Global commitments to prevent and control noncommunicable diseases and to end the global tuberculosis epidemic

In 2011, the United Nations General Assembly issued a Political Declaration on the Prevention and Control of Non-communicable Diseases, agreed to by all Member States. To act upon this declaration, the World Health Assembly endorsed the Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020. Further, in September 2015, the world adopted the Sustainable Development Goals, which contain ambitious targets related to noncommunicable diseases (NCDs), including, by 2030, to reduce by one third premature mortality from NCDs through prevention and treatment and, in the same period, to end the epidemic of tuberculosis (TB).

The Global Action Plan on NCDs recognizes the strong interaction between NCDs and infectious diseases, including TB, and the resultant need to explore opportunities to maximize the detection and treatment of co-morbidities using common platforms and approaches. This interaction and the need for integrated, patient-centred care, support and prevention are also key components of the WHO End TB Strategy, endorsed by all WHO Member States in 2014. Both the Global Action Plan on NCDs and the End TB Strategy recognize the key role of universal health coverage, social protection, poverty alleviation and other factors, including broader social determinants, in determining disease incidence and outcomes.

The 2015 Bali Declaration, signed at the Bali Summit on TB and Diabetes, November 2015, was another important political milestone demonstrating the importance of integration. The declaration represents commitment from leaders of government, nongovernmental organizations, research institutions, media and advocacy groups, affected groups and industry to jointly address the growing and linked epidemics of TB and diabetes.

The case for integration of TB and NCD programmes and services

Each year, 38 million people die from NCDs, primarily from diabetes, cardiovascular diseases, cancers, and chronic respiratory diseases. Over 75% of these deaths are in low- and middle-income countries, and many countries with the highest burden of TB also face growing epidemics of NCDs (WHO, 2015).

The double burden manifests itself through susceptibility of those with NCDs to TB and through the negative impact of NCDs on treatment outcomes for TB. Further, poor and vulnerable populations are the ones most affected by TB. There is a strong association of
poverty with major NCD and TB risk factors, such as poor diet, smoking and alcohol abuse, leading to an inequitable impact and a double burden of disease (Blas, 2010).

Addressing these issues requires integrated and coordinated health services, coordinated planning and preventive frameworks, and integrated funding streams.

**Diabetes.** One third of the world’s population is latently infected with TB, and diabetes increases the risk of conversion to active TB by a factor of 2 to 3 (Jeon, 2008). Conversely, TB may trigger the onset of diabetes and worsen glycaemic control for those with pre-existing diabetes (WHO, 2011). Diabetes has also been associated with a negative impact on TB treatment outcomes, including a risk of treatment failure up to 4 times higher and a significant increase in the risk of death for patients co-infected with diabetes and TB (Baker, 2011). Diabetes may also interfere with several anti-TB medications (Nijiland, 2006).

**Cardiovascular diseases.** There is an increased risk of cardiovascular diseases in patients with a history of TB, and recent studies suggest an association between latent TB and chronic inflammation that may lead to cardiovascular diseases (Huaman, 2015).

**Cancers.** Due to immunosuppression or intensive treatment, cancer patients are vulnerable to the development or reactivation of active TB. Conversely, TB has been associated with an increased risk of lung cancer, inflammation and scarring. A high prevalence of TB has been noted in people with Hodgkin’s disease and lung cancer (Harikrishna, 2012).

**Chronic respiratory diseases.** Strong associations exist between TB and chronic respiratory diseases in TB-endemic areas. These diseases share risk factors such as tobacco use and environmental exposure to silica dust, cigarette smoke and indoor air pollution. For example, more than 20% of TB incidence can be linked to smoking, a risk factor that also increases risk of death from TB (WHO, 2015). TB itself may lead to chronic respiratory diseases, and the sequelae of TB may contribute to risk of chronic obstructive pulmonary disease (Byrne, 2015).

**Opportunities for synergistic action (programme commonalities and opportunities for action)**

**Integrated management.** Both TB and most NCDs are preventable and share many risk factors that need to be addressed for effective prevention, such as smoking, poor diet and harmful use of alcohol. As mentioned above, they are also both impacted by common underlying social determinants, such as issues related to financial and social protection, which are particularly important for chronic conditions. Both require long-term, well organized, people-centred disease management in order to achieve favourable outcomes, and most cases require a comprehensive primary care focus. Within the primary health care setting, there is potential for combined health communication and community engagement strategies, coordinated opportunities for training of health workers, provision of coordinated or
combined care, and strengthening of referral mechanisms, linking to the broader health system approach.

