



Study Guide

Case: “Tuberculosis in Pakistan”

Spring 2013

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Pakistan: Country Background

Geography

Natural Resources: Located between India, China, Iran, and Afghanistan, Pakistan is mostly a dry desertⁱ. Despite the extensive natural gas reserves, it lacks many other natural resources including minerals and petroleumⁱ.

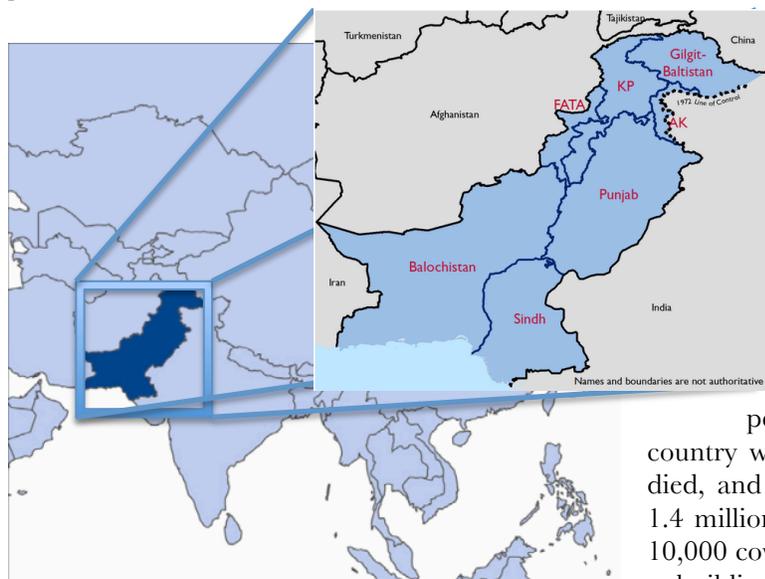


Figure 1. Provinces of Pakistan (USAID Health: TB Survey Program; <http://transition.usaid.gov/pk/images/maps/1.png>); **Pakistan on the Map** (USAID, 2009 Pakistan TB Profile http://transition.usaid.gov/our_work/global_health/id/tuberculosis/countries/asia/pakistan.pdf)

Natural Disasters: Only about a quarter of the land is arable, and the land is subject to frequent earthquakesⁱ and annual floodingⁱ. The heavy rains all but destroy the livelihoods of millions of Pakistanis each year, and during particularly bad years, Pakistani citizens can be stranded without even a tent for months after the flooding ends. In July 2010, during the worst flooding in the history of the country, 20 million people were affected as a fifth of the country was submerged under waterⁱⁱ. Thousands died, and the food supply was severely damaged. 1.4 million acres of farmland were destroyed, and 10,000 cows were killed. Estimates place the cost of rebuilding the nation in the billions of dollars. Moreover, these natural disasters increased the gap between the rich and the poor because the rich had more ready access to essential resources during the aftermathⁱⁱⁱ.

People

Health: With nearly 200 million people, Pakistan is the sixth most populous country in the world^{iv}. Yet it has one of the worst health expenditures on the planet, only contributing about two percent of its GDP^v. Life expectancy is low, and Pakistanis have a high risk of contracting diseases. Most of the country does not have reliable access to potable waterⁱ. The healthcare system is predominantly run by the private sector, which supplies 80 percent of outpatient care^{vi}. Notably, the quality of care differs from region to region, particularly with regards to the question of access.

According to the United Nation's most recent Human Development Report for Pakistan, the percentage of the population living below the poverty line has increased to 34 percent, and 60.3 percent of the population lives on less than \$2 per day^{vii}. Data has shown that Pakistan's high fertility and high population rates are linked to poverty and ill health throughout the country^{vii}.

Government and Economy: Pakistan's government is based on Islamic law. Due to political unrest, investment has suffered for several decades. The military, which relies on mandatory conscription, struggles to combat terrorist groups, particularly along the Afghan border.

GDP per capita is about \$2,900, and Pakistan's economy was ranked among the 20 worst in the world^{viii}. 45 percent of people farm for a living, and agriculture accounts for a fifth of total output^{viii}. Low growth and high inflation, coupled with rising food prices, have thrust approximately 50 percent of the country into poverty^{viii}. Inflation still remains high, nearly 11 percent, and foreign investment is still weak due to concerns over governance, security and the greater global economy^{viii}. Growth is low while the total population continues to rise, and Pakistan remains dependent on foreign aid. The Pakistani government must learn to cope with the inevitable increase in health, education and energy spending as their population grows.

International Relations

Relations with India: Since the end of British rule in 1947, India and Pakistan have had continuously touchy relations, particularly concerning the region of Kashmir^{viii}. After several wars, the predominantly Muslim Pakistan and predominantly Hindu India have reached a peaceful agreement and are working to establish better diplomacy. However, after attacks in 2008, tensions remain, and insurgency remains a primary concern for both countries.

