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Tuberculosis in South Africa: A Public Health Concern

Background

Tuberculosis

Tuberculosis (TB) is an infectious bacterial disease caused by mycobacterium tuberculosis (M. tuberculosis) that primarily affects the lungs. It is a public health concern because it is a communicable airborne disease. If a person with active TB coughs, sneezes, speaks, sings, or laughs, they can release infectious particles into the air. A person who breathes the same air as a person with active TB for a prolonged period of time (for instance, several hours) is at risk of contracting the disease. There are three possible outcomes following inhalation of droplets containing M. tuberculosis. The individual may immediately clear the organism, may have immediate onset of active disease, or may develop a latent infection. People with latent TB are not contagious, but they may develop "reactivation disease" at a later date, in which latent TB converts to active disease. Patients with latent TB have a 5-10% lifetime risk of developing reactivation disease. Roughly one-third of the world's population has latent TB. Both active and latent TB can be treated and cured with prolonged courses of medications. Active TB is treated with a four-medication regimen that must be taken daily for 6 months. Failure to take these medications appropriately can result in multi-drug resistant TB (MDR-TB). MDR-TB is resistant to current first-line therapies (rifampin and isoniazid). MDR-TB is curable with second line therapies, but these therapies are expensive and must be administered for 2 years to be effective, making MDR-TB difficult to treat in resource poor areas. Although it is both curable and preventable, TB remains one of the top 10 leading causes of death worldwide; in 2015 10.4 million people fell ill with TB and 1.8 million died from the disease. Without proper treatment just under 50% of HIV-negative people with TB die from the disease.

Tuberculosis and HIV

The risk of developing active or reactivation TB is much higher in immunosuppressed patients, particularly patients with HIV/AIDS. In fact, the WHO notes that people with HIV are 20-30 times more likely to develop active TB than the general population, and that HIV is the strongest risk factor for developing TB disease. This is particularly unfortunate because TB and HIV exacerbate each other: HIV infection is a major risk factor for accelerated progression of TB following exposure, and TB is associated with an increased risk of progression from HIV to AIDS and acceleration of HIV diseases. Additionally, the risk of extrapulmonary and disseminated TB is greater in HIV patients with advanced immunosuppression. In 2015 roughly 35% of deaths among HIV-positive patients worldwide were due to TB, and without proper treatment nearly 100% of HIV-positive people with TB will die from it.

Tuberculosis in South Africa

Facts and Figures

- South African TB incidence 834 per 100K population in 2015
- 2 in 3 South African TB patients also have HIV
- Treatment success rate (2013): 78%
- Mortality (excluding HIV+TB) in 2015: 25,000 people
- Mortality HIV+TB in 2015: 73,000 people, 133 per 100K population
- South Africa contributes 15% of global burden of MDR-TB

- Contributes 73% of burden of MDR-TB in African Region

Overview of South African Health System
South Africa is a middle-income nation that faces significant public health challenges; over 7 million South Africans are living with HIV, and the incidence of tuberculosis is among the highest in the world. South Africa has historically had difficulty addressing these issues in part because it has both public and private health systems. South Africa spends more on voluntary private health insurance (42%) than any other country in the world, despite private health insurance serving only 16% of the population. Over half of the nation's doctors and almost all subspecialists, are employed at private facilities. The public sector, meanwhile, has been struggling to provide quality health care over the last 25 years, due in part to a shortage of human resources and the heavy burden the HIV epidemic placed on the existing infrastructure. In recent decades those who have relied on the public sector (a group consisting of the vast majority of the South African population) have received inferior care, with limited access to life-saving medications and treatments. Indeed, antriretroviral drugs were not available in the public sector until 2003, an alarming fact when one considers that South Africa leads the world in the number of people living with HIV. In response to the significant disparities between the public and private sectors, the South African government created National Health Insurance, or NHI, a health financing system through which it aims to provide universal coverage to health services for all South Africans. The system was rolled out in 2012 and will be implemented in phases over the course of 14 years. It is hoped that this system will not only provide more equitable care to all South Africans, but that it will also allow South Africa to more effectively address public health concerns such as HIV/AIDS and TB by improving access to treatment. There is still much ground to cover from a public health perspective.

