

The Challenge of Global Health

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Summary: Thanks to a recent extraordinary rise in public and private giving, today more money is being directed toward the world's poor and sick than ever before. But unless these efforts start tackling public health in general instead of narrow, disease-specific problems -- and unless the brain drain from the developing world can be stopped -- poor countries could be pushed even further into trouble, in yet another tale of well-intended foreign meddling gone awry.

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BEWARE WHAT YOU WISH FOR

Less than a decade ago, the biggest problem in global health seemed to be the lack of resources available to combat the multiple scourges ravaging the world's poor and sick. Today, thanks to a recent extraordinary and unprecedented rise in public and private giving, more money is being directed toward pressing health challenges than ever before. But because the efforts this money is paying for are largely uncoordinated and directed mostly at specific high-profile diseases -- rather than at public health in general -- there is a grave danger that the current age of generosity could not only fall short of expectations but actually make things worse on the ground.

This danger exists despite the fact that today, for the first time in history, the world is poised to spend enormous resources to conquer the diseases of the poor. Tackling the developing world's diseases has become a key feature of many nations' foreign policies over the last five years, for a variety of reasons. Some see stopping the spread of HIV, tuberculosis (TB), malaria, avian influenza, and other major killers as a moral duty. Some see it as a form of public diplomacy. And some see it as an investment in self-protection, given that microbes know no borders. Governments have been joined by a long list of private donors, topped by Bill and Melinda Gates and Warren Buffett, whose contributions to today's war on disease are mind-boggling.

Thanks to their efforts, there are now billions of dollars being made available for health spending -- and thousands of nongovernmental organizations (NGOs) and humanitarian groups vying to spend it. But much more than money is required. It takes states, health-care systems, and at least passable local infrastructure to improve public health in the developing world. And because decades of neglect there have rendered local hospitals, clinics, laboratories, medical schools, and health talent dangerously deficient, much of the cash now flooding the field is leaking away without result.

Moreover, in all too many cases, aid is tied to short-term numerical targets such as increasing the number of people receiving specific drugs, decreasing the number of pregnant women diagnosed with HIV (the virus that causes AIDS), or increasing the quantity of bed nets handed out to children to block disease-carrying mosquitoes. Few donors seem to understand that it will take at least a full generation (if not two or three) to substantially improve public health -- and that efforts should focus less on particular diseases than on broad measures that affect populations' general well-being.

The fact that the world is now short well over four million health-care workers, moreover, is all too often ignored. As the populations of the developed countries are aging and coming to require ever more medical attention, they are sucking away local health talent from developing countries.

Already, one out of five practicing physicians in the United States is foreign-trained, and a study recently published in JAMA: The Journal of the American Medical Association estimated that if current trends continue, by 2020 the United States could face a shortage of up to 800,000 nurses and 200,000 doctors. Unless it and other wealthy nations radically increase salaries and domestic training programs for physicians and nurses, it is likely that within 15 years the majority of workers staffing their hospitals will have been born and trained in poor and middle-income countries. As such workers flood to the West, the developing world will grow even more desperate.

Yet the visionary leadership required to tackle such problems is sadly lacking. Over the last year, every major leadership position on the global health landscape has turned over, creating an unprecedented moment of strategic uncertainty. The untimely death last May of Dr. Lee Jong-wook, director general of the World Health Organization (WHO), forced a novel election process for his successor, prompting health advocates worldwide to ask critical, long-ignored questions, such as, Who should lead the fight against disease? Who should pay for it? And what are the best strategies and tactics to adopt?

The answers have not been easy to come by. In November, China's Dr. Margaret Chan was elected as Lee's successor. As Hong Kong's health director, Chan had led her territory's responses to SARS and bird flu; later she took the helm of the WHO's communicable diseases division. But in statements following her election, Chan acknowledged that her organization now faces serious competition and novel challenges. And as of this writing, the Global Fund to Fight AIDS, Tuberculosis, and Malaria remained without a new leader following a months-long selection process that saw more than 300 candidates vie for the post and the organization's board get mired in squabbles over the fund's mission and future direction.

Few of the newly funded global health projects, meanwhile, have built-in methods of assessing their efficacy or sustainability. Fewer still have ever scaled up beyond initial pilot stages. And nearly all have been designed, managed, and executed by residents of the wealthy world (albeit in cooperation with local personnel and agencies). Many of the most successful programs are executed by foreign NGOs and academic groups, operating with almost no government interference inside weak or failed states. Virtually no provisions exist to allow the world's poor to say what they want, decide which projects serve their needs, or adopt local innovations. And nearly all programs lack exit strategies or safeguards against the dependency of local governments.

As a result, the health world is fast approaching a fork in the road. The years ahead could witness spectacular improvements in the health of billions of people, driven by a grand public and private effort comparable to the Marshall Plan -- or they could see poor societies pushed into even deeper trouble, in yet another tale of well-intended foreign meddling gone awry. Which outcome will emerge depends on whether it is possible to expand the developing world's local talent pool of health workers, restore and improve crumbling national and global health infrastructures, and devise effective local and international systems for disease prevention and treatment.

SHOW ME THE MONEY

The recent surge in funding started as a direct consequence of the HIV/AIDS pandemic. For decades, public health experts had been confronted with the profound disparities in care that separated the developed world from the developing one. Health workers hated that inequity but tended to accept it as a fact of life, given that health concerns were nested in larger issues of poverty and development. Western AIDS activists, doctors, and scientists, however, tended to have little experience with the developing world and were thus shocked when they discovered these inequities. And they reacted with vocal outrage.

