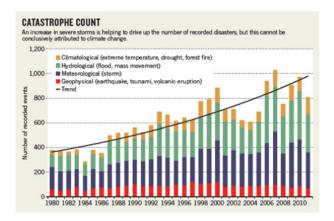


Figure 35

2012 Indian Monsoon - NOT

After two summers of erratic and delayed monsoons,

this year the rains simply failed.



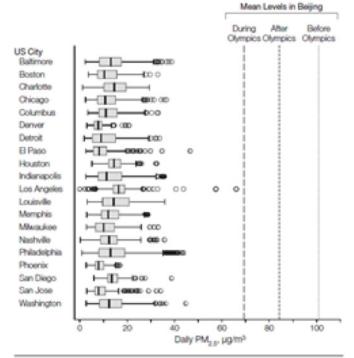
- Rains are about 70% below average.
- Nearly 2/3s of Indian fields are fed only by rain.
- One trend looksclea: India has grown warmer over the past six decades. Glaciers are melting inthe Himalyas, and orchards in the range's valleys are being planted on everhigher slopes in search of a temperate climate.

Figure 37

China's air is **YOU** air



Figure. Daily Ambient PM_{2.5} Levels in 20 US Cities With Large Populations, June 2, 2008, to October 31, 2008



The bar in the box represents the median; the outer edges of the box, the 25% and 75% (first and third quartiles); the whiskers, the most extreme data points no more than 1.5 times the interquartile range from the box; and the dots, outle-ers. The lines are placed at the average PM_{2.5} (particulate matter ±2.5 µm in set dynamic diameter) level in Beljing before, during, and after the Olympics.4 Data for US city pollution levels are from the National Air Pollution Monitoring Network.7

Figure 36

Extremely hot summers — classified as about 3.5 °C warmer than average — have affected about 10% of the world's land since 2006, an order of magnitude higher than during the period from 1951 to 1980.

(NATURE AUGUST 2012)

Hospital²⁶ and emergency <u>resilience</u> after 2005 Hurricane Katrina, <u>Sandy</u>²⁷ and other severe weather events shows few medical facilities are prepared to withstand prolonged flooding, loss of electrical power, or large scale surges in trauma patient numbers. <u>WHO warns</u> that health systems will be taxed all over the world by climate-induced storms, rich and poor alike. World Bank President Jim <u>Kim announced</u> willingness in 2012 to entertain proposals linking adaptation to climate change with global health issues and HIV programs.

Rising sea levels, violent storms and catastrophes constitute the most obvious challenges to health systems, particularly in poor countries with vast sea level populations, such as Bangladesh. But an equally devastating impact on human health may come from heat, itself.

<u>Shifting heat</u> and salinity patterns are <u>altering the marine</u> <u>ecology</u>²⁸ that directly <u>impacts fisheries</u>, and the food Pacific Island nations, Japan and many Indian and South China Sea populations rely upon. Shifting salinity is directly affecting <u>drinking water</u>, and therefore human health and agriculture, in much of the world. The ocean ecologies are changing so rapidly and dramatically that

scientists cannot parse the relative weight of the causes: Over-fishing, pollution and waste dumping, changes in salinity/acidity, temperature shifts, churning storms and a long list of other complex contributors.

From a human health perspective the issue is less causality than the absolute loss of sea-derived food, coupled with the sewer-like ecology of many coastal waters, in which a range of microbes may thrive. Heat, coupled with drought, may constitute a "new normal" across much of the Indian Subcontinent. Monsoons have come later annually, temperatures have risen, and extreme drought has shattered agricultural production in parts of India, Pakistan and Bangladesh.

For human beings the insidious effect of heat, per se on the body may be the most under-appreciated cause of elevated deaths associated with climate change. In 2012 the US space agency NASA showed that the world has experienced a steady increase since 1951 in the volume and severity of severe heat events with temperatures sustained at levels that are above safe tolerance for human beings. While temperatures vary on a classic bell-shaped curve, NASA found that the median of that curve has shifted toward higher extremes every year. In 2003, when Europe experienced a record-breaking sustained heat wave, France lost more than 11,000 people to heat stroke .In 1995 a 50-day heat wave killed 692 people in Chicago, mostly poor, African-American and/or elderly. A third of the New Orleans deaths during and after Hurricane

