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Tuberculosis and HIV Co-infection

Background

Tuberculosis, more commonly known as TB, is a bacterial infection that usually affects the lungs but can affect any part of the body except hair, teeth and nails. Much like HIV, there is no 100% effective vaccine to protect against TB – the BCG vaccine is given to infants and can protect an individual from TB for a limited period of time. However, if administered to a child who is HIV positive, BCG can actually be fatal. TB is completely curable and treatment is a fraction of the cost of medications used to treat HIV. When a person is infected with HIV, they are at an increased risk of also contracting TB. Co-infection with TB can also mean an accelerated progression to AIDS.

TB can be latent (inactive) or active. One-third of all people living with HIV have dormant or latent TB. While many will simply live with dormant TB and not know it, for those whose immune systems are compromised (be it through general poor health or through another infection, like HIV), active TB can develop and, without treatment, will most certainly be fatal. An HIV-negative person with a latent TB infection has a 10% chance of progressing to active TB over his or her entire lifetime, whereas an HIV-positive person is 21-34 times more likely to develop active TB.¹

It is estimated that in 2014 at least one third of all people living with HIV are co-infected with both TB and HIV (over 11 million people). Around 79% of all

co-infected patients live in sub-Saharan Africa.² TB is the leading cause of death of people living with HIV, and is responsible for one quarter of all HIV-related deaths.³

Tuberculosis and HIV together are responsible for the deaths of over 4 million people annually. TB is one of the most common infections that threaten people living with HIV in the developing world. Of the 1.3 million deaths from TB in 2012, 320,000 were people co-infected with HIV or AIDS.⁴

An effective cure for tuberculosis has existed for over 40 years. With this cure and the political commitment to eradicate this disease in developed countries, TB has been eliminated as a significant public health concern. However, in developing countries, a lack of consistent action and the high prevalence rates of HIV infection mean that TB is, once again, a matter for international concern - and one that threatens to roll-back the gains made in improving the lives of people living with HIV and AIDS (PLWHA).

Most leading international bodies, such as the World Health Organization (WHO) and the United Nations Joint Programme on AIDS (UNAIDS), agree on the importance of a collaborative approach to dealing with TB-HIV co-infection, including testing and treatment.

Much is being done to address HIV and TB co-infection, though we are still far from reaching global targets. The WHO released a set of guidelines for integrating TB and

HIV activities, the results of which are starting to have great effect; in 2012, 46% of TB patients knew their HIV status, up from 40% the previous year.⁵ However, the rate of HIV patients being tested for TB is unknown, as the numbers are not as readily available. This potentially low rate of screening is problematic, given that TB is the leading cause of death for people living with HIV. It becomes even more problematic with the global rise in multi-drug resistant tuberculosis (MDR-TB) and extensively drug-resistant TB (XDR-TB). Resistant to the most potent TB drugs, treatment options are reduced to those that are less effective, have more side effects, require longer times on treatment, and are more expensive. Political and resource commitments are needed to make the necessary diagnostic facilities accessible.

Testing for TB

Testing for TB among people living with HIV is not without difficulty. People living with HIV are more susceptible to contracting TB outside of the lungs (extra-pulmonary). The most widely used diagnostics, however, only look for pulmonary TB. It is therefore difficult for people with extra-pulmonary TB to get a correct diagnosis within a relatively short period of time. Increasing the number of PLWHA being tested for all forms of TB is the first critical step to addressing TB-HIV co-infection. Similarly, it is also essential that TB patients have easy access to HIV testing and counselling.

A revolutionary tool was recently introduced to the market that can not only test for extra-pulmonary TB, but also drug-resistant forms of the disease. GeneXpert is currently being used across the globe, though it does have some limitations in its high cost and the fact that it relies on electricity to function. Given these limitations, significant challenges are often encountered at point-of-care, particularly in the developing world where TB infection rates are the most staggering. In such settings, the necessary infrastructure can be unreliable and health care professionals proficient in the use of GeneXpert can be scarce.

