Scaling Up Effective Delivery Models Worldwide

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The previous chapter explored the health care delivery model of Partners In Health, Zanmi Lasante, and Inshuti Mu Buzima in the rural reaches of Haiti and Rwanda. Working in the public sector, PIH and its sister organizations have helped transform patient care and improve the overall health of people living in impoverished areas. PIH is one among many organizations that have discovered ways to deliver high-quality health services in resource-poor settings. But is its model generalizable? In this chapter, we step back to consider general principles of global health delivery.

We begin with the Global Health Delivery Project at Harvard, an academic collaboration seeking to discern and promulgate principles of effective health care delivery. The chapter examines a strategic framework developed by this group and offers a series of examples from the project's case studies. The remainder of the chapter then broadens the focus, exploring the promise of health systems strengthening, a strategy that extends the GHD framework to the regional or national level. After a brief review of the health systems of several countries, the chapter concludes by turning to one of the essential components of health care delivery: the necessary human resources. Throughout, we aim to synthesize key lessons that practitioners and policymakers have learned, with the goal of introducing the emerging science of global health delivery.

PRINCIPLES OF EFFECTIVE GLOBAL HEALTH DELIVERY

The Global Health Delivery Project is a partnership between the schools of business, medicine, and public health at Harvard and the Brigham and Women's Hospital. The project took shape to help fill the knowledge gap about the delivery of health care services in resource-poor areas. Many global health programs targeting these areas have proved successful, yet there has been little systematic analysis of how such programs deliver quality care. What is missing, in other words, is a science of global health delivery. In response, GHD is developing a series of case studies drawn from countries ranging from India to Kenya to Brazil to Indonesia on topics such as measles vaccination, antimalarial drug production, and HIV counseling and testing. Although the field is young, its analysis is instructive. Here we consider four salient principles that, taken together, offer a strategic framework for effective global health delivery:

Adapting to local context
Constructing a care delivery value chain
Leveraging shared delivery infrastructure
Improving both health delivery and economic development

Adapting to Local Context

Local factors, such as climate, labor market characteristics, and demographic trends, pattern the burden of disease and access to health care in a given setting. As chapter 6 explains, the strategy of Partners In Health has, from the beginning, been guided by local knowledge. Awareness of specific structural barriers to accessing care in Cange—unemployment, insufficient access to food and clean water, shoddy health infrastructure, high transport costs, and poor housing, to name just a few—informed its accompagnateur-based care delivery model and its strategy of providing wraparound social services. Such programmatic innovations were in many ways the foundation of Partners In Health and Zanmi Lasante's clinical performance.

How do programs adapt to the local context? Assessing the local contours of disease burden is an essential first step: disease prevalence and modes of transmission often vary greatly within countries and regions. For example, in 2003, Kenya's HIV prevalence rate was an esti-
affected 6.7 percent nationally, but the prevalence rates in its provinces ranged from nearly 0 percent (North Eastern Province) to 15.1 percent (Nyangza Province). Within Nyangza Province, there were [and are] also large differences in prevalence among major cities and between cities and rural areas. Recognizing geographic differences in prevalence rates is essential to any health delivery strategy.

Politics, without fail, also influences the provision of care and accessibility of services. Instability, insecurity, or predation can have far-reaching effects on health care delivery and can jeopardize the work of providers. Haiti is a case in point: as chapter 6 details, a history of elite control and political turmoil disrupted and undermined efforts to strengthen the national health system. Furthermore, public health is predicated on the provision of public services. The public sector is often the only health provider for the poor. Public goods like potable water and clean air are necessary inputs for the good health of a population; in their absence, waterborne diseases like typhoid and pollution-associated diseases like asthma may become more common. Clean water is also required for formula feeding children of HIV-positive mothers, who are counseled to avoid breastfeeding in poor settings that lack water security; additional interventions such as water purification technologies are needed for successful formula feeding.

Economic conditions also play a significant role in determining access to care and the burden of disease. Although the links between poverty and health are well known, understanding the precise, local mechanisms by which poverty and inequality in part shape the patterns of disease and the availability of care are key starting points for the science of global health delivery. Patients who cannot afford transportation to a local clinic, for example, may need additional resources to borrow a car or, in remote rural areas, rent a donkey; the destitute sick may also need help with child care or food for their families.

Social and cultural factors, such as gender disparities and disease-related stigma, influence the local landscape of health care. The health needs of marginalized populations—such as the squatters Zanmi Lasante began serving in Cange in the 1980s, or commercial sex workers in Mumbai, India—often go unaddressed by health providers. The stigma associated with particular diseases, such as mental illnesses or neglected tropical diseases, may prevent patients from seeking care. In such situations, health providers may need to intensify and expand their case-finding efforts and provide care with even greater confidentiality to gain the trust of patients. Local religious practices can also affect care-seeking and service delivery: in Haiti, for example, diseases such as tuberculosis and AIDS have long been attributed, at times, to sorcery. Such alternate etiologies can lead individuals to eschew biomedical solutions.

These are just a few examples of local context that must be considered. Because every local situation is different, it is impossible to enumerate a checklist of considerations that are relevant everywhere. But it is important to underscore the centrality of ethnography and discernment as starting points for global health delivery. The challenge for

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**Case Brief 1. Polio in Uttar Pradesh: Local Context Matters**

Poliomyelitis, an enterovirus spread by fecal-oral transmission, can cause paralysis. Fortunately, inexpensive vaccines have been available since the 1950s. By 1985, however, vaccine coverage in India was still below 30 percent of the population.

