



GLOBAL HEALTH

Picking Up the Pace — Scale-Up of MDR Tuberculosis Treatment Programs

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Multidrug-resistant (MDR) tuberculosis is a treatable, airborne infectious disease that killed an estimated 1.5 million people between 2000 and 2009 — an annual rate 10 times that of

the H1N1 influenza virus.^{1,2} During this period, barely 0.5% of the estimated 5 million people who became ill with MDR tuberculosis received treatment with quality-assured second-line drugs. The rest continued to transmit resistant bacteria to others — in their homes, communities, workplaces, and other places where people congregate. The results: an increase, in a number of locales, in the proportion of tuberculosis cases that were MDR; a frightening increase in the proportion of strains with broad-spectrum resistance, especially in areas with a high prevalence of human immunodeficiency virus (HIV) infection; and, in some areas, an unraveling of hard-

won progress in tuberculosis control.¹

The solution to this burgeoning epidemic is no secret. Fifteen years ago, Frieden et al.³ described the interventions deployed to contain a tuberculosis epidemic in New York City in the late 1980s. They noted that it was “easy to prevent transmission by ensuring that patients with recently acquired disease are treated promptly, appropriately, and completely — ideally, with directly observed therapy.”³ The same interventions are urgently needed to stem the global epidemic of MDR tuberculosis: rapid case detection, proper infection control, timely access to quality-assured second-line drugs, and the building of capacity to de-

liver treatment effectively.^{4,5} Indeed, as with drug-susceptible tuberculosis, prompt and effective treatment is the best way to stop the spread of drug-resistant strains.

Over the past 15 years, there has been a sea change in the global approach to drug-resistant tuberculosis, with laudable policy advances, improved treatment guidelines, and a World Health Assembly resolution calling on all countries to provide universal access to diagnosis and treatment. Yet very few of the millions of patients who require treatment today will receive it. Five successful global initiatives, described in the table, provide insight into approaches that can address this enormous gap. Taken together, they show that when there is a sense of urgency — and appropriate policies, resources, strategies, and technologies are aligned — care can be made accessible even in some of the world's poorest areas.

Addressing the MDR tuberculosis epidemic will require critical transformation in four areas: diagnostics, drug supply, treatment implementation, and advocacy. First, current efforts by the Global Laboratory Initiative to improve the capacity for tuberculosis diagnosis in low- and middle-income countries should be supported and expanded, and similar approaches should be adopted by global health programs such as the President's Emergency Plan for AIDS Relief (PEPFAR) and those of the World Bank. New methods of rapid molecular detection need to be widely deployed and integrated into case-finding strategies to reduce transmission of MDR tuberculosis and treat patients promptly. More needs to

UNICEF, and PEPFAR), to help implement tested solutions. Current funders of MDR tuberculosis medicines (such as the Global Fund to Fight AIDS, Tuberculosis, and Malaria and UNITAID) need to demand much more than the status quo. Repair of the mechanism for procuring drugs for MDR tuberculosis must occur in tandem with the development of new tuberculosis drugs and the funding of clinical trials that can help to bring these drugs to patients quickly.

Third, the implementation of MDR tuberculosis programs needs to be substantially accelerated. Data have shown that with appropriate funding, long-term on-site assistance, and models that promote ambulatory delivery of care,

include universal access to MDR tuberculosis treatment as part of their global strategies, despite the substantial risk of death for patients coinfecting with HIV and MDR tuberculosis and the fact that more than 10% of patients with MDR tuberculosis are children. Partners such as these — along with the many implementation agencies, advocacy groups, and private networks of laboratories and providers with whom they are linked — need to be involved so that their successful approaches in other areas can vitalize the fight against MDR tuberculosis.

Finally, advocacy for scaling up MDR tuberculosis treatment has been inadequate and must increase — exponentially. Despite the best efforts of the World Health Organization (WHO) to highlight the MDR tuberculosis crisis through a high-level ministerial meeting in Beijing in 2009 — attended by ministers of health, the vice-premier of China, the director general of the WHO, and Bill Gates — few governments or nongovernmental organizations have prioritized MDR tuberculosis treatment. Moreover, there has been limited organized demand for treatment from patients with MDR tuberculosis, their families, or their advocates — a marked difference from the situation with HIV. For MDR tuberculosis treatment to be scaled up, there will have to be greater advocacy at the community, national, and international levels. Funding is needed for education and community building.