Combatting Tuberculosis in South Africa
Over the last five to ten years the South African government, in conjunction with healthcare workers, has implemented a massive scale-up of treatment and care for the "twin epidemics" of HIV/AIDS and TB. These efforts began in the mid-2000s, before the implementation of NHI, in the form of national plans. In 2005 the South African Minister of Health declared TB to be a national crisis, and a "Tuberculosis Treatment Plan for South Africa, 2007-2011" was implemented in parallel with the "HIV & AIDS and STI Strategic Plan for South Africa 2007-2011." In 2011 the South African National Aids Council (SANAC) announced a "National Strategic Plan in HIV, STIs, and TB 2012-2016" to build off the 2007-2011 plans. The 2007-2011 TB plan included, among other things, strengthening the implementation of the DOTS (directly observed treatment system), strengthening the health system, strengthening infection control, and addressing TB and HIV coinfection. Strategies for addressing TB and HIV coinfection included increasing HIV testing uptake by patients with TB, ensuring early diagnosis of HIV in TB patients, routine screening for TB in HIV patients, provision of ART and prophylaxis against AIDS-defining illnesses to all co-infected TB patients, routine CD4 testing for co-infected TB patients, and developing a best practice model for integrating TB and HIV care. Different communities experimented with assorted ways of addressing this final point. For instance, in 2009 the South African National Department of Health partnered with local health care providers in Cape Town to create a TB/HIV/ART program with the same clinical and administrative staff so that patients co-infected with HIV and TB would only need to have one clinic visit with a clinician trained in the management of both diseases. This led to improved HIV testing of TB patients and reduced delays in accessing ART for TB patients and TB treatment for HIV patients.

The National Strategic Plan for 2012-2016 builds off the successes of the 2007-2011 plan while continuing to look forward. It has the following broad goals:

- To reduce new HIV infections by, at least, half (50%) using a combination of available and new prevention methods.
- To ensure that 80% of all people who need antiretroviral treatment (ART) actually do get it, ensure that 70% of these people do recover and remain alive and on treatment five years after initiation of ART.
- To reduce the number of new TB infections and deaths caused by TB by half (50%).
- To ensure an enabling and accessible legal framework that protects and promotes human rights in order to support the implementation of the NSP.
- To reduce self-reported stigma related to HIV and TB by 50%.

The strategic objectives by which these goals will be attained include addressing social and structural drivers of disease, preventing new infections, sustaining health and wellness, and ensuring the human rights of those infected. Preventing TB infection and disease in particular will be accomplished through intensified TB case finding, TB infection control, workplace/occupational health policies on TB and HIV, isoniazid preventive therapy (IPT), immunization, prevention of MDR-TB, and reducing TB-related stigma. The official endorsement of IPT, which was absent from the 2007-2011 plan, reflects adoption of 2011 WHO guidelines recommending that HIV patients who are unlikely to have active TB receive at least 6 months of IPT as part of a comprehensive package of HIV care. IPT lessens the chance that the person taking it will develop active TB, and it has been shown that the effects of IPT augment the effects of ART on reducing the incidence of TB. In places with limited resources (such as some parts of South Africa), tuberculin skin testing is used to identify those patients who would benefit most from IPT.

The South African government has earmarked a significant amount of national funds for combatting HIV and TB, and in fact has financed the largest ART program in the world largely from its own domestic resources (to the tune of 1.5 billion annually). However, the nation does receive some help from international partners. For instance, in 2017 the US President's Emergency Plan For AIDS Relief (PEPFAR) will work with the South African government to increase ART coverage to 90% among coinfected TB patients and to ensure HIV testing of all TB suspects, among other interventions. The South African government also receives funds from USAID, the Global Fund, and private donors.

Conclusion

Control of the TB epidemic in South Africa can be accomplished only by simultaneously working toward the eradication of HIV. Eliminating HIV, in turn, can only take place if South Africa continues to work on dismantling social and structural barriers to HIV prevention, such as sex work, stigma, and food insecurity. The nation has adopted the UNAIDS 90-90-90 target, which states that by 2020 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy, and 90% of all people receiving antiretroviral therapy will have viral suppression. They may well find that their TB rate decreases as they work toward this goal. Furthermore, South Africa is pursuing a TB 90-90-90 target in addition to the HIV 90-90-90 target. This target aims for 90% of vulnerable groups screened, 90% diagnosed and started on treatment, and 90% treatment success. As NHI continues to roll out it will hopefully prove a boon toward the nation reaching both 90-90-90 targets. The National Strategic Plan on HIV, STIs, & TB 2017-2022 will be released on March 23, 2017.

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