

Chapter 4

HIV/AIDS Care: The Minimum Package and Scaling Up

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Introduction—The Movement to Bring ART to Developing Countries

As recently as 2002, experts argued that prevention should take priority over treatment for HIV/AIDS in Africa based on cost effectiveness considerations. However, cost effectiveness analyses failed to take into account arguably the most important reason for implementing widespread HIV treatment—treating the sick. Twenty years into the epidemic, fewer than 5% of people worldwide who required treatment had access to antiretroviral drugs (ARVs) (WHO, 2002). Additionally, many prevention programs were failing and those that were successful were not being taken to scale.

In 2002, the unchecked spread of HIV and mounting death toll among those who were already infected had widespread and serious effects on the communities most heavily burdened by HIV; ranging from orphaning to famine and from stigma to professional burnout. Where it was available, antiretroviral therapy (ART) resulted in a 80% reduction in mortality (WHO, 2002). Many argued that prevention efforts alone were unlikely to succeed in high prevalence settings unless AIDS treatment was made available and combined with evidence-based prevention such as the use of condoms, ART to prevent maternal to child transmission, the treatment of sexually transmitted diseases, and education linked to knowledge of one's status.

Activism, largely led by people living with HIV, to bring highly active retroviral therapy (HAART) to the countries with the highest burden of AIDS took center stage at the International AIDS Society in Durban, South Africa in 2000. In 2001, the United Nations General Assembly Special Session on AIDS called for massive increases in aid to help poor countries cope with the AIDS

pandemic. Thus, in 2002, the Global Fund to Fight AIDS, TB and Malaria (Global Fund) was created—a repository for donor funds which was independent of the United Nations system and served as a financing mechanism for country driven proposals to treat these three pandemic diseases.

As funding for AIDS care in developing countries began to become a reality, the search was soon on for effective models of financing, delivery and provision of quality care. Our group, Partners In Health with its sister organization Zanmi Lasante, has developed one such model. In 2001, we published a small descriptive study of the first 60 patients in rural Haiti whom we had treated with ART (Farmer et al., 2001a). These patients were started on ART based on clinical criteria alone as there was no access to CD4 count or viral load. ART was initiated in patients who had recurrent or refractory opportunistic syndromes—such as seizures (thought to be secondary to toxoplasmosis), chronic enteropathy or weight loss. When patients with HIV presented with a treatable opportunistic infection (OI), most commonly tuberculosis (TB), the OI was treated first to reserve ART for those who were otherwise untreatable.

To provide maximum support for patients on ART and to minimize the development of antiretroviral resistance, community health workers provided accompaniment—i.e. adherence and social support. While ART was feasible to deliver in a resource poor setting such as rural Haiti, even without the laboratory tests that were standard in developed countries, we argued that ART could not be given alone; that there is some “minimum package” which addresses HIV prevention, treatment and care of affected families. Prevention must move beyond just education and condom promotion to include a broader set of interventions such as the prophylaxis of those with occupational exposure, prevention of mother to child transmission (PMTCT) and the diagnosis and treatment of sexually transmitted diseases (STDs). HIV treatment includes the diagnosis and treatment of OIs as well as the provision of ART. Further, a minimum package should also address the social consequences of the epidemic, particularly the care of families and children affected by HIV. With new funds and attention to increased access to ART for people living in resource poor settings, it is also important to consider what constitutes the minimum package of care which will serve patient and community and allow for successful scale up.

Since 2001, many other HIV/AIDS treatment programs have been implemented in resource poor settings. These programs have been funded by a variety of agencies and governments, each with their own particular philosophy. For example, the Clinton Foundation approach has been to take a business model and work on reducing drug costs through partnering with governments and assisting them in negotiations. The Global Fund has used a funding support approach based on country-driven proposals and covers an enormous number of countries. The President’s Emergency Plan for AIDS Relief (PEPFAR) is highly targeted, working in 15 core countries, 12 of them in Africa. PEPFAR has used a vertical model of care and treatment delivery with considerable control leveraged through the State Department where the program resides. In addition to these large programs, many individual countries have developed their own care models as well. Indeed, some of the leaders in providing care to citizens have been states like Brazil and Thailand, which early on became involved in ARV manufacture as well as treatment and care. Their efforts have inspired many other states to commit to universal access. And both, it should be

noted, were first successes in prevention services before they became leaders in treatment.