^{26.} http://www.nejm.org/doi/full/10.1056/NEJMp1213843 and http://www.nejm.org/doi/full/10.1056/NEJMp1213844 and http://www.nejm.org/doi/full/10.1056/NEJMp1213486

and http://www.nejm.org/doi/full/10.1056/NEJMp1213492

^{27.} http://www.fas.org/sgp/crs/homesec/R42804.pdf and http://www.eurekalert.org/pub_releases/2012-11/nu-ddb110212.php

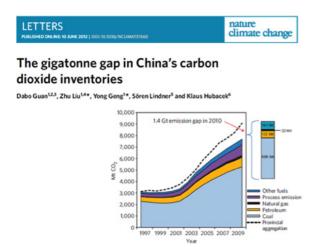
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^{28.} http://www.pnas.org/content/109/43/17633.abstract and http://www.nature.com/nature/journal/v491/n7422/full/491010d.html?WT.ec_id=NATURE-20121101
And http://www.pnas.org/cqi/doi/10.1073/pnas.1208160109

Figure 38



Figure 39



Katrina were due to heat stroke. A recent Harvard School of Public Health study found that elderly individuals that have underlying chronic ailments are the most likely to perish under high heat conditions. Overall, the researchers concluded that for every degree increase in the average peak summer heat in the US, 10,000 senior citizens will perish. In a sense their work offers a dose/response curve between climate change and one type of human mortality.

The Global health community has not responded to the challenge of climate change in a meaningful manner. Beyond explicative work, health advocates and their multilateral agencies have steered clear of climate debates, spent little financial or intellectual capital in confronting the problem, and provided virtually no concrete agenda for health system and population adaptation to severe weather, heat or other likely outcomes of rising CO2 levels.

One critical opportunity to scientifically parse the impact of CO2 emissions and air pollution on global human health was the 2008 Beijing Olympics, when the Chinese government cleared the region's air but shutting down much of the manufacturing and coal firing in northeastern China for the duration of the sporting event. Comparison of pre-Olympics, during the Olympics and post-Olympics air in the US researchers showed that China's air is America's air. The human health impact of carbon pollution is global.²⁹

Asia may be at particular human health risk because of the density of populations living along coastal and river systems. But another contributor cannot be ignored: soaring industrialization and energy production, particularly from China. Because of its dependency on coal, China is now the world's largest soot-producer, emitting gigatons of carbon pollutants that blanket the Himalayan glaciers and contribute to planetary CO2. Recent reappraisals of China's emissions indicate it is the world's #1 CO2 producer.

What Is To Be Done?

The boom in global health funding, organizations and governments' interest saved lives. In a remarkably short amount of time the resources, however chaotically administered and unaccountably they may have been spent, saved tens of millions human beings. In 1960, when the world population was 3 billion, some 20 million children under 5 years of age died annually, mostly from infectious diseases. By 2010, with a world population of some 6.8 billion, the child death numbers had plummeted to about 8 million annually. The Bill & Melinda Gates Foundation reckons that persistent effort and sustained funding for vaccination, malaria prevention, nutritional support, elimination of mother-to-child HIV transmission and proper management of pediatric pneumonia and

29. Source for chart is http://jama.jamanetwork.com/article.aspx?articleid=1157472

Figure 40

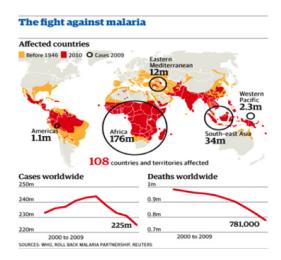
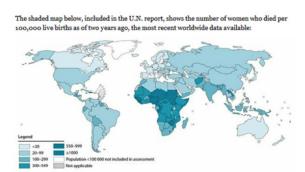


Figure 41





diarrheal disease can push that death toll down below 5 million children a year in 2025, when the world population will top 8 billion people.

In 2000 about a million people died of malaria, most of them children under 12 years old. By 2009 the global mobilization of resources and malaria control programs brought that death toll down to 781,000, according to the WHO. It could then be argued that about a half million lives were saved over nine years.

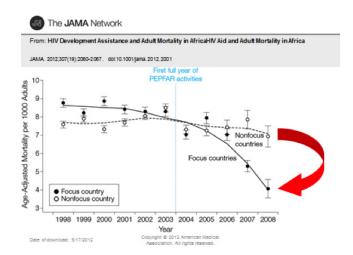
The UNAIDS Programme estimates about 6 million people were taking anti-HIV medicines by the end of 2011, 2.3 million of them living in sub-Saharan Africa. Since the global response to HIV began to escalate in 2001, UNAIDS says, the incidence of new infections worldwide has plummeted by 50 percent, and AIDS-related deaths in Africa have fallen by a third. "In some of the countries which have the highest HIV prevalence in the world, rates of new HIV infections have been cut dramatically since 2001; by 73 percent in Malawi, 71 percent in Botswana, 68 percent in Namibia, 58 percent in Zambia, 50 percent in Zimbabwe and 41 percent in South Africa and Swaziland," <u>UNAIDS announced</u> in November 2012. More than 500,000 fewer people died of AIDS in 2011 compared to 2005, meaning more than a million lives were saved overall.