The revolution started at an international AIDS meeting in Vancouver, Canada, in 1996. Scientists presented exhilarating evidence that a combination of anti-HIV drugs (known as antiretrovirals, or ARVs) could dramatically reduce the spread of the virus inside the bodies of infected people and make it possible for them to live long lives. Practically overnight, tens of thousands of infected men and women in wealthy countries started the new treatments, and by mid-1997, the visible horrors of AIDS had almost disappeared from the United States and Europe.

But the drugs, then priced at about \$14,000 per year and requiring an additional \$5,000 a year for tests and medical visits, were unaffordable for most of the world's HIV-positive population. So between 1997 and 2000, a worldwide activist movement slowly developed to address this problem by putting pressure on drug companies to lower their prices or allow the generic manufacture of the new medicines. The activists demanded that the Clinton administration and its counterparts in the G-8, the group of advanced industrial nations, pony up money to buy ARVs and donate them to poor countries. And by 1999, total donations for health-related programs (including HIV/AIDS treatment) in sub-Saharan Africa hit \$865 million -- up more than tenfold in just three years.

In 2000, some 20,000 activists, scientists, doctors, and patients gathered in Durban, South Africa, for another international AIDS conference. There, South Africa's former president, Nelson Mandela, defined the issue of ARV access in moral terms, making it clear that the world should not permit the poor of Harare, Lagos, or Hanoi to die for lack of treatments that were keeping the rich of London, New York, and Paris alive. The World Bank economist Mead Over told the gathering that donations to developing countries for dealing with HIV/AIDS had reached \$300 million in 1999 -- 0.5 percent of all development assistance. But he characterized that sum as "pathetic," claiming that the HIV/AIDS pandemic was costing African countries roughly \$5 billion annually in direct medical care and indirect losses in labor and productivity.

In 2001, a group of 128 Harvard University faculty members led by the economist Jeffrey Sachs estimated that fewer than 40,000 sub-Saharan Africans were receiving ARVs, even though some 25 million in the region were infected with HIV and perhaps 600,000 of them needed the drugs immediately. Andrew Natsios, then director of the U.S. Agency for International Development (USAID), dismissed the idea of distributing such drugs, telling the House International Relations Committee that Africans could not take the proper combinations of drugs in the proper sequences because they did not have clocks or watches and lacked a proper concept of time. The Harvard faculty group labeled Natsios' comments racist and insisted that, as Sachs put it, all the alleged obstacles to widespread HIV/AIDS treatment in poor countries "either don't exist or can be overcome," and that three million people in Africa could be put on ARVs by the end of 2005 at "a cost of \$1.1 billion per year for the first two to three years, then \$3.3 billion to \$5.5 billion per year by Year five."

Sachs added that the appropriate annual foreign-aid budget for malaria, TB, and pediatric respiratory and diarrheal diseases was about \$11 billion; support for AIDS orphans ought to top \$1 billion per year; and HIV/AIDS prevention could be tackled for \$3 billion per year. In other words, for well under \$20 billion a year, most of it targeting sub-Saharan Africa, the world could mount a serious global health drive.

What seemed a brazen request then has now, just five years later, actually been eclipsed. HIV/AIDS assistance has effectively spearheaded a larger global public health agenda. The Harvard group's claim that three million Africans could easily be put on ARVs by the end of 2005 proved overoptimistic: the WHO's "3 by 5 Initiative" failed to meet half of the three million target, even combining all poor and middle-income nations and not just those in Africa. Nevertheless, driven by the HIV/AIDS pandemic, a marvelous momentum for health assistance has been built and shows no signs of abating.

MORE, MORE, MORE

In recent years, the generosity of individuals, corporations, and foundations in the United States has grown by staggering proportions. As of August 2006, in its six years of existence, the Bill and Melinda Gates Foundation had given away \$6.6 billion for global health programs. Of that total, nearly \$2 billion had been spent on programs aimed at TB and HIV/AIDS and other sexually transmitted diseases. Between 1995 and 2005, total giving by all U.S. charitable foundations tripled, and the portion of money dedicated to international projects soared 80 percent, with global health representing more than a third of that sum. Independent of their government, Americans donated \$7.4 billion for disaster relief in 2005 and \$22.4 billion for domestic and foreign health programs and research.

Meanwhile, the Bush administration increased its overseas development assistance from \$11.4 billion in 2001 to \$27.5 billion in 2005, with support for HIV/AIDS and other health programs representing the lion's share of support unrelated to Iraq or Afghanistan. And in his 2003 State of the Union address, President George W. Bush called for the creation of a \$15 billion, five-year program to tackle HIV/AIDS, TB, and malaria. Approved by Congress that May, the President's Emergency Plan for AIDS Relief (PEPFAR) involves assistance from the United States to 16 nations, aimed primarily at providing ARVs for people infected with HIV. Roughly \$8.5 billion has been spent to date. PEPFAR's goals are ambitious and include placing two million people on ARVs and ten million more in some form of care by early 2008. As of March 2006, an estimated 561,000 people were receiving ARVs through PEPFAR-funded programs.

The surge in giving has not just come from the United States, however. Overseas development assistance from every one of the nations in the Organization for Economic Cooperation and Development (OECD) skyrocketed between 2001 and 2005, with health making up the largest portion of the increase. And in 2002, a unique funding-dispersal mechanism was created, independent of both the UN system and any government: the Global Fund to Fight AIDS, Tuberculosis, and Malaria. The fund receives support from governments, philanthropies, and a variety of corporate-donation schemes. Since its birth, it has approved \$6.6 billion in proposals and dispersed \$2.9 billion toward them. More than a fifth of those funds have gone to four nations: China, Ethiopia, Tanzania, and Zambia. The fund estimates that it now provides 20 percent of all global support for HIV/AIDS programs and 66 percent of the funding for efforts to combat TB and malaria.