Through the implementation of funded programs, several lessons have been learned about what are the minimum requirements to successfully start and scale up HIV treatment. This chapter will detail elements of one approach to the scale up of a “minimum package”, that of Partners in Health programs in Haiti, Rwanda, Lesotho and Malawi. This package which has provided a framework for others implementing an HIV strategy in similar settings, consists of VCT linked with primary health care, and includes addressing the financial barriers to access to care, the diagnosis and treatment of OIs particularly TB, the provision of ART with a strategy for adherence and the provision of social support to the vulnerable. The chapter ends with a discussion on lessons learned for scaling up HIV prevention, care and treatment through the public sector.

Partners in Health’s “Minimum Package”

Voluntary Counseling and Testing

Uptake of VCT is the critical first step to truly scaling up a comprehensive HIV program. Lack of uptake in VCT programs has been ascribed to a variety of reasons including stigma, lack of treatment availability, a paucity of counselors, long wait times, and fees (Van Dyk & Van Dyk, 2003; Nuwaha, Kabatesi, Muganwa, & Whalen, 2002). Education about the benefits of knowing ones status (treatment, protecting the partner or child) is critical as is developing a place for tests and results to be given privately. Additionally, VCT should be integrated with other services—primary care (Walton et al., 2004), TB (Chimzizi et al., 2004), women’s health etc. Patients are most likely to seek care when they are ill, not to seek testing for HIV per se. As part of the evaluation of the ill patient, HIV testing may be offered by the clinician, if indicated. This strategy, sometimes called “opt out” or “routine offer” HIV testing, has been found to be acceptable in many settings, particularly when ART is available (Westheimer et al., 2004).

Because HIV is often a disease of the poor and marginalized, perhaps the most important element of the minimum package is the provision of free testing and treatment. TB control has long been considered a public good and services have been provided for free. Recent literature on HIV scale up has documented that user fees are a significant barrier to seeking an initial diagnosis of HIV, obtaining laboratory evaluations, and attending follow up appointments (Russell, 2004). Data from Senegal (Laniece et al., 2003) and Botswana (Westheimer et al., 2004) indicate “cost sharing” is detrimental for long term adherence to ART. Additionally, significant “out-of-pocket” expenses such as payment for transportation to and from clinic inhibit ability to adhere to necessary medical visits and prescribed medication (Rowe et al., 2005).

HIV and AIDS Treatment

Once patients are identified as having HIV, a social and clinical evaluation should be undertaken. Social workers, psychologists or lay counsellors play an important role in a patient’s acceptance of the result, their communication

or disclosure to family members and their comfort with the follow up plan. Additionally, social support staff can identify the structural barriers to adherence such as a lack of transportation fees, water or food and develop strategies to address them. In the setting of “opt out” VCT services, post test counselling is critical to the patient’s well being and ideally continues for the lifetime of engagement with the patient.

The necessary initial medical evaluation of the newly diagnosed patient includes some type of staging. CD4 count is increasingly available in resource poor settings, yet, even in the absence of this test, clinical staging can help prioritize those who need ART most urgently. Patients with significant immune suppression determined by a CD4 count less than 200 or clinically WHO stage III-IV should be given co-trimoxazole for the prophylaxis of pneumocystis pneumonia and bacterial infections.

Perhaps the biggest challenge in the initial decision of when to start ART is evaluating the patient for TB. Because TB is the most common OI in developing countries and starting ART without treating underlying TB can result in serious immune reconstitution syndromes, ruling out active TB or finding and treating the infection is a key first step of ART initiation. Many patients with HIV tuberculosis co-infection are smear negative and smear microscopy is the cornerstone of TB diagnosis in developing world settings. All patients being considered for ART should have a careful history and physical exam focused on determining whether or not there is active TB. Chest X ray in this setting can be very helpful as is mantoux test. The diagnosis and treatment of TB as well as other OIs is an important part of the minimum package.