United States Involvement: The relationship between the United States and Pakistan remains tenuous after American Special Forces killed Osama Bin Laden outside of a medium-sized Pakistani city where he had lived for years. Nevertheless, the White House depends on the strength of Pakistan's intelligence agency and military to help support its initiatives in Afghanistan trying to combat terrorist groups such as the Taliban.

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## **Pakistan: Tuberculosis Background**

### **Information on TB in General**

*Biological Background:* Tuberculosis (TB) is an infectious disease caused by bacillus mycobacterium tuberculosis<sup>ix</sup>. It typically affects the lungs, but can be extrapulmonary. TB is transmitted in the air via aerosolized droplets from the throat and lungs of infected people -- thus, when an infected person coughs or sneezes, he or she can infect others nearby<sup>x</sup>. Approximately one-third of the world's population has latent-TB, which is not harmful to the patient because the bacteria do not develop and the patient cannot transmit the disease to others<sup>xii</sup>. TB becomes an issue when latent-TB becomes active and the bacteria develop and multiply.

Although anyone can be infected with TB, the active form of the disease is more likely to develop in people with compromised immune systems -- for instance, people who are malnourished, have diabetes or HIV, or people who smoke. According to the World Health Organization, people who are co-infected with HIV are 21 to 34 times more likely to develop TB, and 20% of TB cases worldwide occur as a result of smoking<sup>xiii</sup>.

*Diagnosis and Treatment:* TB is a treatable disease – it can be diagnosed by sputum microscopy, in which laboratory technicians examine sputum samples under a microscope for the presence of TB bacteria<sup>xii</sup>. Once diagnosed in the patient, a six- to eight-month treatment of antibiotics should cure the disease<sup>ix</sup>.

DOTS, or Directly Observed Therapy – Short-Course, is the current internationally recommended strategy for TB control<sup>x</sup>. In general, it consists of a five-point strategy to:

1. Secure political commitment and adequate funding
2. Ensure early case detection and diagnosis
3. Provide standardized treatment
4. Ensure effective drug supply
5. Monitor and evaluate performance

Although normal TB cases can be treated effectively, there are two cases in which TB cannot be effectively treated: multidrug-resistant (MDR) TB and TB-HIV co-infection. MDR-TB does not respond to the two most common anti-TB drugs (isoniazid and rifampicin) and requires a costly combination of second-line drugs to treat<sup>xii</sup>.

*Campaign:* After the WHO declared TB a global emergency in 1993<sup>xi</sup>, successful worldwide efforts have been made to control the disease. However, TB is still a prominent concern, especially in countries with very low gross national products. Out of the 8.8 million people infected with TB, 95% of the cases occur in developing countries in Africa, Asia, and Latin America<sup>xii</sup>.

TB is still second only to HIV/AIDS as the greatest killer worldwide due to a single infectious agent, and it is one of the top three causes of death for young- and middle-aged women<sup>xii</sup>. Young age groups are affected the most<sup>xi</sup>.

## **TB in Pakistan**

Pakistan, a nation of about 151 million people spread across an area of approximately 852,392 square kilometers, currently ranks as the sixth-highest number of TB cases in the world, according to recent World Health Organization (WHO) estimates<sup>xiii</sup>. This equates to about 413,000 TB cases (2010 estimate). TB is responsible for 5.1% of the total national disease burden in Pakistan<sup>xiii</sup>.

*History:* Historically, Pakistan's National TB Program (NTP) has been relatively weak. In the 1990s, after TB was declared a global emergency by the WHO, the Pakistan Ministry of Health (MoH) tried to implement five DOTS sites for TB treatment, but only one became operational; moreover, the TB control plan that the NTP devised was not approved by all provinces in Pakistan<sup>xi</sup>. In 1998, Pakistan was declared one of sixteen countries without an appropriate NTP. The NTP suffered from a dispute in distribution of responsibility: whether it should be managed centrally, from the federal level, or more locally, at the provincial level. When it was ultimately decided that TB control programs would be independently organized at the provincial level, financial support for TB control was not sufficient. In 2001, as a result of the inadequate funding and high volume of cases, the Pakistan government declared TB a national emergency<sup>x</sup>.

Although TB is treatable, one of the key problems facing Pakistan is that TB patients go to quacks who do not prescribe adequate treatment. In the early 2000s, only a small percentage of Pakistani private practitioners would have considered symptoms of “fever, cough, and weakness for over two weeks” to be

active tuberculosis<sup>xiv</sup>. Another problem is the fact that TB symptoms (such as cough, fever, night sweats, weight loss) may be mild for many months before the patient feels they are significant enough to warrant seeking care - thus delaying treatment and spreading the disease to others. Historically, TB was detected through X-ray, clinical impression, and blood examination, which is usually less accurate than sputum examination<sup>xi</sup>. However, due to lack of infrastructure, many doctors did not have access to the laboratories that are needed for sputum microscopy and had to resort to less effective diagnostic methods.