In the 1990s, the Indian government significantly expanded its polio eradication efforts by instituting National Immunization Days. On a national level, the program achieved impressive results: more than 100 million children were vaccinated, and coverage exceeded 94 percent.

Despite the campaign’s success in reducing polio cases nationally (as shown in map 7.1), vaccination rates remained poor in parts of the country. By the end of the decade, officials noted that vaccine coverage in a number of districts in the province of Uttar Pradesh was under 20 percent. Ethnographic investigation indicated that residents did not consider polio a leading health concern; many asked why polio was being targeted instead of other pressing health needs. A predominantly Muslim province in a Hindu-majority nation, Uttar Pradesh had a legacy of skepticism toward outside intervention. Family planning and immunization campaigns in the province a decade earlier had been construed by some as an attempt to sterilize Muslim communities, fueling distrust of health care personnel. The province is also one of India’s poorest, and it faces a high burden of diarrheal disease, which significantly reduces the oral polio vaccine’s efficacy.

In 2002, Uttar Pradesh experienced a resurgence of polio. Variable achievements of the national campaign in this province illustrate the role of local factors in mediating the delivery of health services, and community-based adjustments to the campaign have succeeded in eliminating polio from India since 2014.

They must be adapted to local contexts to minimize unintended negative consequences.

Constructing a Care Delivery Value Chain

The second principle of effective health delivery involves choosing and adapting health interventions based on value for patients, defined as overall health outcomes per cost. This definition differs from the standard practice of considering the cost-effectiveness of isolated interventions. For example, care delivery for HIV/AIDS involves the primary activities of prevention, testing and screening, staging, delaying progression, initiating antiretroviral therapy, continuous disease management, and management of clinical deterioration. By adapting a value-based approach, program design reflects this overall set of activities and the links—information and resource flow, to name a few—between them. A value-based approach emphasizes the integration of interventions, creating a shared delivery infrastructure.

The care delivery value chain (CDVC) is a conceptual tool that optimizes value for patients across the myriad steps in the delivery of care. The CDVC considers care as a system, not as discrete interventions. For a given medical condition, the CDVC maps out the relevant health delivery activities, highlighting the flow of care and the links between different providers and services. The CDVC thus cultivates a systemic analysis of value creation that defines a medical condition as an interrelated set of circumstances. Based on the principle that patients receive greater value when different interventions work in concert, a CDVC allows program managers to optimize this value as the delivery of health care and the health interventions become more integrated.

As illustrated in figure 7.1, every CDVC begins with monitoring and prevention; progresses through diagnosing, preparing, intervening, and rehabilitating; and ends with monitoring and managing. Monitoring and prevention include tracking a patient's condition, assessing risk, and taking steps to prevent or reduce the seriousness of illness or injury. The activities following monitoring and prevention support management of the medical condition over time to sustain desired results and minimize reoccurrence. Three additional categories of supporting activities cut across each stage of the care cycle: informing and engaging, measuring patient progress, and accessing the site of care. These activities help bind the care cycle together; this

practitioners is to conduct ethnographic research and discern which aspects of the local context matter and to adapt programs accordingly.

This approach may diverge from global public health policy. For example, although the World Health Organization (WHO) and other international health authorities did not (and often do not) recommend compensating community health workers, Zanmi Lasante has found that paid accompagnateurs provide first-rate home-based care for complex affictions such as tuberculosis, AIDS, and certain malignancies. Habits and protocols generated in one context may become institutionalized—to use Peter Berger and Thomas Luckmann's term (explained in chapter 2)—among global public health authorities and thus diverge from the complexity of local contexts. Global policies can be helpful in offering strategies and standards for care delivery, but
Case Brief 2. AMPATH HIV Care: A Care Delivery Value Chain

In 1989, the Indiana University School of Medicine in the United States and the Moi University School of Medicine in Kenya launched a joint project in Kenya’s Western Province that aimed to expand health services and to train American and Kenyan clinicians. For several years, the program offered only primary care services. By the late 1990s, however, it became clear that the partnership could not meet the province’s health needs without providing HIV care. The main teaching hospital recorded eighty-five AIDS deaths in 1991; by 2000, there had been more than one thousand.

In response, they created the Academic Model for Prevention and Treatment of HIV/AIDS (AMPATH), which rolled out an AIDS prevention and treatment program targeting various points in the disease cycle. AMPATH providers offered HIV counseling and testing, antiretroviral therapy, and treatment of opportunistic infections, including tuberculosis. The program referred patients to oncology care (Kaposi’s sarcoma is among the most common opportunistic infections across sub-Saharan Africa), provided reproductive health services, and delivered antenatal care to reduce HIV transmission between mother and child. It also offered food and social support for patients in need. To tackle the many afflictions associated with AIDS—opportunistic infections, sexually transmitted infections, poverty, stigma—AMPATH developed a package of integrated interventions, including prevention, diagnosis, treatment, and clinical management of complications. What began with a single patient scaled up to more than one thousand in the first three years (see figure 7.3); by 2008, the program had a cumulative enrollment of more than sixty-eight thousand patients and operated seventeen centers. AMPATH had become the largest provider of antiretroviral treatment in Kenya.

Nonetheless, a 2007 survey indicated that 85 percent of residents in AMPATH’s catchment area were unaware of their HIV status. The AIDS patients AMPATH identified received excellent care, but others remained beyond its reach; the program’s services were insufficiently addressing HIV transmission. A pilot project called Home-Based Counseling and Testing was begun, which provided door-to-door information, testing, and counseling. The project reached 95 percent of the 59,654 eligible residents, 96 percent of whom received HIV tests. By 2010, AMPATH had expanded this service throughout the catchment area: knowledge of HIV status increased markedly, as did patient volume. Expanding services at the front end of the care delivery value chain—knowledge of HIV status and counseling about preventing transmission—helped AMPATH enroll more than 120,000 people in treatment by 2011.

integrated perspective is essential to managing prevention and treatment efforts.