Adherence Support

Adherence to ART delays both the progression to AIDS (de Olalla et al., 2002; Bangsberg et al., 2001) and the development of ARV resistance (Bangsberg et al., 2000). Much of the medical literature on adherence to ART is focused on measuring the individual patient’s ability to take ART as prescribed (Lucas, Chaisson, & Moore, 1999). The underlying assumption in much of this body of work is that once the medicines are prescribed the patient has regular and reliable access to the medications. Some authors have described risk factors for non-adherence such as active drug use that are more common in poor populations (Steiner & Prochazka, 1997). Because of the links between such risky behaviors and poverty and non adherence, when ART was introduced in resource poor settings, there was widespread fear that adherence would be a major problem and promote widespread resistance to ART (Harries et al., 2001; Frater et al., 2002). Data from resource poor settings has actually shown comparable or better levels of individual adherence than what is seen in North American and European populations (Orrell, Bangsberg, Badri, & Wood, 2003; Weiser et al., 2003). However, in resource limited settings, there are a multitude of structural barriers which prevent access to health care and the regular supply of ARVs. These factors affect the patient’s ability to take medications as prescribed by the health care provider.

The support of adherence is a critical aspect of all countries in resource poor settings (and should serve as a lesson to developed countries where poor adherence has led to high rates of resistance). An adherence strategy is an important

part of the minimum package. In Haiti, our program, the HIV Equity Initiative, employs trained community health workers. Community health workers provide community based active case finding for HIV and TB and a link between the patient, family, community and clinic. Their daily role is to give psychological support and daily directly observed therapy to HIV patients requiring ART (Farmer et al., 2001a,b).

In some countries there has been a focus on the idea of treatment preparedness which involves people living with HIV/AIDS and others in civil society in educating people about the benefits of treatment, the concept of long term treatment and engaging governments in supporting the right to care and treatment. In their report from 2005, the International Treatment Preparedness Coalition reported some of the most significant barriers to treatment include the out of pocket cost for ART—8 dollars per month in Nigeria with PEPFAR funded programs, as well as the cost of diagnostic tests and the treatment of OIs. In addition, transportation costs in all countries continue to be a major barrier to care resulting in irregular and interrupted treatment (ITPC, 2006).

Social and Economic Support

Recognition of the social and economic stressors on patient and community is an important element of the minimum package. Orphans and vulnerable children make up a significant proportion of those affected by AIDS. Without assistance, these children often lack access to education and frequently suffer from malnutrition and disease. Aiding such children is a critical component of prevention HIV in the next generation and in mitigating the human toll of HIV on the community at large. For those suffering from HIV, lack of food has been associated with poor adherence to ART and provision of food and micronutrients have been shown to improve outcomes (Ndekha, Manary, Ashorn, & Briend, 2005; Villamor et al., 2005; Fawzi et al., 2004). Many families throughout the developing world spend more than 50% of household income on food, and both food production and wage earning are adversely affected when an adult has AIDS (Rutengwe, 2004; Smith Fawzi et al., 2005). Depending on the context, other social supports such as job creation, income generating activities and assistance with shelter have an important role to play.

Strengthening Health Systems and Scale Up

There is much talk of the attention to HIV scale up siphoning money from other needed public health interventions, but the reality on the ground suggests that existing health infrastructure is weak to non-existent. If HIV testing, treatment and care are provided in the public sector, the flow of money, attention to procurement of medications and diagnostics, and training of health workers can serve to strengthen existing systems. The public health sector is ideally positioned to provide health care to the poorest communities. However, in many poor countries, public clinics stand empty or underutilized. This is not because people have lost faith in the public sector per se; it is because the health budgets of poor countries cannot provide either a decent wage for health workers or the tools (including essential drugs, gloves, needles, and proper waste disposal)

that are necessary for a clinic to function. Both staff and community become demoralized. Empty clinics offer neither an avenue for prevention nor one for HIV case-detection. NGO-public sector partnerships that can provide essential drugs and incentives to staff will help revitalize the clinics and improve both the utilization of services and the overall health of the community.