**Diagnostic services.** In a number of areas there is potential for reciprocal screening. For example, based on the intersecting epidemics of TB and diabetes in countries with a high burden of TB, the WHO and International Union Against Tuberculosis and Lung Disease Collaborative Framework for Care and Control of Tuberculosis and Diabetes recommends screening for diabetes among TB patients, as well as screening for TB among diabetes patients in highly TB-endemic settings. The goal is earlier diagnoses, and thus better treatment outcomes and control of both diseases. Further, people suffering from TB and diabetes co-morbidity could be linked to ongoing care for diabetes after TB treatment completion.

With regard to cancer, in some cases there is also potential for considering reciprocal diagnostic efforts. This is important as clinical diagnosis and confirmatory diagnosis of co-morbidity can be challenging and requires a synergistic approach to avoid delays in diagnosis and timely start to appropriate treatment.

**Access to medicines.** With regard to the need to increase access to safe, effective, affordable and quality-assured essential NCD medicines and health technologies, the establishment of the Global Drug Facility for TB using pooled procurement for TB drugs and diagnostics has contributed to an impressive scale-up of TB treatment in the last 15 years in low- and middle-income countries. Access to essential medicines for NCDs, including insulin for diabetes and inhalers (bronchodilators and inhaled corticosteroids) for asthma and chronic obstructive pulmonary disease, is currently low and prevents the implementation of effective NCD programmes. The Global Drug Facility could, therefore, serve as a good model for an efficient procurement service for NCD medicines.

**National plans and resources.** Other examples of programme integration opportunities include linking smokers with TB to smoking cessation programmes, and TB patients with chronic lung disease to ongoing respiratory care. The Practical Approach to Lung Health (PAL) provides a framework for integrated diagnosis and management of people presenting with respiratory symptoms to primary care providers. This approach has been piloted in Egypt, Indonesia and Nepal, among other countries (WHO, 2009). Additionally, information and communication technologies offer opportunities to create integrated programmes to address both TB and risk factors such as tobacco addition, which both require long-term strategies that can be facilitated by innovative use of technology (WHO, 2015).

**Risk factor control.** Considering other NCD risk factors, there is also potential to provide TB patients with screening for alcohol and substance abuse, as well as outreach and care programmes when appropriate (Bates, 2015). Undernutrition is a risk factor for and consequence of TB, and poor diet is also a risk factor for NCDs. A key principle of the care of TB patients is the necessity of an adequate diet with all essential macro- and micronutrients.
Nutritional assessment and counselling for TB patients should take into account potential co-morbidities such as diabetes, and can take advantage of the opportunity to address nutritional risk factors for NCDs (WHO, 2013).

**Follow-up and monitoring.** For both TB and NCDs, treatment adherence can pose a major challenge. Effective patient support models, patient-centred care, enabler packages and patient supervision have been shown to reduce morbidity and mortality from TB. Initial studies show that applying this approach to chronic disease programmes, such as diabetes and chronic respiratory diseases, could have similar effects and improve treatment outcomes, including for patients with co-morbidities (Kalra, 2014).

A united approach is indeed required to deliver on the promise to end TB. A convergence between infectious diseases and NCDs – on the basis of their increasingly shared risk factors – could enable a renaissance not only in TB research but also in the energy and consistency of TB prevention and treatment programmes (Lancet, 2016).

**Case study: Screening people with diabetes mellitus for TB in China**

China has experienced an escalating epidemic of diabetes mellitus, affecting as many as 11% of the urban population and 3% of rural people over the age of 15. Similarly, despite tremendous progress, they still have over 1 million new cases of TB each year. In 2011, a study was conducted to assess the feasibility and results of screening diabetes mellitus patients for TB within routine health care settings. A standardized procedure, monitoring tool and quarterly reporting system for screening diabetes mellitus patients for TB were agreed and implemented within routine health care settings. No additional or special budget was set aside for implementation. Although some challenges were identified, including pressure felt by doctors in relation to this additional duty, some underreporting of suspected TB cases, and TB patients lost to follow-up, the study demonstrated that TB case notification rates in screened diabetes mellitus patients were indeed higher than in the general population. The results show the feasibility of the approach and suggest that it could be cost-effective in countries with a high double burden of disease. Routine screening of TB patients for diabetes mellitus could also help reduce the large numbers of undiagnosed diabetes mellitus patients.

The School of Public Health at the Medical College of Qingdao University also worked to implement diabetes screening in two provinces in China, through training of health care providers working in TB in the detection and management of diabetes. These health care providers screened TB patients for diabetes and offered appropriate treatment and referrals, coordinating with local centres of disease control and health centres to ensure treatment compliance for both diseases, with the objectives of reducing risk of diabetes-related complications and of the development of multidrug-resistant TB. As a result of the project, 290 TB health care workers and 2000 village nurses were trained in the diagnosis and management of diabetes. They screened 11,523 TB patients and 10,525 non-TB patients,
identifying 552 co-infected patients and educating nearly 1 million people about the link between diabetes and TB.

For key resources and more information:

http://www.who.int/nmh/events/ncd-coordination-mechanism/en/