In sum, the pace of scale-up of MDR tuberculosis treatment has been abysmal. We have failed to apply relevant lessons, and our approaches are outdated. Meanwhile, the disease continues to spread, and patients continue to

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be done to build on recent advances and ensure the creation of true point-of-care tests for tuberculosis and MDR tuberculosis.⁵

Second, drugs for MDR tuberculosis must be affordable and readily available. Reliance on an overly centralized procurement approach, exacerbated by a paucity of manufacturers of quality-assured products, has resulted in market failure for MDR tuberculosis drugs. Decades-old, off-patent, second-line tuberculosis drugs still cost more than \$2,000 per year of treatment, whereas the prices of medications for HIV and malaria have dropped significantly. It is critical to convene industry and supply-chain experts, along with agencies with drug-procurement experience (e.g., the Clinton Health Access Initiative,

universal access to MDR tuberculosis treatment can be achieved in low- and middle-income countries.⁵ Though the Global Fund, UNITAID, and the U.S. government have provided countries with much-needed resources, the rate at which treatment programs are being launched or expanded is inadequate as a response to a global emergency. One reason is, again, a centralized mechanism of technical assistance that was designed for less complex interventions; another is that many regions lack a cadre of professionals who can provide the type of programmatic support required.⁵ The problem is aggravated by the fact that key global health agencies are not promoting universal access to treatment. For example, PEPFAR and UNICEF do not in-

Five Global Health Initiatives for the Treatment of MDR Tuberculosis.

Initiative	Description	Mission	Outcomes and Insights
Green Light Committee	Joint effort of the WHO and the Stop TB Partnership	To improve affordability and access to quality-assured second-line antituberculosis drugs and to promote their safe and effective use	<p>Fostered treatment projects in more than 80 countries, showing that treatment is possible in low- and middle-income countries in both urban and rural settings</p> <p>Showed that rapid scale-up of treatment is possible with sufficient resources and on-site technical assistance</p> <p>Helped neighboring regions and countries with program implementation through a nascent network of local technical-assistance centers</p> <p>Showed that alternative approaches are required to reduce prices of second-line drugs and increase their supply</p> <p>Identified gaps and suggested solutions through monitoring and evaluation mechanisms but discovered that current models of technical assistance are insufficient to foster rapid treatment scale-up</p>
Global Laboratory Initiative	Joint effort of the WHO and the Stop TB Partnership	To serve as a platform of coordination and communication for strengthening tuberculosis laboratories in the areas of global policy, guidelines, best practices, laboratory capacity development, coordination of technical assistance, advocacy, and resource mobilization	<p>Attempted rapid laboratory scale-up to diagnose MDR tuberculosis in 130,000 patients in 27 poor countries over a 3-year period with UNITAID funding and a technical-accompaniment model from Partners in Health and the Foundation for Innovative New Diagnostics</p> <p>Provided a model for deploying techniques for advanced mycobacterial culture and molecular biologic technologies to improve diagnosis in high-burden countries</p> <p>Highlighted the need for more laboratory experts who are willing to live in-country to build local laboratory and laboratory-network capacity</p> <p>Showed that it is possible to build appropriate laboratory infrastructure in low- and middle-income countries</p>
President's Emergency Plan for AIDS Relief	Program of the U.S. government	To establish and scale up HIV prevention, care, and treatment programs	<p>Supported the provision of HIV treatment and prevention services to millions of people, showing that rapid scale-up is possible in low-income countries</p> <p>Worked with international and local nongovernmental organizations, civil-society partners, and technical agencies to deploy on-site long-term technical assistance, involving broad constituencies and avoiding centralized control</p> <p>Broadened the market for HIV drugs and diagnostics and fostered innovative approaches to rapid program expansion and sharing of best practices</p>
Global Fund to Fight AIDS, Tuberculosis, and Malaria	Public-private partnership	To dramatically increase resources to fight three of the world's most devastating diseases and to direct those resources to areas of greatest need	<p>Developed an innovative funding mechanism for treating HIV, tuberculosis, and malaria</p> <p>Fostered more than 572 treatment programs, showing that it is possible to quickly enroll large numbers of patients in treatment</p> <p>Worked through country programs, using broad constituencies involving nongovernmental organizations and civil-society and technical partners</p> <p>Helped to broaden the market for HIV drugs and diagnostics</p> <p>Discovered that MDR tuberculosis programs are expanding at a substantially slower pace than those for HIV and malaria</p>
UNITAID	Multilateral donor effort	To contribute to scaling up access to treatment for HIV, malaria, and tuberculosis, primarily for people in low-income countries, by leveraging price reductions for high-quality diagnostics and medicines and accelerating the pace at which they are made available	<p>Created economies of scale that drive down prices and free funds for more treatment through long-term funding commitments and purchases of high volumes of medicines and diagnostics to stimulate increased production</p> <p>Produced a price reduction of 60% for key pediatric AIDS medicines, enabling more children to be treated</p> <p>Worked with the Clinton Health Access Initiative and UNICEF to increase the availability of HIV drugs</p> <p>Discovered that since the agency began funding the Stop TB Partnership's Global Drug Facility to purchase second-line tuberculosis medications, the price of MDR tuberculosis treatment has increased, suggesting the need to reevaluate the current approach to such procurement</p>