The World Bank, for its part, took little interest in health issues in its early decades, thinking that health would improve in tandem with general economic development, which it was the bank's mission to promote. Under the leadership of Robert McNamara (which ran from 1968 to 1981), however, the bank slowly increased direct investment in targeted health projects, such as the attempted elimination of river blindness in West Africa. By the end of the 1980s, many economists were beginning to recognize that disease in tropical and desperately poor countries was itself a critical impediment to development and prosperity, and in 1993 the bank formally announced its change of heart in its annual World Development Report. The bank steadily increased its health spending in the following decade, reaching \$3.4 billion in 2003 before falling back to \$2.1 billion in 2006, with \$87 million of that spent on HIV/AIDS, TB, and malaria programs and \$250 million on child and maternal health. The bank, along with the International Monetary Fund (IMF), the OECD, and the G-8, has also recently forgiven the debts of many poor nations hard-hit by AIDS and other diseases, with the proviso that the governments in question spend what would otherwise have gone for debt payments on key public services, including health, instead.

When the Asian tsunami struck in December 2004, the world witnessed a profound level of globalized generosity, with an estimated \$7 billion being donated to NGOs, churches, and governments, largely by individuals. Although health programs garnered only a small percentage of

that largess, many of the organizations that are key global health players were significantly bolstered by the funds.

In January 2006, as the threat of avian influenza spread, 35 nations pledged \$1.9 billion toward research and control efforts in hopes of staving off a global pandemic. Since then, several G-8 nations, particularly the United States, have made additional funding available to bolster epidemiological surveillance and disease-control activities in Southeast Asia and elsewhere.

And poor nations themselves, finally, have stepped up their own health spending, partly in response to criticism that they were underallocating public funds for social services. In the 1990s, for example, sub-Saharan African countries typically spent less than 3 percent of their budgets on health. By 2003, in contrast, Tanzania spent nearly 13 percent of its national budget on health-related goods and services; the Central African Republic, Namibia, and Zambia each spent around 12 percent of their budgets on health; and in Mozambique, Swaziland, and Uganda, the figure was around 11 percent.

For most humanitarian and health-related NGOs, in turn, the surge in global health spending has been a huge boon, driving expansion in both the number of organizations and the scope and depth of their operations. By one reliable estimate, there are now more than 60,000 AIDS-related NGOs alone, and there are even more for global health more generally. In fact, ministers of health in poor countries now express frustration over their inability to track the operations of foreign organizations operating on their soil, ensure those organizations are delivering services in sync with government policies and priorities, and avoid duplication in resource-scarce areas.

PIPE DREAMS

One might think that with all this money on the table, the solutions to many global health problems would at least now be in sight. But one would be wrong. Most funds come with strings attached and must be spent according to donors' priorities, politics, and values. And the largest levels of donations are propelled by mass emotional responses, such as to the Asian tsunami. Still more money is needed, on a regular basis and without restrictions on the uses to which it is put. But even if such resources were to materialize, major obstacles would still stand in the way of their doing much lasting good.

One problem is that not all the funds appropriated end up being spent effectively. In an analysis prepared for the second annual meeting of the Clinton Global Initiative, in September 2006, Dalberg Global Development Advisors concluded that much current aid spending is trapped in bureaucracies and multilateral banks. Simply stripping layers of financing bureaucracy and improving health-delivery systems, the firm argued, could effectively release an additional 15-30 percent of the capital provided for HIV/AIDS, TB, and malaria programs.

A 2006 World Bank report, meanwhile, estimated that about half of all funds donated for health efforts in sub-Saharan Africa never reach the clinics and hospitals at the end of the line. According to the bank, money leaks out in the form of payments to ghost employees, padded prices for transport and warehousing, the siphoning off of drugs to the black market, and the sale of counterfeit -- often dangerous -- medications. In Ghana, for example, where such corruption is particularly rampant, an amazing 80 percent of donor funds get diverted from their intended purposes.

Another problem is the lack of coordination of donor activities. Improving global health will take more funds than any single donor can provide, and oversight and guidance require the skills of the many, not the talents of a few compartmentalized in the offices of various groups and agencies. In practice, moreover, donors often function as competitors, and the only organization with the political

credibility to compel cooperative thinking is the WHO. Yet, as Harvard University's Christopher Murray points out, the WHO itself is dependent on donors, who give it much more for disease-specific programs than they do for its core budget. If the WHO stopped chasing such funds, Murray argues, it could go back to concentrating on its true mission of providing objective expert advice and strategic guidance.

This points to yet another problem, which is that aid is almost always "stovepiped" down narrow channels relating to a particular program or disease. From an operational perspective, this means that a government may receive considerable funds to support, for example, an ARV-distribution program for mothers and children living in the nation's capital. But the same government may have no financial capacity to support basic maternal and infant health programs, either in the same capital or in the country as a whole. So HIV-positive mothers are given drugs to hold their infection at bay and prevent passage of the virus to their babies but still cannot obtain even the most rudimentary of obstetric and gynecological care or infant immunizations.

Stovepiping tends to reflect the interests and concerns of the donors, not the recipients. Diseases and health conditions that enjoy a temporary spotlight in rich countries garner the most attention and money. This means that advocacy, the whims of foundations, and the particular concerns of wealthy individuals and governments drive practically the entire global public health effort. Today the top three killers in most poor countries are maternal death around childbirth and pediatric respiratory and intestinal infections leading to death from pulmonary failure or uncontrolled diarrhea. But few women's rights groups put safe pregnancy near the top of their list of priorities, and there is no dysentery lobby or celebrity attention given to coughing babies.