By highlighting that the value of a specific intervention is linked to the entire health system, the CDVC reflects a broad, biosocial conception of health care delivery. By identifying factors such as patient access to information and treatment, and other external indicators that are especially crucial in resource-limited settings and are often beyond the considerations of today’s provider organizations, the CDVC provides a framework within which providers can analyze the totality of the care delivery process and also examine service facilities, design geographic expansion, improve existing metrics, and analyze costs. While most medical providers have delineated, however implicitly, the distinct activities in managing a patient’s condition, the CDVC provides a common language for understanding and potentially improving the overall system of care delivery.
Leveraging Shared Delivery Infrastructure

Many different interventions require the same health infrastructure for effective delivery. For example, although treatments for malaria and trypanosomiasis have disparate synthetics, biochemical properties, and dosages, they both rely on procurement systems, a robust supply chain, financing, management, clinical staff, and treatment facilities.

Most successful global health programs make it a point to leverage shared delivery infrastructure whenever possible, which brings clear advantages for both providers and patients. Providers save time and resources by using the same hospitals and clinics, modes of transport, laboratories, and supply chains to deliver multiple interventions at once. For example, harmonizing the storage and distribution of numerous different medications in a single pharmacy requires fewer staff and resources than having separate pharmacy systems for each intervention. Indeed, leveraging shared delivery infrastructure across a range of interventions can generate economies of scale and greater efficiency for the health system as a whole.10

Patients also benefit from shared delivery infrastructure. Many people present at health facilities without knowing what illness—or, as is often the case in settings of poverty, illnesses—they have. Clinics that can deliver a range of services, from primary health care to specialty care for leading causes of morbidity and mortality, will be better pre-

Case Brief 3. BRAC's Rural Tuberculosis Program: Shared Delivery Infrastructure

BRAC (formerly known as the Bangladesh Rural Advancement Committee) has promoted rural economic development since shortly after Bangladesh gained its independence in 1971. Before long, BRAC leadership realized the links between health care and development, they began investing in local health delivery systems by training a cadre of female community health workers, called shasthya sevikas. The sevikas implemented grassroots health education programs and taught community members how to dispense medications for minor medical needs. BRAC provided ongoing training as well as logistical and clinical support for the shasthya sevikas, each of whom served 350 to 500 households.

In the early 1980s, BRAC staff identified tuberculosis (TB) as among the most pressing health needs in rural Bangladesh. Beginning in a district of 250,000 people, BRAC set up a pilot program of TB control based on the existing network of shasthya sevikas. During regular home visits, shasthya sevikas screened for TB and conducted active case-finding, referring suspected cases to treatment facilities and counseling patients with confirmed TB to help them adhere to therapy. After patients completed treatment, shasthya sevikas were paid. BRAC also integrated this program into the government health system: public-sector facilities provided medicines and laboratory capacity whenever possible. Where there was not sufficient public-sector capacity, BRAC set up its own laboratories according to government guidelines. The shasthya sevikas followed the protocol of the government's National Tuberculosis Programme, including treatment and reporting procedures.

BRAC's TB program was hailed as a success and expanded to ten subdistricts in 1992; by 2006, it served a catchment area with more than 83 million residents. That year, BRAC treated 87,000 TB patients and recorded a cure rate of 92 percent. Today, BRAC's work is widely regarded as a paradigm of TB control. Its model—based on BRAC's large network of trained and paid shasthya sevikas and integrated with the public-sector health system—exhibits the substantial benefits of leveraging shared delivery infrastructure in global health delivery.11
pared to respond to diverse patient needs. A patient co-infected with tuberculosis and HIV—in 2000, some 30 percent of tuberculosis cases in sub-Saharan Africa were attributed to HIV infection—will be best served by a clinic that tests for HIV and refers to tuberculosis services next door. Even with proper referrals, patients have an easier time accessing needed services when care is integrated and centralized. Especially outside tertiary care centers, shared delivery infrastructure is simpler and less expensive for patients to navigate.

Improving Both Health Delivery and Economic Development

In rich and poor countries alike, poverty and inequality are often chief risk factors of ill health. The concept of structural violence, described in chapter 2 and elsewhere, highlights some of the mechanisms by which large-scale social forces become embodied as disease and disability among the poor and otherwise vulnerable. A crucial objective in itself, poverty reduction is also fundamental to building a strong health system: no health system can provide high-quality care to all those who need it—over the long term—without modern infrastructure, a robust workforce, a decent school system, water and sanitation systems, and a working economy. Conversely, the health of a nation’s population is an important precondition to sustainable development. Preventable and treatable diseases like AIDS and tuberculosis thin workforces and civil services; children who do not receive treatment for parasitic worms—not to mention malnutrition, diarrheal diseases, and respiratory diseases—suffer long-term developmental deficits that are later manifested as skill deficits and lower wages among adults.

There is thus synergy between health delivery and economic development. Prudent global health delivery maximizes the spill-over effects that can foster economic growth. Procuring locally produced goods strengthens demand, for example; hiring local staff whenever possible and promoting job creation can help reduce unemployment. Strengthening physical infrastructure (roads, bridges) and public works (water, sanitation, electricity) can improve health care delivery while also facilitating economic transactions. In addition to easing ambulance passage and enabling supply chain logistics, road improvements in rural areas can boost trade and make labor markets more dynamic. In other words, well-designed global health programs can harness a positive feedback loop between poverty reduction and health system strengthening.