HIV care as a Model to Strengthen the Health System

The model Partners in Health has used for scaling up HIV care in Haiti was not designed to provide free-standing, NGO-managed HIV counseling and testing, treatment and care but was established to integrate access to HIV care within the setting of the public, primary CARE clinic. With this as a goal, we identified four main entry points for identifying HIV-positive persons through HIV VCT: (1) routine offer of testing to those presenting for primary care whose symptoms suggest HIV/AIDS, (2) testing among those being evaluated or treated for TB, (3) offering HIV testing to women in the context of broad based women's health services that include antenatal, obstetrical care and family planning and (4) offering testing to those diagnosed with an STD. The goal of our integrated approach is to move towards a comprehensive health program whose basis is these four pillars of good HIV prevention and care.

The first pillar is the provision of culturally appropriate HIV prevention and care, including VCT that is linked with the delivery of primary health services. The reason for offering VCT in the context of primary health care is that basic health concerns mobilize more people to attend clinics than does the desire to know one's HIV status (Kosko & Becker, 2000). Patients presenting with a variety of symptoms, from fever to diarrhea, may have HIV. In addition, integrating VCT into primary health care decreases the perceived stigma of HIV/AIDS, in that patients need not declare that they have an HIV risk factor to present for care (Roeloffs et al., 2003). Thus, all patients who are seen for primary health care services are questioned for social and epidemiological risk factors for HIV, e.g., status of partner, status of parents, history of migration for work, or domestic service. Those patients with a risk factor are additionally screened for HIV (Phillips & Fernyak, 2000). Counseling patients prior to performing HIV testing is a challenge. The constraints of time and space within the busy clinic setting must be balanced against the need to ensure appropriate patient privacy and participation in the decision-making process (Coovadia, 2000; Harris et al., 2003). The reality for busy clinics in the developing world is that pre-test counseling is brief so as to minimize disruption of the flow of patient services. For this reason, in our clinics in Haiti, the same practitioner (nurse, social worker, or physician) who sees the patient for the presenting complaint provides the counseling in the same session and directly refers the patient to the lab for rapid HIV testing (Wilkinson et al., 1997). It is very important that the test result be available on the same day of the initial visit because returning at a later date presents a considerable difficulty for many patients.

The second pillar of integrated HIV prevention and care is improved TB case-finding and treatment (Sivaram & Celentano, 2003). Because TB is the most common OI in HIV patients worldwide, all HIV patients should be screened for both active and latent TB, just as all active TB patients should be tested for HIV (Banerjee, Moyo, Salaniponi, & Harries, 1997). When the two services are provided together, a larger number of individuals with HIV and

TB co-infection will be identified, and this population may enter into treatment sooner with improved outcomes for both diseases.

The third pillar is comprehensive women's health services. Included among these services are family planning and safe motherhood (Tay & Emmanuel, 2003). The acceptance of HIV testing among pregnant women is greatly enhanced by the provision of ARVs and also by the availability of antepartum, maternity, and postpartum care. Preventing HIV transmission from mother to child in this setting will, of course, improve women's health in a far broader sense (Segurado et al., 2003).

Finally, the fourth pillar is the diagnosis and treatment, preferably through algorithms reflecting local epidemiology, of all STDs (Kahn, Moseley, Thilges, Johnson, & Farley, 2003). Numerous studies have shown that improving care for STDs will diminish the risk of acquiring HIV (Weinstock et al., 2002). Additionally, the detection and treatment of STDs is an important avenue for providing HIV testing and prevention messages (Day et al., 2002).