In 2007, approximately 297,108 people in Pakistan developed TB<sup>x</sup>. Within the last decade, though, progress has been steady, with an increase in both the case detection rate and treatment success rate (due largely in part to increased involvement of private practitioners, community volunteers, and the general public in identifying TB suspects)<sup>x</sup>. Most recently, in 2012, Pakistan's National TB Control Program (NCTP) released the results of the 2011 National TB Survey – a survey which enabled Pakistan to gain better understanding of the TB burden and identify ways to improve key interventions for TB disease control. Based on the results of the survey TB incident rate was determined to be 295 per 100,000 people (over the age of 15) for 2010-2011<sup>xv</sup>. This number has decreased to approximately 181 cases per 100,000 people<sup>ix</sup>.

Currently, Pakistan is still considered a “Tier 1” country – one of 22 countries that are most at risk for TB worldwide<sup>ix</sup>.

*Treatment in Pakistan:* The current treatment success rate in Pakistan is 85% (Tribune, 2013). However, both MDR TB and TB-HIV have emerged in Pakistan and are a growing health concern. At least 400,000 new TB cases and 15,000 MDR TB cases are diagnosed each year in Pakistan<sup>xv</sup>.

Completion of TB treatment is extremely important, as partially treated patients are actually worse than untreated patients. TB patient who are not completely eradicated of the disease can develop multi-drug resistant bacteria, which not only leads to chronic infection but also increases the community burden<sup>xiv</sup>. Thus, continuous monitoring of patients to ensure treatment compliance is essential.

Medical teams often face numerous obstacles (specific to Pakistan) when they try to reach and treat TB patients in more rural areas of the country. For example, some of the challenges the 2010-2011 National TB Survey Team faced in Pakistan included floods, fragile security, staff turnover, the transportation of specimens in high temperatures, maintenance of X-ray equipment, and data management<sup>xv</sup>.

Another key issue regarding treatment is funding. Treatment costs are a major problem for the Pakistani government – the NCTP relies on outside grants to fund its operations (i.e. a recent \$147 million grant from the Global Fund) and must periodically reapply or renew its grants to sustain effective TB control programs<sup>xiii</sup>.

From a social and cultural standpoint, the disease adversely affects patients and their families. Those who are affected face financial problems, loneliness, and hospitalization<sup>xiii</sup>. Moreover, in Pakistan, there is sometimes a stigma associated with the disease – those with TB may be discriminated against because others do not know about the source and spread of the disease and that it can be cured<sup>xiii</sup>. Not only does TB inflict misery upon families, but it also has a profound impact on development for the country of Pakistan as a whole<sup>xv</sup>.



**Figure 2. TB most commonly affects the poor in Pakistan.**  
Source: Kamila Hyat, IRIN Humanitarian News and Analysis; <http://www.irinnews.org/Photo/Detailes/200803243/TB-is-often-associated-with-poverty-in-Pakistan>

## **Current and Potential Strategies for TB Control**

Multiple sources have suggested the following strategies for effective TB control:

- Treatment: expand DOTS; improve laboratory capacity (for sputum microscopy – key for detection)<sup>x,xi</sup>; increase TB drug availability, especially for private practitioners<sup>xiv</sup>
- Disseminate standardized care and management guidelines at all levels of health care delivery, especially for MDR-TB<sup>x,xiv</sup>
- Strengthen supervision at the provincial/district level<sup>x</sup>
- Improve financial administration of the NTCP<sup>x</sup>
- Educate the general public about TB through advocacy, communication, and social mobilization<sup>x,xiv</sup>
- Better collaboration and referral links between public health services and private practitioners, especially for MDR-TB patients<sup>xiv,x</sup>
- Partner with outside foreign aid organizations for support and funding<sup>x</sup>
- Combating the social stigma: include teachers, religious scholars, students, and health workers in the fight against TB<sup>xiii</sup>.

This list of ideas is meant to give you springboard to begin brainstorming on a proposal. Which of these strategies do you think will be most effective, both in terms of eradication of the disease and in terms of cost? How can you expand upon these possible strategies and come up with a more detailed, feasible plan? Although these may sound like sound strategies, *how* exactly could the Pakistani government implement them?

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Suggested Roles

- The Pakistani Government
 - How high of a priority would TB control be on your agenda?
 - How many resources (i.e. money, manpower) would you allocate to TB control?
 - How would you change or adjust existing health care infrastructure to more adequately deal with TB?
 - How much would you rely on outside organizations (NGOs or international groups like the United Nations) to assist you in TB control?
- Non-Government Organization (NGO)
 - Non-profit organizations such as Doctors without Borders
 - How would you provide aid and resources (i.e. money, manpower) to Pakistan to assist in TB control?
- International Organizations
 - For example, the United Nations or the World Health Organization
 - How would you convince the Pakistani government to do more for TB control?
 - What would you send to Pakistan to help out with TB efforts?

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