These four principles of global health care delivery—adapting to local context, constructing a care delivery value chain, leveraging shared delivery infrastructure, and improving both health delivery and economic development—offer a strategic framework to guide program design and resource allocation. They are, however, only a first step

Case Brief 4. A to Z Textile Mills Ltd.: Improving Health and the Economy

Insecticide-treated bed nets (ITNs) have been shown to reduce malaria transmission when used regularly and mended or replaced periodically. An initial effectiveness study performed in the Gambia in 1991 suggests that use of these beds nets reduced mortality among children under the age of five by up to 60 percent.

In 2000, international malaria-control organizations committed to scaling up the use of bed nets, but utilization rates have remained somewhat low. One problem was that when ITNs were first developed, the nets needed to be retreated with insecticide every six months. More recently, manufacturers such as Sumitomo Chemical Company in Tokyo have developed insecticidal bed nets that remain effective for at least three years. Sumitomo’s product is called Olyset. In 2006, the Roll Back Malaria Partnership—a multilateral coalition formed in 1998 to intensify and coordinate global efforts against malaria—called for 80 percent coverage with long-lasting insecticidal bed nets among vulnerable populations by 2010.

In order to increase access to bed nets and to boost local production capacity, Sumitomo chose to partner with public- and private-sector ventures in sub-Saharan Africa. Instead of restricting manufacturing to its own factories, for example, Sumitomo partnered with A to Z Textile Mills Ltd., in Arusha, Tanzania. One of Africa’s largest ITN producers, A to Z had been producing bed nets for over a decade (6 million in 2002 alone). After partnering with Sumitomo, A to Z expanded annual production to more than 25 million royalty-free Olyset nets in 2008. When demand continued to outstrip production, Sumitomo and A to Z entered into a 50/50 joint venture to build an additional factory north of Arusha (see figure 7.3). Together, these efforts created more than 5,300 salaried jobs—90 percent of which went to women—and supported an estimated 24,000 people in the surrounding community. Partnering with A to Z also reduced Sumitomo’s shipping and distribution costs. This success story highlights the potential synergy that exists between the health and business sectors.
toward building a robust science of global health delivery, which will require further research on innovative approaches.

The next section examines the challenge of scaling up model systems. Are the lessons gleaned from these case studies generalizable? What does health systems strengthening look like on a national or global scale?

HEALTH SYSTEMS STRENGTHENING

Defining Health Systems

Building resilient health systems that provide high-quality, comprehensive care for every person who needs it is a difficult, complex, and resource-intensive task; it takes years, if not decades, to do it well. But this remains, to many practitioners, the holy grail of global health work. Although most of the examples considered here are confined to the health sector, the efficacy of health systems at large hinges on social policies, public works, environmental conditions, economic development, and many other factors. While improving health care delivery and implementing health-sector reforms can address many specific causes of morbidity and mortality, improving the health of a population in the long run also demands large-scale social change.

Health systems are made up of the institutions and personnel charged with providing health care and improving health within a given area. A 2007 report by the WHO, *Everybody's Business: Strengthening Health Systems to Improve Health Outcomes*, highlights six essential building blocks of functioning health systems: service delivery; the health workforce; information; medical products, vaccines, and technologies; financing; and leadership and governance (see figure 7.4).18

Former Secretary of Health of Mexico Julio Frenk extends this definition by noting the dynamic relationship between a health system and the population it serves:

In a dynamic view, the population is not an external beneficiary of the system, it is an essential part of it. This is because, when it comes to health, persons play five different roles: (i) as patients, with specific needs requiring care; (ii) as consumers, with expectations about the way in which they will be treated; (iii) as taxpayers and therefore as the ultimate source of financing; (iv) as citizens who may demand access to care as a right; and most importantly, (v) as co-producers of health through care seeking, compliance with prescriptions, and behaviors that may promote or harm one's own health or
the health of others. The importance of this perspective is that it opens the door to population-side interventions to improve the health system.\textsuperscript{16}

By considering the many roles patients play in health systems, Frenk eschews a unidirectional depiction of health care moving from providers to patients. Good health systems, he argues, draw on the populations they serve to deliver better care. Families, for example, are often the principal caregivers in the management of chronic disease, especially for the elderly.\textsuperscript{20} The accompagnateur and sibika models of Zanmi Lasante and BRAC, respectively, offer two other examples of integrating local communities into health care delivery. The next section examines approaches that integrate contributions from both providers and patients to strengthen health systems.

The Diagonal Approach

Though most global health practitioners and policymakers share the long-term goal of strengthening health systems, many prioritize more targeted interventions in the short term. This debate echoes the debate over primary health care versus selective primary health care discussed in chapter 4: advocates of a vertical approach favor disease-specific interventions, while advocates of a horizontal approach favor primary care improvements and investments in health systems.

The polio eradication effort illuminates this distinction. Since 1988, the WHO, UNICEF (the United Nations Children’s Fund), the Rotary Foundation, and, more recently, the Bill and Melinda Gates Foundation have driven an ongoing campaign to eradicate polio with oral vaccine. Globally, reported cases dropped from more than thirty-five thousand in 1988 to fewer than seven hundred in 2003.\textsuperscript{31} (As one example, India’s polio vaccination campaign was described in the previous section and illustrated in map 7.1.) In the decade since, despite renewed attention and many millions of dollars, between one and two thousand cases have been recorded annually in several countries in West and Central Africa; in 2009, twenty-three previously polio-free countries were reinfected due to imports of the virus. Today, persistent pockets of transmission in northern Nigeria and on the border between Afghanistan and Pakistan are the focus of polio eradication interventions.\textsuperscript{23} Polio vaccination is a paradigmatic vertical intervention: eradicating polio would prevent people from suffering from this disabling and deadly illness ever again; it would be a credit to modern medi-
cine. But why pour millions of dollars into combating a disease that causes only a few thousand cases and several hundred deaths each year, critics ask, when other infectious killers like AIDS, TB, malaria, and the neglected tropical diseases—not to mention noncommunicable diseases, mental disorders, maternal mortality, and other global health priorities—claim millions of lives per year?\textsuperscript{33} Alternatively, why focus on individual diseases at all, when health systems could be strengthened to combat polio, AIDS, and whatever comes along next?

