ENDING CONSUMPTION: NEW STRATEGIES FOR THE ERADICATION OF TUBERCULOSIS IN UZBEKISTAN

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ABSTRACT: Since the collapse of the Soviet Union in 1991, Uzbekistan has struggled with the burden of a growing tuberculosis (TB) epidemic. A changing healthcare system and the stagnant economy have hindered efforts to produce sustainable, long-term change in the state of the disease. In particular, the emergence of multidrug-resistant tuberculosis (MDR-TB) and HIV-associated TB in prisons has worsened treatment outcomes. In this article, an analysis of previous efforts finds that despite the wealth of technical expertise in treating TB, the lack of public health policy targeting cultural, financial, and infrastructural realities has made the eradication of TB unattainable. The policy recommendations presented in this article encompass a novel multi-pronged approach to managing systemically overlooked aspects of the tuberculosis epidemic both rapidly and inexpensively.

In 1996, R.T. Sultanov, the first Deputy Minister of Health of Uzbekistan, stressed the importance of improving disease prevention measures and primary healthcare for Uzbekistan’s changing public health system (Sultanov, 1999). In the aftermath of the dissolution of the Union of Soviet Socialist Republics in 1991, Uzbekistan has encountered economic difficulty transitioning from the Soviet model of healthcare to a more privatized universal healthcare model. As a country that has retained a majority of its Soviet-era officials, Uzbekistan has led Central Asia in certain aspects of healthcare reform, including the rationalization of hospital facilities and personnel, maintenance of robust welfare programs, and the development of a solid domestic pharmaceutical industry (Rose, 1999; Sultanov, 1999). Nevertheless, the current healthcare system still suffers from a lack of funding, weak public health and disease prevention programs, unequal access to healthcare among citizens, and weak policy implementation from governmental bodies to regional and local strata (Klugman & Schieber, 1999). Of urgent concern, however, is the growing tuberculosis epidemic in Uzbekistan, which endures despite the extensive efforts of foreign aid agencies and the World Health Organization. Any steps taken to address TB must make the demand for disease control fit the supply that can be procured by the fragile economy. Uzbekistan must adopt inexpensive and easily implemented policies that target logistical, financial, and cultural obstacles to the efficient eradication of TB without significantly stressing the existing economy.

Tuberculosis in Uzbekistan

Tuberculosis, historically referred to as consumption, is a bacterial infection caused by *Mycobacterium tuberculosis* and spread by aerosolized droplets that cause a chronic, debilitating lung infection that can be fatal if untreated. For much of history, the dis-
ease has been incurable, but with the advent of antibiotics, patients have achieved high cure rates with relatively few side effects. Unfortunately, the development of drug-resistance to TB and the increased susceptibility to TB in immunocompromised HIV patients have allowed the disease to persist in many regions of the world. In Uzbekistan, infectious diseases no longer represent the leading cause of death, yet the country exhibits the highest TB rates in the former Soviet Union (FSU), having grown from 45.2 to 58.2 new cases per 100,000 people between 1990 and 2005 (Dubrovskaya, 2002; Stuckler, Basu, McKee, & King, 2008). Of the ten leading causes of death in Uzbekistan, tuberculosis stands out as an infectious disease, underscoring the illness’ peculiar place in a country where non-transmissible first-world diseases have become the predominant cause of mortality (Jakubowski & Arnaudova, 2009). The prevalence of TB is uneven in the country, with rural areas and prisons being the epicenters of contagion and leading to infections in peripheral communities (McKee & Chenet, 2002). Recently, TB in Uzbekistan has more frequently presented in immunocompromised patients infected by the HIV virus, a worrying sign of a separate epidemic facilitating the movement of TB, as has been documented in sub-Saharan Africa (Harries et al., 2010). In addition, multidrug-resistant TB is thriving in Uzbekistan, a threat compounded by the fact that less than 10 percent of Uzbeks have access to drug-resistant TB treatment (Eurasianet, 2011). On average, two of every three patients who fail to be cured by standard treatments are infected by these resistant strains (Cox et al., 2007). Uzbeks suffering from tuberculosis, particularly those living in the capital of Tashkent, are also more likely to default from treatment regimens due to poor patient-doctor communication, social stigma of the disease, and a lack of accurate information on TB. Patients that do not complete the full course of treatment are likely to still be infected with M. tuberculosis upon their return to the community, leading to a heightened risk of spreading the bacteria to people they interact with, allowing the epidemic to persist (Hasker et al., 2010).