die. The good news is that much more is possible, as shown by innovations in diagnostic tests for tuberculosis, HIV, and malaria; the management of the drug supply for treating HIV and malaria; and the scale-up of HIV treatment. The Green Light Committee and the Global Laboratory Initiative have shown what can be accomplished in MDR tuberculosis treatment in a variety of settings, given appropriate efforts (see table). Now is the time to implement a bold new vision for halting this epidemic. PEPFAR should build on its success by ensuring that all patients who are coinfecting with HIV and MDR tuberculosis receive treatment. UNICEF should ensure the same for children with MDR tuberculosis. Countries such as Brazil, China, Russia, and South Africa should create their own “presidential

initiatives” to defuse the MDR tuberculosis time bombs ticking within their borders and in their spheres of influence. Bilateral funders such as Canada, Japan, and Britain must make the control of MDR tuberculosis a priority, as part of their integrated tuberculosis-control strategies. So, too, should large multilateral funders such as the World Bank.

Facing this epidemic will require engaging new players in the fight against tuberculosis; it will require courageous steps and a globalized approach, drawing on new public and private partnerships. We may not have much time before this epidemic overtakes our capacity to stop tuberculosis.

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Payment Reform and the Mission of Academic Medical Centers

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U.S. academic medical centers (AMCs) are facing new challenges to their financial well-being. As payers seek to control health care costs, teaching hospitals and their medical staffs can anticipate continued payment reductions. Under the fee-for-service system, hospitals respond to payment cuts by increasing their volumes of admissions and ambulatory services while improving efficiency. Although costs per case may decline, overall costs do not. The inevitable result is a further reduction in per-case payments, and the cycle continues — with

many undesirable consequences. Costs are inflated, and the quality and safety of care are eroded as the result of unnecessary or inappropriate tests and procedures.

Rather than perpetuating this cycle, AMCs stand to gain by exploring payment reforms that promote evidence-based, rather than income-driven, care. Several such reforms are being proposed or tested, including payment per episode of illness, various forms of capitation, and an annual payment for the care of a defined population. Any of these approaches may include extra payments for meet-

ing or exceeding quality standards. Commonly referred to as bundled payment, these approaches reflect the principle that health care providers should be reimbursed on the basis of the outcomes of care, not the inputs used to achieve them. Bundled-payment programs thus prioritize the discriminating use of health care resources, and the evidence shows that they can achieve cost savings while preserving hospitals’ revenues and physicians’ incomes. Despite concern that bundled payment may cause underutilization of services, experiments have