A different way of conceptualizing this trade-off between vertical and horizontal interventions is the diagonal approach. Julio Frenk and others argue that “disease-specific interventions, when delivered well, can also strengthen health systems.”\textsuperscript{24} In other words, vertical programs can also be horizontal ones. Chapter 6 explores how TB and AIDS treatment, coupled with comprehensive care and wraparound services, improved primary health care in Haiti’s Central Plateau.\textsuperscript{25} Partners in Health and Zanmi Lasante used TB and AIDS efforts as a wedge to strengthen the local health system. Frenk noted a similar phenomenon in Mexico when the government initiated a conditional cash transfer program called Opportunidades (Opportunities). To be eligible for a cash transfer, families needed to demonstrate that their children were regularly attending school and had received a package of basic health care, including growth monitoring, nutritional supplementation, and treatment for common infectious diseases—all of which could be deemed vertical interventions. But implementing Opportunidades among the poor improved health indicators—maternal mortality dropped, for example—and fostered a better functioning health system across the board.\textsuperscript{26} These and other examples of the diagonal approach demonstrate that, when guided by sound principles of global health delivery (such as those outlined earlier), health initiatives can respond to particular causes of mortality and morbidity while also strengthening health systems more generally.

The Role of the Public Sector

In rich and poor countries alike, governments play an important role in providing health care services—especially for poor and vulnerable populations who often fall through the cracks of private-sector health care markets. As chapter 4 describes, the privatization of health sectors during the structural adjustment era in the 1980s and 1990s undermined access to care among the poorest people in a number of developing countries.\textsuperscript{27} Even moderate user fees can prevent the poor from
accessing health services, and when private health care providers lack consumers (patients), they tend to relocate to markets in which they can recoup costs. Hence the concentration of private providers in urban centers in developing countries: for example, in recent years there have been three CAT scanners in Haiti, all in private-sector health facilities in the capital, Port-au-Prince.

Such market failures in health care are well known. Many policymakers and practitioners agree that if health systems are to provide comprehensive services that reach the poor, on a large scale and over time, governments must play a leading role. The 2005 Paris Declaration on Aid Effectiveness and the 2008 Accra Agenda for Action both recommended that global health initiatives work in conjunction with, if not directly through, the public sector. More than 150 national governments, major bilateral and multilateral donor agencies, and nongovernmental organizations ratified these documents.

What are the advantages of strengthening public-sector health systems in developing countries with democratic governments? First, governments are the only institutions capable of enshrining—and providing—health as a right. International covenants such as the Universal Declaration of Human Rights might declare a right to health in principle, but they can do little in the way of implementation. Only governments can guarantee that all their citizens have access to the health services necessary to live full lives in good health. Second, democratic governments are generally more accountable to their citizens than nonstate health care providers are to those they serve. Nongovernmental organizations (NGOs), for example, are dependent on and accountable to their funders. If a major donor withdraws support for AIDS programs that supply contraceptives to commercial sex workers, NGOs who depend on that donor may be forced to cut such services, even if the population they serve will be worse off as a result.

Governments, in contrast, are less vulnerable to the whims of donors; they can design programs according to evidence and local needs instead of the fads du jour of global health. They are therefore charged with providing a broad scope of health services instead of specific interventions supported by donors. Governments are also expected to provide services for their citizens in the long term—beyond the ebb and flow of foreign aid. Public-sector health systems are thus often more sustainable than private efforts. When funding dries up and NGOs pack their bags, the government remains.

Governments are also typically best positioned to provide services on a large, or indeed national, scale, which can ensure that vulnerable populations like the rural poor are not left out. Given that there are latent economies of scale in health care delivery, governments, by nature of their mandate and their reach, are poised to harness these efficiencies by building robust national health systems. Additionally, governments can coordinate and integrate the efforts of diverse health providers to ensure that care is delivered efficiently and equitably throughout a given country. Without nationwide delivery strategies, private-sector health care providers may cluster in wealthy urban areas and forfeit the economies of scale that come with collaboration and coordinated health systems strengthening. An estimated ten thousand NGOs work in Haiti, for example; with better coordination, as former prime minister Garry Conille called for, such efforts might amount to more than the sum of their parts. By integrating public and private health care efforts through shared delivery infrastructure, governments can foster more efficient and equitable health systems. Table 7.1 summarizes eight reasons why working through the public sector in democratic nations is the prudent approach.