**Stakeholders**

Ending the TB epidemic is in the interests of all Uzbeks. Better treatment outcomes would directly improve the quality of life and overall health of patients and healthcare workers. Additionally, while the disease’s eradication would spare future generations from being infected. Since aerosolized respiratory droplets can harbor TB, it is rapidly spread by human-to-human contact. Tuberculosis patients are “at present a source of danger to themselves and to all around them” (Bashford, 2002).

In Uzbekistan, networks of informal person-to-person relationships have been described as the conduits through which information and public will are transmitted, and small-scale, local interpersonal interactions are the medium through which Uzbeks self-identify and mobilize popular protests (Radnitz, 2010). The infectious agent of tuberculosis is an airborne pathogen, and previous analysis of a TB outbreak in British Columbia, Canada has revealed its proclivity to spread within social circles (Gardy et al., 2011). In a country like Uzbekistan, where social interactions are paramount, the spread of TB, a highly contagious disease, is likely facilitated by the importance of
person-to-person contact.

The disease is also already in a position to interfere with the economy. In the rural northwestern region of Karakalpakstan, the incidence of tuberculosis is 300 in every 100,000 people. The intersection of extreme poverty and unsanitary hospital conditions puts citizens at great risk of becoming infected during their daily lives. Moreover, a regional drought due to the drying Aral Sea has severely reduced harvests for many local farmers, who are struggling to feed their families, let alone seek treatment for TB (Dubrovskaya, 2002). When disease morbidity chronically interferes with the ability for people to work, raise children, and participate in society, the Uzbek economy will be deeply and detrimentally affected. For instance, in the early 20th century, the TB epidemic in Australia posed a serious threat to the nation’s economy. Not surprisingly, TB treatment in Australia was based on “a secure recovery and a return to full working capacity” for patients (Bashford, 2002).

The persistence of TB in Uzbekistan largely derives from the failure of previous policies to take cultural, financial, and infrastructural contexts into account, and the emphasis on technical support in the absence of sustainable public health reform. The successful eradication of TB, then, must be predicated on a multi-pronged approach that addresses setbacks at the patient and hospital level that are specific to Uzbekistan.

In line with this, I suggest the following five policies for immediate implementation:

**Previous Efforts**

Efforts to confront the tuberculosis epidemic in Uzbekistan have focused primarily on technical improvements in diagnosis, treatment, and infection control. The World Health Organization’s (WHO) Directly Observed Treatment Short-course (DOTS) TB treatment program reached 100 percent coverage in Uzbekistan since 2005. The DOTS program focuses on case detection, standardization of treatments, improving drug supply, and extensive patient monitoring and evaluation, and is designed for broad, non-specific application in all countries identified as TB hotspots. Workshops for health workers funded by the United States Agency for International Development (USAID) in 2012, have focused on rapid diagnosis with the rapid GeneXpert *M. tuberculosis* and antibiotic resistance diagnostic test, infection control, and programmatic management of drug-resistant TB cases (*World Health Organization*, 2013). While these efforts have vastly improved the situation, the rate at which treatments lead to complete cures has stagnated at a discouraging 80 percent in recent years (Hasker et al., 2009).

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In line with this, I suggest the following five policies for immediate implementation:
1. Reduce the patient default rate through effective information dissemination and patient following:

Patients who decide to stop their prescribed course of treatment are said to have defaulted. Patients in Tashkent default because of misconceptions of tuberculosis and its treatment, fear of being identified as a TB patient by the community, and dislike of treatment facilities and staff (Hasker et al., 2010). To counteract lack of knowledge of the disease, accurate information must be available to the public both directly from healthcare providers and from public awareness initiatives in schools, mosques, and other community centers. Such initiatives would educate at-risk demographic groups on common misconceptions of TB, contraception, and clean needle use as a means of stopping the spread of HIV, which can predispose individuals to TB infection by suppressing one’s ability to fight off disease.

Physicians should be required to articulate clear expectations for the length of a TB treatment regimen, possible side effects, and prognosis, because a widespread mistaken sentiment among patients is that the disease is incurable. Research shows that as patients proceed from the initial “intensive” phase to the out-of-clinic “ambulatory” phase of treatment, they are most likely to default (Hasker et al., 2010). In response, community health workers should work with mahallahs (urban neighborhoods) and rural communities to follow up with discharged patients returning home through regular house visits (many families lack telephones) encouraging adherence to treatment. Patient follow-ups to make sure treatment regimens are being properly followed have proven to be effective in reducing the patient default rate, according to a meta-analysis in 2013 (Toczek, Cox, du Cros, Cooke, & Ford, 2013). This policy recommendation combines the effective deterrent to defaulting of regular patient visits with cooperation with local figures, easing assimilation of policy changes into the existing social milieu.