TB Treatment for People Living with HIV

Treatment for TB is also a struggle. Unlike most drugs used in the treatment of HIV, the newest TB drug is over 40 years old. The standard treatment regimen for the simplest form of TB requires a minimum of 6 months of daily intake of multiple drugs. For drug-resistant TB,

the treatment period is up to 2 years and can consist of up to 14,600 pills, in addition to injections. Complex treatment regimens such as those required for drug-resistant TB can have profound impacts on the daily lives of patients, including an increased financial burden on the individual due to loss of income experienced while at appointments and/or increased expenses resulting from travel to and from treatment centres.

Despite these difficulties, organizations like UNAIDS and the WHO recommend providing appropriate TB therapy for all HIV positive people who test for either the latent or active forms of the disease. The WHO has issued guidelines on TB treatment for people living with HIV in resource poor health and community health settings. For TB patients who then test positive for HIV, antiretroviral therapy and/or other appropriate treatment is also recommended.

From diagnosis to treatment: The cost of TB-HIV treatment

The cost of both TB and HIV treatments in developing countries has decreased significantly during the last decade. The full cost of the drug regimen to cure TB is now about \$20 USD.⁶ In the mid to late 1990s, antiretrovirals cost a staggering \$10,000 - \$15,000 USD per person per year. The most commonly used first-line combination of antiretroviral drugs now costs \$88 USD per person per year. Therefore, in many cases, we can cure a co-infected person of their TB and make sure that they are getting life-saving ARVs for just over \$100 per year.

The treatment challenges for TB-HIV co-infection relate primarily to the rising cost of drugs along with the danger of developing drug resistance. The most common cause of drug resistance is treatment interruption, but drug-resistant strains of TB can also be passed on to others. The most common cause of treatment interruption is a decision by the person to stop taking the drugs. TB patients start to feel better long before their six-month drug course is finished.

Implementing preventative TB therapy for people living with HIV is believed to be more cost-effective than limiting treatment to existing cases. Preventative therapy for people living with HIV involves treating latent TB with the \$20 USD TB drug regimen. This is a cornerstone of the WHO's recommended guidelines for collaborative TB-HIV policies.

Avoiding drug resistance by ensuring uninterrupted supplies of treatments and appropriate care to ensure compliance, providing preventative treatment where possible and developing and ensuring affordable access to new treatments are key to keeping the cost of TB-HIV co-infection treatment down.

Barriers to Addressing Co-infection

Major barriers to addressing the TB-HIV co-epidemic include:

- **Lack of resources:** Donor countries and multilateral institutions have not dedicated sufficient resources to addressing TB-HIV co-infection.
- **Inconsistent policies:** TB-HIV policies vary considerably – The WHO and Global Fund to Fight AIDS, TB, and Malaria have set ambitious standards, but pick-up of these standards across the health sector remains to be seen.
- **Inadequate programming:** This is particularly evident in a number of high prevalence countries where donor countries and multilateral institutions have failed to implement adequate programming to address TB-HIV co-infection.

Global Fund to Fight AIDS, TB and Malaria

The Global Fund is an obvious place to showcase collaborative programming efforts. In 2013, the Global Fund announced that *“going forward, any country with high rates of TB and HIV co-infection that applies for funding treatment programs will have to design its programs in a single unified application for joint TB and HIV programs, rather than submit separate proposals for each disease.”* This is a very promising and exciting step forward and encourages the consistent use of internationally recognized policies through the practical implementation of WHO TB-HIV guidelines in countries around the world. These guidelines were introduced in 2012, with support from the Global Fund in the revision of HIV and TB service integration.

Conclusion

The simple fact that TB is a leading cause of death in people living with HIV makes addressing TB-HIV co-infection critical in any strategy that aims to reach those most in need.

While TB rates are relatively stable around the world, they are on the rise in sub-Saharan Africa, regions in Eastern Europe and Asia. TB is a preventable and curable disease. Millions of dollars invested in addressing HIV are wasted if patients put on antiretroviral therapies die because they cannot access TB drug regimens that cost as little as \$20 USD per person. Progress towards universal access to prevention, treatment and care for people living with HIV will not be met if they are dying from TB.

Collaborative approaches to TB-HIV co-infection could, quite simply reduce long-term health care costs and most importantly, ensure that more lives are saved.

References

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