<table>
<thead>
<tr>
<th>Rights</th>
<th>Only states can guarantee rights, including the right to health</th>
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<tr>
<td>Accountability</td>
<td>Governments are accountable to their citizens, and democracies have avenues for citizen participation; most NGOs are ultimately accountable to donors</td>
</tr>
<tr>
<td>Scope</td>
<td>Public-sector systems are responsible for meeting all the health needs of their citizens, as opposed to delivering a single intervention</td>
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<tr>
<td>Sustainability</td>
<td>Public-sector services tend to persist; even robust NGOs can eventually lose their funding</td>
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<td>Scale</td>
<td>Public-sector systems have the broadest reach and are often the only source of potential care for the most vulnerable</td>
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<td>Efficiency</td>
<td>The economies of scale harnessed through shared delivery infrastructure are greatest for the largest system, the public sector</td>
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<tr>
<td>Coordination</td>
<td>With a national outlook, the public sector is positioned to balance needs and minimize duplication of efforts</td>
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<tr>
<td>Global commitment</td>
<td>The Paris Declaration on Aid Effectiveness (2003) and the Accra Agenda for Action (2006) commit to public-sector ownership and maximum utilization of country delivery systems in efforts to expand health systems</td>
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Examples of Effective Public-Sector Health Systems

The Indian state of Kerala has achieved impressive health outcomes by building a strong public-sector health system. Although private-sector health initiatives have expanded since the mid-1990s, public programs coordinate the state's health system and account for the majority of health care provision and training. The Keralan public-sector approach prioritizes prevention, immunizations, and infant and maternal care alongside curative care. In contrast, many market-based health systems, such as that of the United States, underperform in preventative care. Kerala also invests heavily in education—including health education—and female literacy rates are higher in Kerala (87 percent) than in other parts of India and most of the developing world.

This model has realized good health outcomes and low costs: Kerala spent $2.8 per capita on health in 2000 and recorded an infant mortality rate of 14 per 1,000 births and life expectancies of seventy-six years for women and seventy for men. In contrast, the United States spent $4,702 per capita on health in 2000 and recorded an infant mortality rate of 7 in 1,000 births and life expectancies of eighty years for women and seventy-four for men. Moreover, thanks to Kerala's universal health care scheme, its citizens—by many estimates, some of the best access to services in the developing world, even in rural areas. For example, 97 percent of Keralan mothers deliver their babies in hospitals or other institutions.

Critical to the Keralan model is high social-sector spending; 15 percent of the state budget was allocated to health and 25 percent to education throughout the 1990s. These high percentages are a function of the government's small overall budget; per capita spending figures highlight how little investment is needed to realize good health outcomes when an efficient national health system is in place. There are, of course, trade-offs and complexities associated with Kerala's model. The state has India's highest suicide rate, and, additionally, access to care increased, so did reported morbidity. As Amartya Sen suggests, the latter finding likely reflects the lack of reporting capacity before health services were scaled up. Such biocultural complexities, which have been explicated at length elsewhere, are endemic to global health work. Nonetheless, Kerala exemplifies some of the benefits of a strong public-sector health system.

Although Cuba can be a polarizing case, its health system has long won acclaim, even from unlikely admirers such as the former president of the World Bank, James Wolfensohn. By many standards, Cuba has some of the best health indicators in the developing and developed world. The national health system provides free care—especially primary care and preventative services, just as the Keralan system does—for all Cuban citizens. The cornerstone of the national health service is the médico de familia, the family doctor, who, like a general practitioner, provides primary care services and acts as a gatekeeper to specialized services. Thanks to national training programs across the country, Cuba boasts more than 65,000 doctors for a population of 11 million, a rate of about one doctor per 175 people. (The United States has one doctor per 357 people.) Even the rural reaches of Cuba are serviced by physicians and nurses and dedicated health facilities. In fact, Cuba has long been a net exporter of skilled health professionals. After the 2010 Haiti earthquake, the Cuban medical brigade was among the largest and most dedicated foreign aid efforts. It has also proved to be among the longest-lasting; although the great majority of NGOs and foreign relief teams long ago departed the country, a large portion of the Cuban brigade remains in Haiti, actively engaged in controlling cholera and strengthening that country's beleaguered health system. Like the system in Kerala, the Cuban model has its drawbacks, most notably its association with the country's oppressive communist government. But the components of its model are not unique to a communist system: any government could adopt a family doctor approach or increase emphasis on preventative and primary care.

As chapter 6 describes, Rwanda has also emerged as a model of national health system strengthening. The Rwandan Ministry of Health adopted a community-based approach to tackling AIDS and many other leading causes of mortality and morbidity, and the ministry encouraged coordination and integration by mandating that non-state providers work within the country's national strategies. In fact, Minister of Health Dr. Agnes Binagwaho often bars foreign initiatives from Rwanda if they do not work in conjunction with the public-sector health system. This policy has helped Rwanda's health system become more efficient and equitable; the efforts of multiple providers, through partnerships, have exceeded expectations. Rwanda's health indicators have improved dramatically; mortality among children under five dropped from 196 per 1,000 in 2000 to 103 per 1,000 in 2007. Rwanda is one of the only developing countries within reach of providing universal antiretroviral treatment coverage for people with AIDS.
The U.S. Health System

With its state-of-the-art facilities and cutting-edge procedures, the U.S. health system has been described as "the most advanced system of care in the world." It is also burdened with unsustainable rising costs and great disparities in access to quality care. The United States, despite its great wealth and capability, is the only high-income Western nation that does not guarantee universal health insurance. Some 50 million people went without health insurance in 2010, although the 2010 Affordable Care Act is projected to reduce this number. Stratified by age and income, the uninsured have a 53 percent higher mortality risk in future years compared to individuals who do have insurance. The Institute of Medicine estimates that eighteen thousand Americans die prematurely each year for want of timely care. Such gaps occur predominantly among the poor. Health care is regarded as a commodity rather than a right, and it is therefore rationed based on ability to pay for the majority of Americans. Unlike countries that ration health care explicitly—a practice many Americans vocally oppose—price rationing simply excludes those who can't afford it.