The HIV/AIDS pandemic, meanwhile, continues to be the primary driver of global concern and action about health. At the 2006 International AIDS Conference, former U.S. President Bill Clinton suggested that HIV/AIDS programs would end up helping all other health initiatives. "If you first develop the health infrastructure throughout the whole country, particularly in Africa, to deal with AIDS," Clinton argued, "you will increase the infrastructure of dealing with maternal and child health, malaria, and TB. Then I think you have to look at nutrition, water, and sanitation. All these things, when you build it up, you'll be helping to promote economic development and alleviate poverty."

But the experience of bringing ARV treatment to Haiti argues against Clinton's analysis. The past several years have witnessed the successful provision of antiretroviral treatment to more than 5,000 needy Haitians, and between 2002 and 2006, the prevalence of HIV in the country plummeted from six percent to three percent. But during the same period, Haiti actually went backward on every other health indicator.

Part of the problem is that most of global HIV/AIDS-related funding goes to stand-alone programs: HIV testing sites, hospices and orphanages for people affected by AIDS, ARV-dispersal stations, HIV/AIDS education projects, and the like. Because of discrimination against people infected with HIV, public health systems have been reluctant to incorporate HIV/AIDS-related programs into general care. The resulting segregation has reinforced the anti-HIV stigma and helped create cadres of health-care workers who function largely independently from countries' other health-related systems. Far from lifting all boats, as Clinton claims, efforts to combat HIV/AIDS have so far managed to bring more money to the field but have not always had much beneficial impact on public health outside their own niche.

DIAMONDS IN THE ROUGH

Arguably the best example of what is possible when forces align properly can be found in the tiny African nation of Botswana. In August 2000, the Gates Foundation, the pharmaceutical companies

Merck and Bristol-Myers Squibb, and the Harvard AIDS Initiative announced the launching of an HIV/AIDS treatment program in collaboration with the government of Botswana. At the time, Botswana had the highest HIV infection rate in the world, estimated to exceed 37 percent of the population between the ages of 15 and 40. The goal of the new program was to put every single one of Botswana's infected citizens in treatment and to give ARVs to all who were at an advanced stage of the disease. Merck donated its anti-HIV drugs, Bristol-Myers Squibb discounted its, Merck and the Gates Foundation subsidized the effort to the tune of \$100 million, and Harvard helped the Botswanan government design its program.

When the collaboration was announced, the target looked easily attainable, thanks to its top-level political support in Botswana, the plentiful money that would come from both the donors and the country's diamond wealth, the free medicine, and the sage guidance of Merck and Harvard. Unlike most of its neighbors, Botswana had an excellent highway system, sound general infrastructure, and a growing middle class. Furthermore, Botswana's population of 1.5 million was concentrated in the capital city of Gaborone. The national unemployment rate was 24 percent -- high by Western standards but the lowest in sub-Saharan Africa. The conditions looked so propitious, in fact, that some activists charged that the parties involved had picked an overly easy target and that the entire scheme was little more than a publicity stunt, concocted by the drug companies in the hopes of deflecting criticism over their global pricing policies for AIDS drugs.

But it soon became apparent that even comparatively wealthy Botswana lacked sufficient health-care workers or a sound enough medical infrastructure to implement the program. The country had no medical school: all its physicians were foreign trained or immigrants. And although Botswana did have a nursing school, it still suffered an acute nursing shortage because South Africa and the United Kingdom were actively recruiting its English-speaking graduates. By 2005, the country was losing 60 percent of its newly trained health-care workers annually to emigration. (In the most egregious case, in 2004 a British-based company set up shop in a fancy Gaborone hotel and, in a single day, recruited 50 nurses to work in the United Kingdom.)

By 2002, the once-starry-eyed foreigners and their counterparts in Botswana's government had realized that before they could start handing out ARVs, they would have to build laboratories and clinics, recruit doctors from abroad, and train other health-care personnel. President Festus Mogae asked the U.S. Peace Corps to send doctors and nurses. Late in the game, in 2004, the PEPFAR program got involved and started working to keep HIV out of local hospitals' blood supplies and to build a network of HIV testing sites.

After five years of preparation, in 2005 the rollout of HIV treatment commenced. By early 2006, the program had reached its goal of treating 55,000 people (out of an estimated HIV-positive population of 280,000) with ARVs. The program is now the largest such chronic-care operation -- at least per capita -- in the world. And if it works, Botswana's government will be saddled with the care of these patients for decades to come -- something that might be sustainable if the soil there continues to yield diamonds and the number of people newly infected with HIV drops dramatically.

But Kwame Ampomah, a Ghana-born official for the Joint UN Program on HIV/AIDS, based in Gaborone, now frets that prevention efforts are not having much success. As of 2005, the incidence of new cases was rising eight percent annually. Many patients on ARVs may develop liver problems and fall prey to drug-resistant HIV strains. Ndwapi Ndwapi, a U.S.-trained doctor who works at Princess Marina Hospital, in Gaborone, and handles more of the government's HIV/AIDS patients than anyone else, also frets about the lack of effective prevention efforts. In slums such as Naledi, he points out, there are more bars than churches and schools combined. The community shares latrines, water pumps, alcohol -- and HIV. Ndwapi says Botswana's future rests on its ability to fully integrate HIV/AIDS care into the general health-care system, so that it no longer draws away scarce doctors

and nurses for HIV/AIDS-only care. If this cannot be accomplished, he warns, the country's entire health-care system could collapse.