2. Reward observance of established protocols by doctors through the use of checklists:

Although Uzbekistan officially standardized its TB treatment program, doctors still prescribe an average of seven to eight non-tuberculosis drugs per patient, including chemotherapeutic drugs, on questionable bases (Hasker et al., 2009). Such treatments are not provided by the government, and must be paid for by the patient. To incentivize adherence to standardized protocols, doctors should be evaluated and financially rewarded by hospital managers according to their adherence to distributed checklists detailing protocols and doctor responsibilities to the patient. Having tangible protocols at all times can save money that would be lost due to human error and reduce ambiguity and variation in physician behavior. In the United States, such checklists have been employed in a variety of hospital settings to combat infections and minimize costly physician errors to great success (Landro, 2011). Eventually, the financial savings generated by checklists could be directly used to reward doctors for their adherence, creating an enclosed and self-sustaining incentive system. Additionally, this scheme is robust in that it allows for competition among doctors while maintaining the strong policy role of the Ministry of Public Health.
3. **Curb tuberculosis in prisons through inexpensive prevention and diagnosis initiatives:**

Much of the increase in tuberculosis in Eastern Europe and Central Asia in recent decades is attributed to HIV-associated TB in overcrowded prisons (Stuckler et al., 2008). Prisons have been shown to be reservoirs of tuberculosis that facilitate outbreaks in peripheral communities when prisoners come in contact with outside civilians and prison authorities (Jones, Woodley, Fountain, & Schaffner, 2003). Crucially, high prison population densities and crowding conditions juxtapose healthy prisoners and TB-positive prisoners in small spaces, allowing aerosolized bacteria to easily spread the infection (Stuckler et al., 2008). Logistically, the Ministry of Public Health should prioritize reducing prisoner crowding in mess halls, bathrooms, and medical facilities and improving ventilation in these areas (when possible), minimizing the likelihood of interpersonal spread. The sharing of contaminated needles by drug users, which can transmit HIV, is also associated with tuberculosis. In Uzbekistan, one out of six intravenous drug users is infected with HIV, yet drug syringe exchanges are limited to the public and absent in prisons (AVERT, 2013). Free needle exchanges, in which clean intravenous needles are supplied, and used needles are collected by prison authorities, have been implemented successfully in Kyrgyz prisons. In Uzbekistan, one out of six intravenous drug users is infected with HIV, yet drug syringe exchanges are limited to the public and absent in prisons (AVERT, 2013). Free needle exchanges, in which clean intravenous needles are supplied, and used needles are collected by prison authorities, have been implemented successfully in Kyrgyz prisons. Such an exchange greatly reduces the spread of HIV and TB by contaminated needles and should be established in Uzbek prisons. Finally, prisoners should be tested for TB biweekly using the inexpensive and newly available GeneXpert test, which is able to rapidly identify both *M. tuberculosis* and resistance to certain antibiotics using DNA-based methods (Vinkeles Melchers, van Elsland, Lange, Borgdorff, & van den Hombergh, 2013). Early diagnoses will improve the ability for the relevant healthcare professionals to treat, contain, and track prison TB cases.

4. **Exempt healthcare providers from government work orders:**

In October of 2012, doctors, nurses, and other government employees were directed into cotton fields to harvest cotton, compensating for an international boycott of child harvesters by commercial retailers, resulting in patients being turned away from healthcare facilities and seeking less effective treatment alternatives (Eurasianet, 2012). The consistent availability of doctors to the public is critical to the effective treatment of TB, and it is difficult to predict the extent of the ramifications such extraprofessional obligations may have. For this reason, all healthcare professionals must be exempted from being forced from their duties for reasons unrelated to their professions.

5. **Establish a multinational FSU advisory committee on multidrug-resistant TB to promote horizontal cooperation:**

Approximately 22 percent of patients with drug-resistant TB return to their communities while still potentially infected (due to defaulting or treatment failure), facilitating the spread of these highly-untreatable strains (Cox et al., 2007). An international advisory committee composed of epidemiologists, doctors, and public policy analysts from the countries of the FSU would provide an invaluable forum for exchang-
ing information and policy suggestions, as well as a means to keep track of ambulatory drug-resistant TB patients who have begun to participate in societal functions and may cross international borders. For all their efforts, international entities such as the WHO and the USAID have not typically included local healthcare professionals in reform discussions. Involving healthcare professionals in policy dialogue addresses this shortcoming and promotes cooperation between countries facing an endemic, regional problem (Eurasianet, 2011). Further, evidence shows that well-positioned advisory bodies can sway influential executives and ministerial figures, potentially bolstering financial support for related ventures (Savas, Gedik, & Craig, 2002).