In addition to concerns about access and equity, the U.S. health system is also beset by inefficiencies. Despite spending $8,800 per person on health care in 2010—more than double the median per capita expenditures of other high-income countries—aggregate health outcomes in the United States are frequently lackluster. Several indicators are worse than those in other high-income countries: the WHO's World Health Report 2000 ranked the U.S. health care system thirty-seventh in the world, for example. Though cross-country comparisons must be used with caution, the United States's middling rankings are disquieting: in 2006 it was ranked thirty-ninth for infant mortality, forty-third for adult female mortality, forty-second for adult male mortality, and thirty-sixth for life expectancy.

Although at times it may seem like the language of global health delivery and that of U.S. health care reform have little in common, in the past few decades health care delivery strategies have been imported from developing countries to the United States—examples of "reverse innovation," often improving health outcomes among vulnerable populations while cutting costs. Chapter 11 describes several such examples and provides a more in-depth analysis of the U.S. health system.

These and many of its other gains in part stem from a strategy of building a strong national health system. An approach that focuses on public-sector health system strengthening will not suit all settings. In fragile or predatory states, governments may have neither the will nor the capacity to provide health services for their citizens; in such places, nonstate providers sometimes serve as the caregivers of last resort. Nonetheless, NGOs and other private providers have found it possible and fruitful to work with governments in many challenging settings, including Haiti, where political instability and anemic public-service provision have been the norm. In particular, local governments may have greater continuity of leadership and overall stability than national governments, which face more frequent—and typically more fevered—election cycles. Corruption, one of the most commonly touted arguments against working with governments in developing countries, can also be less endemic at the district level. Moreover, charges of corruption are usually meant to end, not start, a conversation about how to strengthen local institutions and health care delivery capacity. Working with public-sector ministries, although difficult, offers an opportunity to strengthen the infrastructure of transparency and accountability in the governments of developing countries. Corruption is often enabled by a lack of computer-based bookkeeping, accountants, and trained civil servants—or even a lack of reliable electricity, in some cases. Chapter 10 argues that accompanying local institutions, public and private, offers a compelling approach for global health work and foreign assistance in general.

But accompaniment is a long way from the status quo. Public-private partnerships in global health efforts remain uncommon in the early twenty-first century. Although some countries, such as Rwanda, have worked to harmonize nonstate health care initiatives with state programs, most developing nations have parallel public and private health systems. For example, NGOs, which provide a substantial portion of the health services available in such settings, rarely work in conjunction with the public-sector health system. Without coordination, parallel systems of care can lead to inefficiencies, uneven access to services, and gaps in the standard of care. In some cases, private providers, including NGOs, can unwittingly undermine public-sector health initiatives by offering high salaries that distort the labor markets for health care workers. Further, NGOs and other foreign initiatives, accountable to their donors, bring their own priorities, which often diverge from government priorities and national strategies.
But NGOs can also partner with local and national governments and work through public-sector health systems to strengthen health care delivery capacity. One successful practitioner of this approach has been the Clinton Health Access Initiative (CHAI, formerly the Clinton HIV/AIDS Initiative), which, among other things, seeks to strengthen public-sector health systems by improving supply chain management, rural health infrastructure, laboratory systems, and training platforms for health care workers. CHAI's stated goal is "to work ourselves out of a job," by building local government capacity in the health sector.57 This approach accords with the Accra Agenda for Action and the Paris Declaration on Aid Effectiveness. Although not suited for all contexts, global health practitioners would do well to seek public-private partnerships capable of strengthening national health systems in the long term.

**HUMAN RESOURCES FOR HEALTH**

Human resources are a key component of health systems. No health system can function without well-trained and fairly compensated doctors, nurses, laboratory technicians, pharmacists, social workers, community health workers, and the many other types of personnel necessary to deliver care effectively and equitably to all who need it. Yet there are far too few health care workers around the world. According to the WHO, there is a global shortfall of more than 4 million health care workers; the organization estimates that an additional 2.4 million workers will be needed to meet the Millennium Development Goals (explored in chapter 11).58 Both developed and developing countries face such deficits, though they are more acute in the latter.59 The ratio of health care workers to population size illustrates the disequilibrium: the United States has an average of 2.4 health care workers per 1,000 people; in Africa, the ratio is 0.3 per 1,000.60 There are also significant regional inequalities. Malawi has 260 medical doctors and a population of 15 million; rural areas often lack a single doctor per several hundred thousand people.61 The scarcity of health personnel means that many clinics and hospitals are unable to deliver timely, quality care. In Ghana, one report found that 77 percent of health facilities were unable to provide 24-hour emergency services, including maternal care for women in childbirth.62

Building a robust health care workforce around the world will require new institutions for medical education and improvements to those that already exist. There are only sixty-six medical schools on the

entire African continent, which has a population of more than 1 billion people.63 In 2008, African medical schools produced some eight thousand doctors, many of whom emigrated to wealthier countries for better pay and job stability.64 Historically, government-run medical and nursing schools have trained the majority of health professionals in developing countries; but recently private schools have begun to play a larger role. In the eastern Mediterranean region, for example, the private sector accounted for 10 percent of all medical training institutions in 1980 and for nearly 60 percent in 2005.65 Much of this private-sector growth is attributable to social-sector spending reductions encouraged during the structural adjustment era. Ultimately, greater investment by both governments and private institutions is necessary to reach the WHO target of building a "pipeline spanning primary, secondary, and tertiary education institutions and health services facilities that produce a range of workers from auxiliaries to technicians and professionals."66 The cost of bridging this training gap over a twenty-year period is, on average, an estimated $88 million per country per year, which would demand increasing health expenditures by $1.50 per person per year.67