Adaptation of the Model

There are many programs now throughout Africa to treat HIV/AIDS, yet the numbers of people with access to this therapy in rural areas remains limited. Additionally, health infrastructure to provide basic health services is severely limited providing little foundation for developing comprehensive services. Furthermore, new monies for HIV as a vertical program have resulted in a "drain" of workers from the public sector into better funded NGO-led projects. Based on the experience of Partners in Health in Haiti and a strong commitment to the integration of HIV with primary health care, in the spring of 2005, at the invitation of the Rwandan government, Partners In Health started a project in 2 districts in eastern Rwanda. These districts are home to almost half a million people and not a single doctor. PIH's intervention in Rwanda consciously replicates the model that has proven successful in central Haiti. Using the model of community health workers, care that is decentralized to the health center level, the abrogation of user fees, support of public sector salaries and HIV testing in primary care clinics through "opt out" testing, the project was able to enroll more than 1000 patients on ART in the first year and to test over 30,000. This model has been adopted by the Rwandan government and an effort is underway to make comprehensive HIV care in primary health centers the standard model for rural care delivery. Since 2005, Partners In Health's model has been implemented in 6 sites in Rwanda, 4 in Lesotho and 1 in Malawi and will be expanded in each country in partnership with the respective Ministries of Health.

Health Systems and Work Force Constraints

Because of new money for HIV prevention, care and treatment in resource poor settings and the reality that there are few trained health professionals who can administer these programs, what we are facing today in developing countries has been called the "Health Care Worker Crisis." Yet to proffer a simple equation such as *AIDS money is greater than the capacity of professionals to use it*, is but a pinhole view of a much larger landscape. In fact, the AIDS pandemic

has done nothing if not lay bare the fact that health systems in Africa, from personnel, to supplies, medicines to physical infrastructure, were never adequate to deal with the burden of disease. AIDS is a lens through which we see that reality. Not only by its overwhelming death count, but also by the fact that it is a chronic disease that foments other diseases, most notably TB. People in poor countries understand this. In Rwanda, our patients offered the phrase “Imboni Ibibazo”, a lens through which we see the reality and larger context.

Today developing countries bear 90% of the global burden of disease with only 20% of the GDP. Only 12% of all health expenditures are going to stem this tide, \$351 billion out of a global total of \$3.2 trillion (Gottret & Schieber, 2006). Africa is particularly burdened. While it bears fully one quarter of the world’s disease burden, it has but 3% of the global health workforce who are paid with less than 1% of global health expenditures. Approximately 60% of all health expenditures in poor countries are out of pocket, paying private pharmacies or clinics for inadequate treatment (Gottret & Schieber, 2006). For the global, infectious pandemics of HIV, TB and malaria, clearly care should be delivered within the public sector and seen as a public good rather than being commoditized in countries where people can little afford to pay for food to keep their families nourished.

Care must also be decentralized. Many Africans in need of therapy live in rural areas far from capitol cities. For such populations, access to HIV testing and treatment as well as the diagnosis and treatment of TB, STDs and provision of women’s health services must be delivered at the community level. Such national and large scale challenges can only be handled by a functioning public health system down to the level of the health post. No NGO has the capacity to perform national scale up. It is also in this context that community health workers can extend greatly the reach of health centers; providing not a replacement to trained health workers but an extension of case finding, treatment, social support and solidarity. Community health workers in the experience of Partners in Health projects in Haiti, Rwanda, Lesotho and Malawi as well as in TB projects in Peru and Russia serve an important role in adherence, monitoring and evaluation. These workers, however, must be paid if they are to perform this critical task for the long term.

The public sector is absolutely inadequately resourced to perform these basic services. The majority of aid that was given to post-colonial Africa was in the form of loans with conditions that the money be spent building market economies rather than investments in the public sector. Such conditions (called Structural Adjustment) resulted in massive disinvestment in health and education sectors. National health budgets were set at extremely low levels (on the order of two to five dollars per capita) and constrained by limits on the number of and compensation for public employees, leaving little money for essential medicines or building and maintenance of health infrastructures. Countries finding themselves under such fiscal conditions have few options for responding to escalating public health needs. User fees for health were imposed at the behest of the World Bank and International Monetary Fund. But in extremely poor often non-cash economies, such fees usually about twenty five cents (equivalent to USD 20 based on per capita income) serve as an enormous barrier to care. As a result of lack of staff, poor infrastructure, absent medicines and supplies and user fees many public clinics stand empty in the midst of

the worst epidemics in the history of man kind. In countries without user fees where such clinics are full, such as Malawi, it is not uncommon to see rows and rows of beds with the sick and dying who are untreated and health professionals who are despondent. Understandably, not only is the death toll and number of orphans skyrocketing but the “brain drain” of the professionals needed to deal with this crisis continues.