Botswana is still clearly somewhat of a success story, but it is also a precariously balanced one and an effort that will be difficult to replicate elsewhere. Ampomah says that other countries might be able to achieve good results by following a similar model, but "it requires transparency, and a strong sense of nationalism by leaders, not tribalism. You need leaders who don't build palaces on the Riviera. You need a clear health system with equity that is not donor-driven. Everything is unique to Botswana: there is a sane leadership system in Gaborone. So in Kenya today maybe the elite can get ARVs with their illicit funds, but not the rest of the country. You need a complete package. If the government is corrupt, if everyone is stealing money, then it will not work. So there is a very limited number of African countries that could replicate the Botswana experience." And despite the country's HIV/AIDS achievements and the nation's diamond wealth, life expectancy for children born in Botswana today is still less than 34 years, according to CIA estimates.

BRAIN DRAIN

As in Haiti, even as money has poured into Ghana for HIV/AIDS and malaria programs, the country has moved backward on other health markers. Prenatal care, maternal health programs, the treatment of guinea worm, measles vaccination efforts -- all have declined as the country has shifted its health-care workers to the better-funded projects and lost physicians to jobs in the wealthy world. A survey of Ghana's health-care facilities in 2002 found that 72 percent of all clinics and hospitals were unable to provide the full range of expected services due to a lack of sufficient personnel. Forty-three percent were unable to provide full child immunizations; 77 percent were unable to provide 24-hour emergency services and round-the-clock safe deliveries for women in childbirth. According to Dr. Ken Sagoe, of the Ghana Health Service, these statistics represent a severe deterioration in Ghana's health capacity. Sagoe also points out that 604 out of 871 medical officers trained in the country between 1993 and 2002 now practice overseas.

Zimbabwe, similarly, trained 1,200 doctors during the 1990s, but only 360 remain in the country today. In Kadoma, eight years ago there was one nurse for every 700 residents; today there is one for every 7,500. In 1980, the country was able to fill 90 percent of its nursing positions nationwide; today only 30 percent are filled. Guinea-Bissau has plenty of donated ARV supplies for its people, but the drugs are cooking in a hot dockside warehouse because the country lacks doctors to distribute them. In Zambia, only 50 of the 600 doctors trained over the last 40 years remain today. Mozambique's health minister says that AIDS is killing the country's health-care workers faster than they can be recruited and trained: by 2010, the country will have lost 6,000 lab technicians to the pandemic. A study by the International Labor Organization estimates that 18-41 percent of the health-care labor force in Africa is infected with HIV. If they do not receive ARV therapy, these doctors, nurses, and technicians will die, ushering in a rapid collapse of the very health systems on which HIV/AIDS programs depend.

Erik Schouten, HIV coordinator for the Malawi Ministry of Health, notes that of the country's 12 million people, 90,000 have already died from AIDS and 930,000 people are now infected with HIV. Over the last five years, the government has lost 53 percent of its health administrators, 64 percent of its nurses, and 85 percent of its physicians -- mostly to foreign NGOs, largely funded by the U.S. or the British government or the Gates Foundation, which can easily outbid the ministry for the services of local health talent. Schouten is now steering a \$270 million plan, supported by PEPFAR, to use financial incentives and training to bring back half of the lost health-care workers within five years; nearly all of these professionals will be put to use distributing ARVs. But nothing is being done to replace the health-care workers who once dealt with malaria, dysentery, vaccination programs, maternal health, and other issues that lack activist constituencies.

Ibrahim Mohammed, who heads an effort similar to Schouten's in Kenya, says his nation lost 15 percent of its health work force in the years between 1994 and 2001 but has only found donor support to rebuild personnel for HIV/AIDS efforts; all other disease programs in the country continue to deteriorate. Kenya's minister of health, Charity Kaluki Ngilu, says that life expectancy has dropped in her country, from a 1963 level of 63 years to a mere 47 years today for men and 43 years for women. In most of the world, male life expectancy is lower than female, but in Kenya women suffer a terrible risk of dying in childbirth, giving men an edge in survival. Although AIDS has certainly taken a toll in Kenya, Ngilu primarily blames plummeting life expectancy on former President Daniel arap Moi, who kept Kenyan spending on health down to a mere \$6.50 per capita annually. Today, Kenya spends \$14.20 per capita on health annually -- still an appallingly low number. The country's public health and medical systems are a shambles. Over the last ten years, the country has lost 1,670 physicians and 3,900 nurses to emigration, and thousands more nurses have retired from their profession.

Data from international migration-tracking organizations show that health professionals from poor countries worldwide are increasingly abandoning their homes and their professions to take menial jobs in wealthy countries. Morale is low all over the developing world, where doctors and nurses have the knowledge to save lives but lack the tools. Where AIDS and drug-resistant TB now burn through populations like forest fires, health-care workers say that the absence of medicines and other supplies leaves them feeling more like hospice and mortuary workers than healers.

Compounding the problem are the recruitment activities of Western NGOs and OECD-supported programs inside poor countries, which poach local talent. To help comply with financial and reporting requirements imposed by the IMF, the World Bank, and other donors, these programs are also soaking up the pool of local economists, accountants, and translators. The U.S. Congress imposed a number of limitations on PEPFAR spending, including a ceiling for health-care-worker training of \$1 million per country. PEPFAR is prohibited from directly topping off salaries to match government pay levels. But PEPFAR-funded programs, UN agencies, other rich-country government agencies, and NGOs routinely augment the base salaries of local staff with benefits such as housing and education subsidies, frequently bringing their employees' effective wages to a hundred times what they could earn at government-run clinics.

