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TUBERCULOSIS – A PHARMACIST’S THOUGHTS

Throughout various parts of the world, Tuberculosis [TB] is often incorrectly referred to as a neglected tropical disease (NTD). Though the majority of individuals contracting this disease happen to inhabit tropical countries, it certainly can appear in non-tropical areas as witnessed in the 90s in New York, United States, and that is being currently experienced by the Russian’s prison system. Around the world death by Tuberculosis eclipses mortality due to diseases such as HIV and Malaria combined. Although the vector – humans – and treatment for non-resistant forms – RIPE (rifampin, isoniazid, pyrazinamide, and ethambutol) therapy - has been well established for decades, the health community still struggles to eliminate this elusive disease. Common explanations for this continuous public health concern range from blaming the patient’s adherence to the elusiveness of the disease. While my pharmacy training in USA exposed me to limited information on TB, direct personal experiences in India and the Kingdom of Cambodia have enabled me to recognize the following challenges and barriers that health care professionals may encounter.

The Kingdom of Cambodia, located in the tropical South East Asia region, has been identified as one of the top 30 countries burdened with TB.¹ In 2016, The World Health Organization (WHO) estimated that

there were 345 diagnosed cases per 100,000 individuals putting them as having one of the highest rates in the world. However, from 2000 to 2015, the incidence of all forms of TB decreased by 34% - a promising sign as a result of the implementation of DOT protocol into health centers (nationwide implementation in 2004).² As 79% of Cambodians living rurally, it is possible that up to 1/3rd of cases have been undiagnosed which would affect the overall effectiveness of the nation’s TB program. Since the country has improved TB outcomes over the years, international funding has declined resulting 52% of the nation’s 37 million TB program to remain unfunded in 2016.³ Furthermore, there has been a rise in the incidence of Multi-Drug Resistant Tuberculosis (MDR-TB) with approximately 550 cases being recognized in 2016. Although significant progress has been made in the Kingdom of Cambodia towards eliminating TB, the combination of deficient funding, high rural population, and rise of MDR-TB could reverse this trend and rekindle the TB epidemic.

Just a few countries to the west of Cambodia, India is fraught with the largest number of TB cases across its borders. Just in 2016, the Indian government notified WHO that there were 2.7 million diagnosed individuals, including MDR-TB.⁴ As with Cambodia, the rate of TB cases causing mortality has been steadily falling since 2000 along with the overall incidence. When examining the countries TB program and its funding, the entirety of India's 2017 TB program has been funded due to the national budget being increased significantly to 525 million dollars in 2017.

Regardless of this renewed emphasis on its TB program, there are estimates that state that 40% of the Indian population carry the bacteria – this includes both latent and active forms.⁴ The Revised National Tuberculosis Control Programme (RNTCP) in India needs to continue to overcome the obstacles of such a large percentage having latent and active TB, an



increase in MDR-TB, a significant delay in diagnosis, and the possibility of the air quality spreading TB in order to contain and then terminate this elusive disease.

As a pharmacist, patient's adherence to any medication is vital for the effectiveness of that medication. For tuberculosis treatment, the necessity of adhering to the regime becomes more critical due to the rising prevalence of MDR-TB and Isoniazid Resistant Tuberculosis (IR-TB). When determining the factors for a patient's lack of adherence to the TB regime, the initial fault is thought to be the patient's motivation, length of therapy, or their culture influencing their adherence. However, health care providers habitually fail to look past these thoughts to identify the root causes of adherence issues. Although everything that encompasses one's culture looks quite unique upon comparing cultures across Cambodia, India and United States of America, the vast majority of patients will adhere to medications that will improve their health. Working in a rural health clinic in the countryside of Cambodia, patients constantly surprise the staff about how timely they are in picking up their medications despite the treatment duration and their limited exposure to education about the disease. The same can be said when looking at urban slums in the metropolitan city of Bangalore, India. Therefore, the issues of adherence need to be examined further – and addressed in a patient-centered technique. Although these issues are non-encompassing, research has identified the following factors that may contribute to failed treatment regimens: lack of transportation and funds to visit health centers or DOT centers, the unavailability of TB medications, loss of income due to frequent visits to obtain medications, counterfeit medications, lack of general resources, and among others.

In order to effectively treat TB, other

diseases/ailments must be ruled out in an efficient and accurate manner. Recently, a novel diagnosis device called Xpert MTB/RIF has been deemed superior to current methods for Tuberculosis testing. The rapid test allows health care workers to provide effective care to prevent further problems and resolve the disease quickly. However – the lack of this gold standard diagnostic test typically means that the health center professionals are continuing to use an older technique with a limited sensitivity for TB. This occurs in both urban and rural areas of this world; for example, the DOT centers in urban Bangalore, India and the health centers in rural Cambodia both utilize the sputum smear microscopy technique that has been in use for decades. Across the medical community, the general impression is that health care workers in under resourced settings with a high incidence of TB are unable to correctly diagnose TB due to lack of knowledge, training, or motivation. Based on my personal experience I can state that is not true, and the international community needs to reconsider ways for these communities to have access to this new technology. The inequalities in biotechnology that persists across the world needs to be addressed if the aim is to “END” TB as stated by the World Organization's latest approach to addressing Tuberculosis.

The resources and funding behind ending the global Tuberculosis outbreak has increased in the recent time – with examples including WHO's emphasis on ending TB by 2030, further research into an effective vaccine to prevent pulmonary tuberculosis, and methods to control latent tuberculosis like utilizing prophylactic low dose isoniazid therapy. However, the global health care community must not forget the humanity that draws each of us to assist in healing others – we must accompany, share their fate for some time, both those afflicted by the disease and those colleagues battling the disease who are



overwhelmed by health inequalities. The health care professionals I've observed both in India and Cambodia strive for the best quality care they can provide despite the limitations, and the health community needs to support them to end this treatable yet burdensome disease.

References

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