In addition to training more doctors and nurses and pharmacists, "task shifting" initiatives can help address the human resources shortfall. A 2008 study found that the quality of integrated management of childhood illness varied little among providers of different training levels in four countries.68 Trained community health workers in particular can provide a range of essential services, such as home-based care and directly observed therapy for complex diseases like AIDS and multidrug-resistant tuberculosis and certain malignancies.69 As chapter 4 describes, community-based primary care, such as that provided by barefoot doctors in China and rural doctors in India, has proven to be effective and low-cost for decades. Partners In Health's efforts, from Haiti to Peru to Rwanda to Russia to the United States, also follow a community health worker model.70

Training large numbers of community health workers can be accomplished rapidly at a low cost. Based on the Millennium Villages Project, which works in ten sub-Saharan African countries, Columbia University's Earth Institute developed a plan to train an additional 1 million community health workers in Africa—a ratio of 1 community health worker per 650 people in rural Africa—for $6.56 per person served, or $2.3 billion per year (including existing government and donor expenditures). Replicating such efforts in other parts of the
developing world would help to improve health system capacity. The Earth Institute report asserts: "The importance of CHWs [community health workers] is not a new realization. Now is the time to align CHWs with broader health system strengthening efforts at the primary care level, improve CHW financing, and broadly disseminate recent advances in technology, diagnostics and treatment to support community-based health workers." Complementary to professional training programs, community-based training initiatives are essential for bridging the health care worker gap—and for strengthening health systems in general.

But improving and expanding training capacity in poor countries will not solve the crisis in human resources for health. The shortage of health care workers is exacerbated by the phenomenon of "brain drain": doctors and nurses and other health professionals frequently migrate within and between countries to seek out higher salaries or more favorable work conditions. The data can be discouraging: Zambia retained only 30 out of 600 doctors trained since 1970; Zimbabwe retained 360 out of 1,300 doctors trained there in the 1990s; Ghana retained 267 out of 871 medical personnel trained there from 1993 to 2002. Health professionals often migrate for work because under-resourced health systems offer meager salaries and lack the tools and technologies they were trained to use. Such environments are deeply demoralizing for health care workers of all stripes. "Before training we thought of doctors as supermen . . . [Here] we are only mortuary attendants," said one physician working in a beleaguered hospital in Kenya.

NGOs and private practitioners in urban centers typically offer higher salaries than national health systems. Lack of opportunities or facilities can draw health care workers from rural areas and toward urban settings. Shortages of health care workers in rich countries—magnified by the increasing health needs of aging populations—also attract doctors and nurses from poor nations. About one in five physicians in the United States is foreign-trained. The United States authorizes 50,000 special visas for foreign nurses annually, while some 150,000 applicants are rejected from U.S. nursing schools every year. Recruiters for hospitals in wealthier countries are often allowed to advertise directly to medical professionals in developing countries. It is difficult not to hold certain rich countries partly accountable for the flight of health professionals from the developing world. Complicit countries, including the United States, could help reduce the pull factors motivating the brain drain by expanding domestic nursing and medical schools to meet rising demand without importing doctors and nurses from abroad.

Reversing the brain drain will require substantive reforms and investments by countries poor and rich. Health professionals are of course entitled to seek better opportunities and options. To retain medical practitioners, developing countries must be able to offer competitive salaries, fringe benefits (such as discounted housing), and a professional medical environment that includes modern health facilities (intensive care units, operating rooms), adequate supplies of medications and diagnostic tools, a sizable support staff, and continuing medical education and training programs. One study found that nonfinancial incentives such as training, study leave, and professional support were among the most important factors affecting retention across four sub-Saharan African countries. In other words, the best way to keep doctors and nurses from moving to wealthy areas is health systems strengthening: when health professionals are compensated fairly, surrounded by well-trained colleagues, and have access to modern medical tools and facilities, many choose to stay in the countries in which they were trained.

Without investing in training and health infrastructure across the developing world, and reforming the institutional architecture that pulls health professionals from poor settings to rich ones, the brain drain will likely continue to deplete health systems in poorer countries. It reduces the supply of doctors and nurses, and it forfeits the investment—most of it made by cash-poor governments—that went into training such personnel in the first place. The effects of the brain drain therefore fall on ministries of health, which are often accused of not spending enough on health, even though some have budgets no bigger than the budget of a single hospital in the United States. Such effects fall hardest, of course, on the poor, who live in precisely the places where health professionals are unable to find satisfying work conditions. The brain drain thus illustrates how economic disparities and other large-scale social forces pattern the health of populations around the globe; in short, it exemplifies structural violence.

CONCLUSION

This chapter has explored the nascent science of global health delivery, which seeks to identify and scale up effective models of health care delivery around the world. The Global Health Delivery Project
has provided several basic principles of health care delivery: adapting to the local context, designing systems of care that maximize value to patients, leveraging shared delivery infrastructure, and improving both health delivery and economic development. It has also provided case studies of these principles in action, highlighting programmatic features that improve or undermine the quality of health care delivery. The chapter also examined health system strengthening on a national and transnational scale and pointed to the diagonal approach as a compelling strategy for responding to specific causes of mortality and morbidity while also strengthening provision of primary health care services. The final section then looked at human resources for health, one key component of health systems strengthening and a telling example of the ways in which global political economy structures the fault lines of global health.

One theme that has recurred throughout the chapter is the biosocial complexity endemic to global health work. The next chapter builds on this theme by analyzing some of the difficulties associated with developing metrics of disease burden and other quantitative tools in the context of two complex—and critical—global health challenges: mental illness and multidrug-resistant tuberculosis.

**Suggested Reading**


