A world of cities and the end of TB

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The WHO’s End TB Strategy aims to reduce TB deaths by 95% and incidence by 90% between 2015 and 2035. As the world rapidly urbanizes, more people could have access to better infrastructure and services to help combat poverty and infectious diseases, including TB. And yet large numbers of people now live in overcrowded slums, with poor access to urban health services, amplifying the burden of TB. An alignment of the Sustainable Development Goals (SDGs) for health and for urban development provides an opportunity to accelerate the overall decline in infection and disease, and to create cities free of TB.

Keywords: Health inequality, Sustainable Development Goals, Tuberculosis, Urbanization

Forty-three million people with TB have been successfully treated by combination chemotherapy between 2000 and 2014. Globally, TB incidence has been falling by 1.65% annually over the past decade, barely satisfying the Millennium Development Goal (MDG) of reversing incidence rates by 2015.\textsuperscript{1} Looking to the future, WHO’s End TB Strategy envisions a world free of TB. This includes ambitious targets to reduce TB deaths by 95% and to cut new cases by 90% between 2015 and 2035.\textsuperscript{2}

In 2013, 9 million new cases of TB were reported and 1.5 million people died from the disease. TB ranks as a leading cause of death, alongside HIV.\textsuperscript{3} Every country continues to have a national TB program because every country still has TB. Achieving the End TB Strategy targets will require a mix of optimizing the effectiveness of current TB control programs and the development of more potent drugs, diagnostics and vaccines.\textsuperscript{2}

Although directly transmitted infections, such as TB, are more easily spread under crowded conditions, urbanization provides an opportunity to combat infectious diseases like TB. As the proportion of people living in urban areas is projected to increase from 50% in 2008 to 66% in 2050, more people will potentially have access to better infrastructure and services, including housing and medical care that help combat poverty and inequality.\textsuperscript{3} In China in 2010, for example, not only was the prevalence of bacteriologically positive TB in urban areas (73 per 100 000) less than half that of rural areas (163 per 100 000), the rate of decrease in prevalence between 2000 and 2010 was nearly twice as fast.\textsuperscript{4}

Despite the advantages that urban areas could provide for better public health, evidence suggests that the impact of urban living on the risks of TB infection is mixed. A comparative study of risk factors for TB in India and the Republic of Korea (Korea) found that the relative incidence of TB in urban areas in India was 1.69 (rural=1) and only 0.48 in Korea. While in Korea, the positive effects of urbanization slowed the increase in number of TB cases (6.1% between 1998 and 2008) relative to increase in population size (14%), the converse was true for India.\textsuperscript{5}

Why do urban areas have more TB than rural areas in some countries but not others? There are broadly two reasons. First, a high proportion of urban residents in some low- and middle-income countries live in dismal conditions that favour transmission of many diseases, including TB. An extreme manifestation of such poor living conditions are slums, defined by overcrowding, lack of water and sanitation, lack of secure tenure, and poor quality of housing. Nearly a billion people live in slums today, and two billion are expected to do so by 2050.\textsuperscript{5} For example, in the Philippines in 2000, the annual risk of TB infection in slums was found to be 2.5 times that of the non-slam urban population.\textsuperscript{6}

In low-incidence countries of Europe, TB notification rates were 2.5 times higher, on average, in big cities compared to national rates. This was attributed to high-risk groups for TB being over-represented in big cities, including migrants from high-incidence countries, homeless people, and drug and alcohol users.\textsuperscript{7}

Second, there are high inequalities in access to health services and quality of care in some urban areas due to social exclusion and financial constraints.\textsuperscript{3} This can have serious implications for TB treatment. A comparative study of TB treatment outcomes revealed a high percentage of multidrug-resistant (MDR) TB in a Mumbai tertiary center (51%) compared to 2% in a rural center. Erratic and highly variable treatment prescribed by doctors in Mumbai’s private sector was considered to be a major reason
for the high rate of MDR-TB. Moreover, while public sector services in Mumbai were more likely to conform to international standards in TB treatment, access to the public healthcare delivery system is limited to people below the poverty line in urban areas in India. The lack of empathy of health workers in public services was another important reason for not utilizing them.

These studies highlight the pros and cons of urban living for TB control today. But they also suggest that careful urban planning has the potential to influence TB transmission by affecting the physical and social environments in which people live; for example, by improving housing quality to reduce indoor pollution, improve air ventilation and expand available living space. Urban planning can also shape the provision of health services, transport to facilitate access, schools for health education and TB-safe occupations. One evaluation of 25 small-scale community based urban projects on water, sanitation, healthcare services and infrastructure development in Bangladesh, Senegal, Thailand and Vietnam showed potential to reduce poverty and improve related health conditions. Urbanization offers the chance to offset the epidemiological risks of high-density living.

A vision for TB-free cities

In September 2015, the 193 Member States of the United Nations adopted 17 new social, economic and environmental goals, Sustainable Development Goals (SDGs), to be reached by 2030. The target of ending the TB epidemic by 2030 is embraced by the overall goal for health (SDG 3). SDG 11, which aims to make cities inclusive, safe, resilient and sustainable, with targets to improve air quality and provide safe housing, will support TB control measures. Aligning actions for the SDGs for health and cities, including a focus on moving towards universal health coverage, provides an opportunity to ensure that TB control benefits from an approach that puts factors linked to physiology, health systems and environment together in a comprehensive, unified view of risk.

In recent years, municipal authorities have actively joined, and often led, global development efforts on climate change, food policy and public health, including TB. The Zero TB Cities Project, formed in 2014, partners with municipalities and local governments to support communities move to ‘zero deaths’ and help reverse the overall TB epidemic. It is based on the expectation that local authorities will be more responsive to their populations than central governments. With strong leadership, greater autonomy, adequate resources and proximity to the people they serve, the populations of cities and their leaders have the potential to catalyze the end of TB.

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