New money for HIV/AIDS, particularly through the Global Fund as well as PEPFAR gives us the opportunity to treat and prevent HIV. But can it have a wider impact? An impact beyond simply getting AIDS patients on to treatment? In our view the answer is yes. Unequivocally, yes. However, the money must be used strategically—not just funding “vertical” HIV programs in a silo, but by supporting the fundamental building blocks of a public health system that can then be assumed by governments. Moreover, HIV programs do not work in a vacuum. The lion’s share of people presenting to clinic, especially in rural areas, where people routinely walk three, six or even eight hours to reach a clinic, come because they are sick, not because they want to know their HIV status. Therefore, if clinics are not reliable, trusted facilities that provide decent, accessible diagnosis and treatment of common disease, few HIV tests will be done.

But there are constraints to the funding that prevent our project and many others from strengthening health systems in the context of HIV program implementation. The most significant of these is the notion, rooted in the Foreign Affairs act, that PEPFAR can not help to compensate public sector workers. The reality is that if we as NGOs expect to be trainers to develop a system that the government can assume, it is imperative that the responsibility and the funding for these programs are gradually moved to the public sector. In a poor country with a growing economy like Rwanda, it is possible to imagine that with time, the government will be able to cover much of this cost. African leaders signed a pledge in Abuja, Nigeria in 2003 to commit 7% of their GDP to health. However, in countries like Haiti, the reality is that even 7% of GDP will not cover the cost of real health systems and international donor money must help to build structures that can tackle not only HIV but the total 90% of the global disease burden. The focus on AIDS can and should be used, rather than simply to treat people with HIV, but also to build health systems that will be sustained for generations to come.

Conclusions

HIV care can be scaled up even in the world’s poorest and most heavily burdened settings. A minimum package that links VCT to health services, provides diagnosis and treatment of OIs and ART to people living with AIDS, addresses the financial barriers to care and provides an adherence strategy will be successful. Strengthening health systems is critical for scaling up HIV widely, in the public sector and for the long term. Additionally, significantly improved attention to and funding for TB diagnosis, treatment and control is needed. While there is no formula for successful scale up, given the magnitude of the epidemic and the population most affected with the disease; it is logical that, like TB prevention and treatment, AIDS prevention and treatment should be seen as a public good and ensconced in the public sector. Linkages of a

comprehensive AIDS program with HIV prevention as well as needed primary health, women's health and TB control efforts will help strengthen rather than weaken health systems.

The Challenge of Tuberculosis Control in the HIV Pandemic

In 2006, there were 9.2 million new cases of TB worldwide (WHO, 2008). With the advent of multi-drug therapy in the 1970s, the treatment of TB with a "short course" of drugs was possible, and TB became the first disease whose treatment (and not only prevention) was adopted by the public health community. Since that time, TB treatment has been under the purview of national governments using the recommended "DOTS" strategy (Directly Observed Therapy Short Course), a course of six to eight months of therapy with multi-drug regimens and observed therapy to prevent the development of resistance. However, as with any infectious disease, resistance to antibiotics develops, and this has been the case for TB since the first anti-tuberculosis drug, streptomycin, was discovered in 1945.

Multi-drug resistant tuberculosis (MDR-TB) is defined as a strain of TB that is resistant to the most potent drugs, isoniazid and rifampin. In addition, some strains of TB have developed resistance to an even broader array of drugs and have been dubbed extensively drug-resistant (XDR), defined as MDR with additional resistance to a fluoroquinolone and an injectable drug. When the TB organism is replicating in the body in the presence of low levels of drugs due to irregular or inadequate treatment, resistant mutants of TB are selected. Once an individual has a strain of drug-resistant TB, he or she may transmit the strain to others.

XDR-TB has already been found in 28 countries on six continents, including all of the G8 countries. There has been great progress made in recent years to address the emergence of MDR-TB, but the existing plan to fight this disease will need to be broadened and strengthened to tackle XDR-TB and HIV co-infection (Gandhi et al., 2006).