USAID's Kent Hill says that this trend is "a horrendous dilemma" that causes "immense pain" in poor countries. But without tough guidelines or some sort of moral consensus among UN agencies, NGOs, and donors, it is hard to see what will slow the drain of talent from already-stressed ministries of health.

GOING DUTCH?

The most commonly suggested solution to the problematic pay differential between the wages offered by local governments and those offered by international programs is to bolster the salaries of local officials. But this move would be enormously expensive (perhaps totaling \$2 billion over the next five years, according to one estimate) and might not work, because of the problems that stem from injecting too much outside capital into local economies.

In a recent macroeconomic analysis, the UN Development Program (UNDP) noted that international spending on HIV/AIDS programs in poor countries doubled between 2002 and 2004. Soon it will have doubled again. For poor countries, this escalation means that by the end of 2007, HIV/AIDS spending could command up to ten percent of their GDPs. And that is before donors even begin to address the health-care-worker crisis or provide subsidies to offset NGO salaries.

There are three concerns regarding such dramatic escalations in external funding: the so-called Dutch disease, inflation and other economic problems, and the deterioration of national control. The

UNDP is at great pains to dismiss the potential of Dutch disease, a term used by economists to describe situations in which the spending of externally derived funds so exceeds domestic private-sector and manufacturing investment that a country's economy is destabilized. UNDP officials argue that these risks can be controlled through careful monetary management, but not all observers are as sanguine.

Some analysts, meanwhile, insist that massive infusions of foreign cash into the public sector undermine local manufacturing and economic development. Thus, Arvind Subramanian, of the IMF, points out that all the best talent in Mozambique and Uganda is tied up in what he calls "the aid industry," and Steven Radelet, of the Center for Global Development, says that foreign-aid efforts suck all the air out of local innovation and entrepreneurship. A more immediate concern is that raising salaries for health-care workers and managers directly involved in HIV/AIDS and other health programs will lead to salary boosts in other public sectors and spawn inflation in the countries in question. This would widen the gap between the rich and the poor, pushing the costs of staples beyond the reach of many citizens. If not carefully managed, the influx of cash could exacerbate such conditions as malnutrition and homelessness while undermining any possibility that local industries could eventually grow and support themselves through competitive exports.

Regardless of whether these problems proliferate, it is curious that even the most ardent capitalist nations funnel few if any resources toward local industries and profit centers related to health. Ministries of health in poor countries face increasing competition from NGOs and relief agencies but almost none from their local private sectors. This should be troubling, because if no locals can profit legitimately from any aspect of health care, it is unlikely that poor countries will ever be able to escape dependency on foreign aid.

Finally, major influxes of foreign funding can raise important questions about national control and the skewing of health-care policies toward foreign rather than domestic priorities. Many governments and activists complain that the U.S. government, in particular, already exerts too much control over the design and emphasis of local HIV/AIDS programs. This objection is especially strong regarding HIV-prevention programs, with claims that the Bush administration has pushed abstinence, fidelity, and faith-based programs at the expense of locally generated condom- and needle-distribution efforts.

Donor states need to find ways not only to solve the human resource crisis inside poor countries but also to decrease their own dependency on foreign health-care workers. In 2002, stinging from the harsh criticism leveled against the recruitment practices of the NHS (the United Kingdom's National Health Service) in Africa, the United Kingdom passed the Commonwealth Code of Practice for the International Recruitment of Health Workers, designed to encourage increased domestic health-care training and eliminate recruitment in poor countries without the full approval of host governments. British officials argue that although the code has limited efficacy, it makes a contribution by setting out guidelines for best practices regarding the recruitment and migration of health-care personnel. No such code exists in the United States, in the EU more generally, or in Asia -- but it should.

Unfortunately, the U.S. Congress has gone in the opposite direction, acceding to pressure from the private health-care sector and inserting immigration-control exemptions for health-care personnel into recent legislation. In 2005, Congress set aside 50,000 special immigration visas for nurses willing to work in U.S. hospitals. The set-aside was used up by early 2006, and Senator Sam Brownback (R-Kans.) then sponsored legislation eliminating all caps on the immigration of nurses. The legislation offers no compensation to the countries from which the nurses would come -- countries such as China, India, Kenya, Nigeria, the Philippines, and the English-speaking Caribbean nations.

American nursing schools reject more than 150,000 applicants every year, due less to the applicants' poor qualifications than to a lack of openings. If it fixed this problem, the United States could be entirely self-sufficient in nursing. So why is it failing to do so? Because too few people want to be nursing professors, given that the salaries for full-time nurses are higher. Yet every year Congress has refused to pass bills that would provide federal support to underfunded public nursing schools, which would augment professors' salaries and allow the colleges to accept more applicants. Similar (although more complex) forms of federal support could lead to dramatic increases in the domestic training of doctors and other health-care personnel.

Jim Leach, an outgoing Republican member of the House of Representatives from Iowa, has proposed something called the Global Health Services Corps, which would allocate roughly \$250 million per year to support 500 American physicians working abroad in poor countries. And outgoing Senator Bill Frist (R-Tenn.), who volunteers his services as a cardiologist to poor countries for two weeks each year, has proposed federal support for sending American doctors to poor countries for short trips, during which they might serve as surgeons or medical consultants.

Although it is laudable that some American medical professionals are willing to volunteer their time abroad, the personnel crisis in the developing world will not be dealt with until the United States and other wealthy nations clean up their own houses. OECD nations should offer enough support for their domestic health-care training programs to ensure that their countries' future medical needs can be filled with indigenous personnel. And all donor programs in the developing world, whether from OECD governments or NGOs and foundations, should have built into their funding parameters ample money to cover the training and salaries of enough new local health-care personnel to carry out the projects in question, so that they do not drain talent from other local needs in both the public and the private sectors.