Costs

Financing for public health reform in the past has largely been provided by overseas organizations such as the World Bank, which pledged 93 million dollars in 2011 for reforming rural healthcare access. Worryingly, national health spending has gradually fallen from 5.5 percent to 2.4 percent of total Gross Domestic Product between 1991 and 2005 (Eurasianet, 2011). Fortunately, the proposed policies would require minimal input of financial resources, and are expected to even generate reductions in spending due to increased efficacy at executing existing functions and a decreased disease burden. The bulk of the financial burden will go towards providing rewards for doctors, purchasing diagnostic GeneXpert machines, and clean syringes for use in prisons. Considerable time and political capital is needed to advocate for prisoners and establish an international advisory panel, and a large-scale public health initiative would require a longer time frame to implement. If it becomes unfeasible to implement all of these policies, it is imperative that prison healthcare reform takes precedence, since this will have the largest and most lasting impact on nationwide TB prevalence.

Shortcomings

Public health initiatives, especially when targeting culturally sensitive topics such as venereal diseases and HIV, may be received with distaste by both the government and people. A safe-sex campaign aimed at preventing the spread of HIV, spearheaded by activist Maxim Popov in 2010, led to Popov being sentenced to seven years in prison for corrupting minors (Eurasianet, 2011). The distribution of public health literature through traditional communal hubs such as mosques may be seen as a state-sponsored encroachment onto traditional Islamic authorities, creating an undesirable juxtaposition of national and local power entities. As the predominant social and ideological institution in local Central Asian communities, Islam could feel threatened by the assertion of government power within its realm of influence. Such a stance could easily translate into public discontent, creating undesirable conflicts between public health efforts and the public. Thus, all efforts must occur within local and traditional power matrices while clearly articulating the minimal cost and high impact of these policies.

Regular patient house visits by community health workers may also lead to negative outcomes. If the stigma of tuberculosis in a community is robust, visited individuals may become ostracized by the community and perceive the healthcare worker and
treatment itself as a nuisance. However, if the individual’s fear of ostracism rarely manifests in reality, as has been suggested by Radnitz (2010), the community may side with the patient and reject the healthcare worker as an unwelcome visitor. An understanding of community dynamics is key to negotiating these obstacles, and healthcare workers should be locally based, preferably having lived in the mahallah they visit to ensure familiarity with local figures and networks.

Generally, there may be resistance from both the people and financial bodies in the government to the use of tax revenues to improve prison conditions and diagnostic techniques. The lack of incentive for investing in prisons must be counteracted by publicly reiterating the role they play as reservoirs for disease.

Central to improving overall healthcare quality is strengthening the position of doctors through increasing salaries and benefits, and allowing for competitive advancement. Unfortunately, doctors may perceive the use of checklists pejoratively as a further restriction on their autonomy and financial security, as many doctors may be able to earn more money from prescribing nonessential drugs than can be offered by the proposed system. The impetus for doctors to compete amongst each other will be a reflection of how much money is invested into their rewards: a greater investment may signal more rapid change. More pressing, however, is the possible reaction from stakeholders such as nurses, other healthcare workers, and local elites (hospital managers, regional officials) involved in healthcare, who may feel their own positions threatened by the elevation of physicians’ status. One possible solution to minimize this competition is to expand the incentive program to include all healthcare professionals.

Finally, working with members of other countries of the FSU may be a harbinger of stronger regional relations, a move that may be against the interests of certain elites, including President Karimov himself, who has implied an interest in an inward-looking nationalism, emphasizing domestic sovereignty and protecting against threats from unstable neighbors (Karimov, 1997).

Conclusion

The express realization of policies directed at advancement of tuberculosis control, prevention, and treatment is a time-sensitive imperative of utmost importance to Uzbekistan. The nation has already reached a high level of technical expertise in managing tuberculosis, yet the epidemic shows no sign of abating. The considerable impact tuberculosis could have on both the well-being of individuals and economic productivity on a nationwide level, demands the prompt implementation of policies that systematically target novel and previously unaddressed factors that contribute to the epidemic. These aspects are involved in the dynamic interplay of culture, infrastructure, and finance with the disease and have been overlooked despite their integral role in the persistence of TB in Uzbekistan. An early indicator of success would be slowed growth of TB in prison populations, while overall reduction in national TB cases per year would be a long-term readout. Surveys of TB patients can indicate not only doctor compliance to established protocols, but also patient knowledge of their condition and treatment options.
References