Several issues have converged to draw attention to the specter of resistant TB. First, people with HIV are exquisitely sensitive to contracting TB, developing active and progressive TB infection and dying if the correct anti-tuberculosis drugs are not given promptly. What sparked the current global concern over XDR-TB is that in the South African province of KwaZulu-Natal, where HIV prevalence is high and immunity to TB is weak, these highly resistant (XDR) strains were transmitted from person to person. The linkages between TB and HIV programs are critical, and all persons with HIV should be carefully screened for TB. Similarly, all individuals presenting with TB should be offered an HIV test and the barriers to HIV testing (both logistical and financial) should be minimized. In addition, HIV treatment with HAART improves the immunity of people living with HIV and decreases their likelihood of developing active TB if they are exposed to a TB strain of any kind. This therapy has been terribly delayed in resource-poor countries due to insufficient resources and lack of political will. Redoubling the effort to effectively diagnose HIV and treat and retain those who need ART is needed to impact individual mortality from TB and the spread of drug-sensitive and drug-resistant TB.

Furthermore, the spread of XDR-TB is a consequence of a woefully inadequate health care infrastructure, one that is insufficient to prevent the spread of XDR-TB, facilitate its prompt detection, and administer its appropriate treatment. In dilapidated clinics and hospitals, TB easily spreads in crowded and poorly ventilated wards. The severe shortages of health workers caused by poor pay, immigration to other countries (so-called "brain drain"), and attrition from AIDS sap the manpower needed to address this epidemic. Investments in health workers and health facilities are fundamental to any effort battling TB and HIV/AIDS. Finally, diagnostic capacity is needed. Almost nothing has been invested towards providing laborato-

ries in resource-poor settings, such facilities have been deemed too costly by the conventional public health approach. Yet drug resistance can only be diagnosed by culturing the TB organism. Safe and modern laboratories must be built and technical staff trained to find XDR and facilitate its treatment and control. Our world is gripped with two interrelated pandemics, HIV and TB, and the prevention, control and treatment of these diseases require long-term, community-based therapy. Such ambulatory treatment assures adherence to and completion of the prescribed treatment, improving outcomes and preventing the development of resistance. It also decreases the concentration of infectious people in congregate settings. Community health workers are best suited to provide this type of therapy, but this class of health workers does not exist in most places in the world and where they do, they are often asked to serve as volunteers, resulting in high attrition rates and the need for constant recruitment and training. As with AIDS treatment, developing a global cadre of health workers of this type is critical to tackling the TB epidemic.

In South Africa, death rates among people living with HIV who acquire XDR-TB are high (Gandhi et al., 2006). This is not because XDR-TB is untreatable, but rather because in most places, patients infected with XDR-TB have not been promptly diagnosed and correctly treated. This failure to provide services has led to the myth that XDR-TB is untreatable or a death sentence. Partners in Health has been successfully treating MDR-TB since 1994 in Haiti, Peru, Russia, and most recently in Rwanda and Lesotho. Socios en Salud, a Partners in Health “sister organization” in Peru, arguably has more experience in MDR-TB than any other organization in the world, having treated over 10,000 cases of MDR-TB. As early as 1996, Partners in Health documented high levels of resistance in some of these cases, which would now by definition be labeled XDR-TB. In Peru, however, the highly resistant nature of many of the strains did not garner the same type of media attention because of the low prevalence of HIV. In such settings, the spread is not as rapid as in southern Africa, where a high proportion of the population has HIV and has not received ART.

Treatment is possible but it depends on prompt diagnosis and timely administration of appropriate therapy and sustained treatment for two years. This requires health care workers who are trained to have a suspicion for drug-resistant TB, HIV testing linked to TB control efforts, a laboratory that is capable of making the diagnosis, health care workers that can prescribe and follow up the treatment for both XDR-TB and HIV, and a cadre of community health workers that can assure adherence to the drugs in the community. If hospitalization is needed, the treatment and control of XDR-TB require hospital wards with adequate ventilation and staffing.

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