



Tuberculosis Control Unit: Reflections and Lessons Learnt

Text by Dr Joel Tan Jingxin

World Tuberculosis (TB) day falls on 24 March every year, on the anniversary of the discovery of *Mycobacterium tuberculosis* by Robert Koch as the causative pathogen of tuberculosis. In Singapore, the incidence of TB has fallen drastically with the advent of improved sanitation, medical services and reduced overcrowding since the 1960s. However, since the late 1990s, it has plateaued at approximately 40 cases per 100,000 population. To address this, the Singapore Tuberculosis Elimination Programme (STEP) was launched in 1997. Its main aims include the early detection and effective treatment of active TB cases, as well as identification and screening of contacts. Housed in a quaint heritage building along Moulmein Road, the TB control unit (TBCU) is an integral part of this effort, serving as the national referral centre and handling all contact investigations for TB cases.

My wife and I had applied for a posting at TBCU because we wanted to experience something different

from the routine of ward work and overnight calls that had been the norm in our careers. Fortunately, our request was granted and we had the chance to work in TBCU for 15 months. Our time there gave us opportunities to participate in inpatient and outpatient care of TB patients, as well as gain exposure to aspects of microbiology, public health and epidemiology. In this article, I hope to share my experiences working at TBCU along with some key reflections.

Functions of the TBCU

The two main clinics at TBCU are the Diagnostic Clinic and the Contact Clinic. In the Diagnostic Clinic, we evaluate suspected TB cases, start newly diagnosed TB patients on treatment and follow up with them until completion. Diagnostic evaluation usually involves detailed history-taking, physical examination, chest X-rays and sputum tests. One of the key advances in recent years is the availability of an in-house TB polymerase chain reaction assay, which enables rapid diagnosis of TB and detection of Rifampicin

resistance within hours. These are essential for the initiation of appropriate treatment in a timely manner. Patients undergoing treatment are regularly reviewed and treatment responses are monitored using subsequent sputum tests and chest X-rays. We also manage comorbidities that can affect treatment response (eg, diabetes), as well as side effects of treatment (eg, cutaneous reactions and drug-induced hepatitis).

The other main aspect of our work is in the Contact Clinic, where we evaluate contacts of diagnosed TB cases who have been identified through a rigorous tracing process. These contacts undergo an interferon-gamma release assay (IGRA) blood test or Mantoux test (if they are under two years old). If a positive result is detected, clinical examination and a chest X-ray are performed to exclude active TB. If these are unremarkable, a diagnosis of latent TB infection is made and the patient is usually commenced on a four- to six-month course of preventive treatment with an anti-TB drug (usually Rifampicin or Isoniazid).

Treatment of active TB comprises an intensive phase of daily medications for two months, followed by a continuation phase lasting four to seven months where medications can be taken three times a week for greater convenience to patients. The majority of TB patients in Singapore are treated under directly observed therapy (DOT). TB medications are fully subsidised by the Government for all patients on DOT. It is available at TBCU and all polyclinics, where specially trained nurses observe the consumption of medications and assess patients for side effects or other issues that may affect compliance. DOT is a cornerstone of effective TB treatment and has been shown to decrease the chances of treatment failure, relapse and the development of drug-resistance resulting from non-compliance.

Lessons learnt at TBCU

Most of the patients I encountered were appreciative of the care they received at TBCU and compliant to DOT. However, some like Mr M (a 53-year-old delivery driver with strongly smear positive pulmonary TB) were angry at the inconvenience of having to attend DOT daily. Addressing his frustrations, I educated him on the nature and transmissibility of TB, emphasising the importance of DOT for his recovery, so that he can continue to protect his family from TB and continue working to earn a living. I also referred him to our social worker for enrolment in the DOT-and-Shop programme, which rewards him with grocery vouchers for continued compliance to DOT.

A key learning point was that cases of TB are often asymptomatic or have minimal symptoms. Often, these patients are referred due to abnormal chest X-ray screenings for work permit or vocational driving license applications. Some patients, like Ms L (a 24-year-old preschool teacher) reported low-grade symptoms for years,

presenting to multiple doctors and receiving courses of antibiotics with no significant improvement before finally being diagnosed with TB. In her case, she could have exposed dozens of vulnerable children before being diagnosed. It is critical for all doctors to have a high index of suspicion for TB, particularly in patients who are immunocompromised, live in communal settings, work in occupations with higher risk of exposure to TB or interaction with vulnerable contacts, or hail from countries with high TB incidence rates. Early referral of suspect cases for evaluation will improve rates of detection and successful treatment, and prevent community spread.

Reflecting on my TBCU experience

The usual response I received from peers when I told them that I was working at TBCU would be: "Aren't you worried that you might get infected?" During the second half of our posting, we found out that my wife was pregnant, which led to even greater concern from family and friends. These fears stem from the assumption that all TB patients are highly infectious. In reality, airborne precautions are only required when seeing suspect or newly diagnosed cases of pulmonary TB. Once patients begin treatment, their infectiousness declines rapidly and only standard precautions are needed when they return for a follow-up after two weeks (we only started wearing surgical masks due to COVID-19 precautions). TBCU staff also have annual IGRA blood testing as an additional safeguard.

During our time at TBCU, we never worried about getting TB because we adopted appropriate precautions and were confident that the patients were receiving effective treatment through DOT. In this regard, working at TBCU was probably safer than in other

settings like emergency medicine, where patients with undiagnosed TB might require urgent procedures with risk of exposing healthcare workers to aerosolised secretions.

Our experiences at TBCU have taught us much about TB and its public health implications. Even as we have moved on to postings in primary care, the lessons and skills learnt continue to serve us well.

With so much attention and resources rightly diverted to fighting the spread of COVID-19, I hope that I have provided a useful insight into the often overlooked public health threat of TB in Singapore and the work that goes on at TBCU to safeguard Singapore from TB. It is my hope that all medical practitioners rally behind and share the mission of STEP and TBCU through early detection, effective treatment and early contact tracing. ♦

Dr Tan and his wife were posted to TBCU from July 2019 to October 2020. They are currently serving as medical officers at polyclinics and pursuing Graduate Diplomas in Family Medicine.