WOMEN AND CHILDREN FIRST

Instead of setting a hodgepodge of targets aimed at fighting single diseases, the world health community should focus on achieving two basic goals: increased maternal survival and increased overall life expectancy. Why? Because if these two markers rise, it means a population's other health problems are also improving. And if these two markers do not rise, improvements in disease-specific areas will ultimately mean little for a population's general health and well-being.

Dr. Francis Omaswa, leader of the Global Health Workforce Alliance -- a WHO-affiliated coalition -- argues that in his home country of Zambia, which has lost half of its physicians to emigration over recent years, "maternal mortality is just unspeakable." When doctors and nurses leave a health system, he notes, the first death marker to skyrocket is the number of women who die in childbirth. "Maternal death is the biggest challenge in strengthening health systems," Omaswa says. "If we can get maternal health services to perform, then we are very nearly perfecting the entire health system."

Maternal mortality data is a very sensitive surrogate for the overall status of health-care systems since pregnant women survive where safe, clean, round-the-clock surgical facilities are staffed with well-trained personnel and supplied with ample sterile equipment and antibiotics. If new mothers thrive, it means that the health-care system is working, and the opposite is also true.

Life expectancy, meanwhile, is a good surrogate for child survival and essential public health services. Where the water is safe to drink, mosquito populations are under control, immunization is routinely available and delivered with sterile syringes, and food is nutritional and affordable, children thrive. If any one of those factors is absent, large percentages of children perish before their fifth birthdays. Although adult deaths from AIDS and TB are pushing life expectancies down in some African countries, the major driver of life expectancy is child survival. And global gaps in life expectancy have widened over the last ten years. In the longest-lived society, Japan, a girl who was

born in 2004 has a life expectancy of 86 years, a boy 79 years. But in Zimbabwe, that girl would have a life expectancy of 34 years, the boy 37.

The OECD and the G-8 should thus shift their targets, recognizing that vanquishing AIDS, TB, and malaria are best understood not simply as tasks in themselves but also as essential components of these two larger goals. No health program should be funded without considering whether it could, as managed, end up worsening the targeted life expectancy and maternal health goals, no matter what its impacts on the incidence or mortality rate of particular diseases.

Focusing on maternal health and life expectancy would also broaden the potential impact of foreign aid on public diplomacy. For example, seven Islamic nations (Afghanistan, Egypt, Iraq, Pakistan, Somalia, Sudan, and Yemen) lose a combined 1.4 million children under the age of five every year to entirely preventable diseases. These countries also have some of the highest maternal mortality rates in the world. The global focus on HIV/AIDS offers little to these nations, where the disease is not prevalent. By setting more encompassing goals, government agencies such as USAID and its British counterpart could both save lives in these nations and give them a legitimate reason to believe that they are welcome members of the global health movement.

Legislatures in the major donor nations should consider how the current targeting requirements they place on their funding may have adverse outcomes. For example, the U.S. Congress and its counterparts in Europe and Canada have mandated HIV/AIDS programs that set specific targets for the number of people who should receive ARVs, be placed in orphan-care centers, obtain condoms, and the like. If these targets are achievable only by robbing local health-care workers from pediatric and general health programs, they may well do more harm than good, and should be changed or eliminated.

In the philanthropic world, targeting is often even narrower, and the demand for immediate empirical evidence of success is now the norm. From the Gates Foundation on down to small family foundations and individual donors, there is an urgent need to rethink the concept of accountability. Funders have a duty to establish the efficacy of the programs they support, and that may require use of very specific data to monitor success or failure. But it is essential that philanthropic donors review the relationship between the pressure they place on recipients to achieve their narrow targets and the possible deleterious outcomes for life expectancy and maternal health due to the diversion of local health-care personnel and research talent.

SYSTEMS AND SUSTAINABILITY

Perched along the verdant hillsides of South Africa's KwaZulu-Natal Province are tin-roofed mud-and-wood houses, so minimal that they almost seem to shiver in the winter winds. An observant eye will spot bits of carved stone laying flat among the weeds a few steps from the round houses, under which lay the deceased. The stones are visible evidence of a terrifying death toll, as this Zulu region may well have the highest HIV prevalence rate in the world.

At the top of one hill in the Vulindlela area resides Chief Inkosi Zondi. A quiet man in his early 40s, Zondi shakes his head over the AIDS horror. "We can say there are 40,000 people in my 18 subdistricts," he says. "Ten thousand have died. So about 25 percent of the population has died." In this rugged area, only about ten percent of the adults have formal employment, and few young people have much hope of a reasonable future. Funerals are the most commonplace form of social gathering. Law and order are unraveling, despite Chief Zondi's best efforts, because the police and the soldiers are also dying of AIDS.

In such a setting, it seems obvious that pouring funds into local clinics and hospitals to prevent and treat HIV/AIDS should be the top priority. For what could be more important than stopping the carnage?

But HIV does not spread in a vacuum. In the very South African communities in which it flourishes, another deadly scourge has emerged: XDR-TB, a strain of TB so horribly mutated as to be resistant to all available antibiotics. Spreading most rapidly among people whose bodies are weakened by HIV, this form of TB, which is currently almost always lethal, endangers communities all over the world. In August 2006, researchers first announced the discovery of XDR-TB in KwaZulu-Natal, and since then outbreaks have been identified in nine other South African provinces and across the southern part of the continent more generally. The emergence of XDR-TB in KwaZulu-Natal was no doubt linked to the sorry state of the region's general health system, where TB treatment was so poorly handled that only a third of those treated for regular TB completed the antibiotic therapy. Failed therapy often promotes the emergence of drug-resistant strains.