In just four years the US PEPFAR program saved 740,000 lives, mostly in Africa, according to a <u>Johns Hopkins University</u> study. By comparing mortality rates in PEPFAR-aided countries in Africa to neighbouring nations that were not recipients of the US program's support the researchers divined the US government's impact.

Attention to making pregnancy a safe experience worldwide and the comparatively modest donor support for maternal mortality programs have also paid off, saving millions of lives. Since 1990 maternal death tolls have plummeted 47 percent, falling even in countries where women enjoy few reproductive rights, and give birth to more than five children per mother. According to Save the Children's Mothers in 2012 the lion's share of maternal deaths, on a per capita basis were concentrated in Afghanistan and nine poor sub-Saharan African nations.

The 2012 Global Burden of Disease survey offers more proof that global health works. In 1990, for example, tuberculosis ranked #9 for worldwide causes of loss of disability-adjusted life. By 2010 TB had fallen to the #13 position. Measles ranked #16 in 1990: by 2010 vaccination programs had pushed it down to #27. Overall in 1990 seven of the top ten killers were infectious diseases; by 2010 only 4 of the top ten were communicable ailments.

Figure 42



The challenge for Global health in 2013 is to find a way to maintain, even accelerate these successes while shifting focus to the chronic disease killers, and forming working partnerships with organizations tackling food security and climate change. Pursuit of UHC, if clearly defined and measured with realistic metrics, offers hope of building resilient, accessible health systems designed to tackle a broad range of threats to human health and wellbeing. But without fundamental alterations in the basic architecture of global health, and radical shifts/escalations in funding support, UHC and resilience are pipe dreams for most of the world.

Political mobilization to save the large mission of human survival requires a shared definition of "global health." The conversation that might produce such a definition has begun, in chaotic fashion, largely as an outcome of financial panic. What is needed is a far more deliberate debate, in a context outside of the World Health Assembly or donor/recipient negotiations. Since 2000 funding streams have defined the mission, and the largest donors have wielded the greatest influence over the policy and best practices agenda. The Obama Administration's years of hand-wringing over the structure of the US foreign assistance program reflects an earnest attempt to give recipient countries more control over their own public health and medical missions. But "global health" should not be defined by the US government, regardless of the scale of its financial commitment to the mission.

Figure 43

What is "Global Health"? And who decides?



Bill Gates?
U.S. Congress?
G20/8 leaders?
LDC governments?
USAID? DIFID?
OECD?
Health
"consumers"?
Poor people?

You?

Figure 44

Donating is easy. Charity is easy.

Maintenance and transformation are the hard parts.



Some of this exercise will transpire amid negotiations over the post-2015 UN targets, but the process is hardly inclusive. The majority of the world population that would, or should, be the targets of the UN agenda know nothing about it, and have no input. The multilateral agencies, their prime donors and allied NGOs will lead the debate.

In tough fiscal and economic times it is difficult to step away from pocketbook exigencies to seek a guiding vision for the future. One piece of the vision has, however, already fallen into place: Cessation of the "charity" component of global health. The notion that has driven the early 21st Century surge in global health action and funding was

spawned by many players, including economist Dr. Jeffrey Sachs who famously in 2000 framed the entire mission in terms of American entertainment. Combined, he argued, HIV, TB and malaria could all be conquered if every North American and European gave up annually the equivalent cost of a movie ticket and a box of popcorn. Sachs chastised the World Bank and US Congress for their parsimony, and insisted an unprecedented multibillion dollar flow of cash from the northern hemisphere rich world to the southern hemisphere poor was the key to global health.

Activism gelled around the concept, and the pipeline of funds poured forth. The money has, indeed, saved millions of lives. But a sustained sense of victory of infection, coupled with new visions for health systems, climate and food security and noncommunicable disease prevention will require far more than charity. Countries must politically embrace the challenges themselves, commit to the healthy survival of their populations, and build permanent structures and governance for change.

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