

MEDICAL EXAMINER

## Let the TB Patients Go

Prisonlike hospitals aren't the place to treat drug-resistant tuberculosis.

By Eliza Barclay

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In the 1990s, scientists noticed that the deadly class of bacteria that causes tuberculosis had outsmarted the limited drugs available to treat it and taken on new and deadlier forms. Since then, the pandemic of drug-resistant TB has escalated. 2008 saw the highest number of people infected with drug-resistant TB in history at 1.5 million in 114 countries, according to the World Health Organization. Some medical experts have even called drug-resistant TB a potential form of biological warfare because of the ease with which the bacteria can piggyback on airborne droplets into people's noses and mouths.

As TB specialists grapple with how best to treat an infectious illness that often defies medication, they have ruled that patients with its two most dangerous forms—multidrug-resistant, or MDR, which is resistant to two or more first-line antibiotics, and extensively drug-resistant, or XDR, which is undeterred by two first-line drugs and two or more second-line drugs—must be quarantined, at least while still contagious, as their treatment is carefully monitored.

But for the countries that shoulder some of the highest TB burdens, including South Africa, Russia, India, and Peru, the costly hospitalization and isolation of these patients has often backfired.

In 2006, an outbreak of XDR in a rural South African hospital killed 52 out of 53 patients infected. Since then, the country has pioneered the policy of locking up XDR patients in virtual prisons to crack down on the epidemic. But this approach has not controlled the disease, as desperate patients, many of whom are breadwinners and parents, break out to see their families, putting their loved ones and communities at risk. TB control program managers in other countries, like Peru, have reported similar difficulties in forcing MDR-TB patients to quit work, stay out of public places, and adhere to the physically taxing treatment regimen.

While hospitalization is sometimes necessary to treat very sick drug-resistant TB patients, two groups of researchers, both at Harvard Medical School, have found that effective treatment does not require hospitalization or the indefinite confinement of patients. Such a policy can be controversial in places like Russia, where hospitals often need to justify their budgets by filling beds with patients. But the studies signal a change not only in the possibilities of curing XDR, previously thought to be incurable, but also in the most effective care model for eliminating all forms of drug-resistant TB.

The evolution of drug-resistant TB is in itself a sign of a disease-control program gone terribly wrong: It develops when regular TB patients shirk the six-month treatment regimen, giving the bacteria the opportunity to develop resistance to the drugs. Frequently, these patients skip their medication because of debilitating side effects such as nausea, rashes, and joint pain. It is also possible to pick up a drug-resistant strain without having had TB before, most often in an overcrowded hospital where air contaminated by TB patients circulates freely.

"With the burgeoning number of drug-resistant TB patients in the world, it's clear that we need to scale up treatment," says Carole Mitnick at the Department of Global Health and Social Medicine at Harvard Medical School, the lead author on a recent study in Peru. "But it's completely impractical to do it in hospitals given

available hospital beds in world. It will never be achieved if we wait for beds to turn over for all the patients that need them."

Mitnick's study, published in August in the *New England Journal of Medicine*, found that people can be treated just as well and more cheaply with comprehensive community-based care than in hospitals. Conducted in Lima between 1999 and 2002, the study produced a cure rate of more than 60 percent for the XDR and MDR patients using daily supervised treatment in patient homes and at community health centers. By contrast, most XDR patients in countries with the highest prevalence, including China, India, Russia, former Soviet republics, and South Africa, typically die a quick death. Crucial to the success of the Peru study were community-health workers, who supervised the patients' adherence to the drug regimen and were able to help patients get immediate medical care when necessary. The patients also had access to additional services as needed, including nutritional and psychological support and surgery.

Critics have questioned whether Mitnick's results could be replicated in places like Lesotho or South Africa, where HIV is endemic and increases the lethality of the TB. But Mitnick believes her results could probably be replicated in any community with high drug-resistant TB rates, as long as a comprehensive strategy is in place involving the health care system, laboratories, health NGOs, the patients, their families, and the community.

"The amount of money it costs to keep patients isolated and under guard could be much better used," says Mitnick. "It could be spent on bringing in additional drugs, following up more aggressively, and provide social and economic support."

In the second study, published in October 2008 in the *Lancet*, a team of researchers led by Salmaan Keshavjee looked at 608 patients in Siberia with MDR. Forty-eight percent of the 29 patients with XDR tuberculosis were cured, while 67 percent of the other 579 patients with MDR were cured. Keshavjee's team used an ambulatory care model similar to Mitnick's, which allowed patients a degree of freedom to live their lives while also receiving personal attention.

Now the World Health Organization is coming around, too. The WHO, previously mum on the issue of community-based TB care, has added a community component to the Stop TB Strategy and issued a report with guidelines on community involvement in TB care and prevention. The report noted, "[C]ommunity participation in care was assessed as highly cost-effective, with major savings in hospitalization costs and with remarkable benefits to patients and communities affected."

The move is wise, because there's no way the ambitious international TB-control goal to "reduce TB prevalence and death rates by 50% relative to 1990" by 2015 will be reached by treating people exclusively in prisonlike hospitals that make patients want to escape.

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