There is also an intimate relationship between HIV and malaria, particularly for pregnant women: being infected with one exacerbates cases of the other. Physicians administering ARVs in West Africa have noticed a resurgence of clinical leprosy and hepatitis C, as latent infections paradoxically surge in patients whose HIV is controlled by medicine. HIV-positive children face a greater risk of dying from vaccine-preventable diseases, such as measles, polio, and typhoid fever, if they have not been immunized than do those nonimmunized children without HIV. But if financial constraints force health-care workers to reuse syringes for a mass vaccination campaign in a community with a Vukindlela-like HIV prevalence, they will almost certainly spread HIV among the patients they vaccinate. And if the surgical instruments in clinics and hospitals are inadequately sterilized or the blood-bank system lacks proper testing, HIV can easily spread to the general population (as has happened in Canada, France, Japan, Kazakhstan, Libya, Romania, and elsewhere).

As concern regarding the threat of pandemic influenza has risen worldwide over the last two years, so has spending to bolster the capacities of poor countries to control infected animal populations, spot and rapidly identify human flu cases, and isolate and treat the people infected. It has become increasingly obvious to the donor nations that these tasks are nearly impossible to perform reliably in countries that lack adequate numbers of veterinarians, public health experts, laboratory scientists, and health-care workers. Moreover, countries need the capacity to coordinate the efforts of all these players, which requires the existence of a public health infrastructure.

At a minimum, therefore, donors and UN agencies should strive to integrate their infectious-disease programs into general public health systems. Some smaller NGOs have had success with community-based models, but this needs to become the norm. Stovepiping should yield to a far more generalized effort to raise the ability of the entire world to prevent, recognize, control, and treat infectious diseases -- and then move on to do the same for chronic killers such as diabetes and heart disease in the long term. Tactically, all aspects of prevention and treatment should be part of an integrated effort, drawing from countries' finite pools of health talent to tackle all monsters at once, rather than dueling separately with individual dragons.

David de Ferranti, of the Brookings Institution, reckons that meeting serious health goals -- such as getting eight million more people on ARVs while bringing life expectancies in poor countries up to at least the level of middle-income nations and reducing maternal mortality by 15-20 percent -- will cost about \$70 billion a year, or more than triple the current spending.

Even if such funds could be raised and deployed, however, for the increased spending to be effective, the structures of global public health provision would have to undergo a transformation. As Tore Godal, who used to run the neglected-diseases program at the WHO, recently wrote in *Nature*, "There is currently no systemic approach that is designed to match essential needs with the resources

that are actually available." He called for a strategic framework that could guide both donations and actions, with donors thinking from the start about how to build up the capabilities in poor countries in order to eventually transfer operations to local control -- to develop exit strategies, in other words, so as to avoid either abrupt abandonment of worthwhile programs or perpetual hemorrhaging of foreign aid.

In the current framework, such as it is, improving global health means putting nations on the dole -- a \$20 billion annual charity program. But that must change. Donors and those working on the ground must figure out how to build not only effective local health infrastructures but also local industries, franchises, and other profit centers that can sustain and thrive from increased health-related spending. For the day will come in every country when the charity eases off and programs collapse, and unless workable local institutions have already been established, little will remain to show for all of the current frenzied activity.

As a thought experiment, the Council on Foreign Relations' Global Health Program has conceived of Doc-in-a-Box, a prototype of a delivery system for the prevention and treatment of infectious diseases. The idea is to convert abandoned shipping containers into compact transportable clinics suitable for use throughout the developing world.

Shipping containers are durable structures manufactured according to universal standardized specifications and are able to be transported practically anywhere via ships, railroads, and trucks. Because of trade imbalances, moreover, used containers are piling up at ports worldwide, abandoned for scrap. Engineers at Rensselaer Polytechnic Institute converted a sample used container into a prototype Doc-in-a-Box for about \$5,000, including shipping. It was wired for electricity and fully lit and featured a water filtration system, a corrugated tin roofing system equipped with louvers for protection during inclement weather, a newly tiled floor, and conventional doors and windows. Given economies of scale and with the conversions performed in the developing world rather than New York, it is estimated that large numbers of Doc-in-a-Boxes could be produced and delivered for about \$1,500 each.

Staffed by paramedics, the boxes would be designed for the prevention, diagnosis, and treatment of all major infectious diseases. Each would be linked to a central hub via wireless communications, with its performance and inventory needs monitored by nurses and doctors.

Governments, donors, and NGOs could choose from a variety of models with customizable options, ordering paramedic training modules, supplies, and systems-management equipment as needed. Doc-in-a-Boxes could operate under a franchise model, with the paramedics involved realizing profits based on the volume and quality of their operations. Franchises could be located in areas now grossly underserved by health clinics and hospitals, thus extending health-care opportunities without generating competitive pressure for existing facilities.

On a global scale, with tens of thousands of Doc-in-a-Boxes in place, the system would be able to track and respond to changing needs on the ground. It would generate incentives to pull rapid diagnostics, easy-to-take medicines, new types of vaccines, and novel prevention tools out of the pipelines of biotechnology and pharmaceutical companies. Supplies could be purchased in bulk, guaranteeing low per-unit costs. And the sorts of Fortune 500 companies that now belong to the Global Business Coalition on HIV/ AIDS, TB, and Malaria would be able to provide services and advice.

Over time, Doc-in-a-Boxes could emerge as sustainable local businesses, providing desperately needed health-care services to poor communities while generating investment and employment, like branches of Starbucks or McDonald's.