

Global epidemic of diabetes threatens to jeopardise further progress in tuberculosis control

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The rapid increase in rates of type 2 diabetes* in low- and middle-income countries where tuberculosis (TB) is endemic could hamper global efforts to control and eliminate TB, according to a new three-part Series about TB and diabetes, published in *The Lancet Diabetes & Endocrinology*.

The Series indicates that 15% of adult TB cases worldwide are already attributable to [diabetes](#). These diabetes-associated cases correspond to over 1 million cases a year, with more than 40% occurring in India and China alone. If diabetes rates continue to rise out of control, the present downward trajectory in global TB cases could be offset by 8% (ie, 8% less reduction) or more by 2035, warn the authors.

Diabetes increases the risk of developing active TB, and is associated with a poorer TB prognosis. Conversely, TB infection worsens glucose control in patients with diabetes. Thus, as diabetes becomes more common in TB-endemic regions, health care systems will increasingly be faced with the challenge of this double disease burden.

Diabetes is making an increasingly important contribution to the TB epidemic [Paper 1]. A 52% increase in diabetes prevalence recorded over the last 3 years in the 22 highest TB burden countries is thought to be responsible for a rise in diabetes-associated TB cases from 10% in 2010 to 15% in 2013.

New estimates produced for the Series [Paper 1] reveal that the top 10 countries with the highest estimated number of adult TB cases associated with diabetes are India (302 000), China (156 000), South Africa (70 000), Indonesia (48 000), Pakistan (43 000), Bangladesh (36 000), Philippines (29 000), Russia (23 000), Burma (21 000), and the Democratic Republic of Congo (19 000) [see paper 1, table 2, page 4].

"These findings highlight the growing impact of diabetes on TB control in regions of the world where both diseases are prevalent", says Series author Dr Knut Lönnroth from the Global TB Programme at WHO in Geneva. "TB control is being undermined by the growing number of people with diabetes, which is expected to reach an astounding 592 million worldwide by 2035."

This double disease burden creates obstacles for the prevention and care of both diseases [Paper 2]. Dr Reinout van Crevel, Series co-author and infectious disease specialist at Radboud University Medical Center in the Netherlands, explains, "People with diabetes have a three times greater risk of contracting TB than people without diabetes, are four times more likely to relapse following treatment for TB, and are at twice the risk of dying during treatment than those without diabetes. These figures suggest we need to improve care for these patients at multiple levels."

Worryingly, the impact of diabetes on TB rates could worsen in future decades [Paper 3]. Over the next 20 years, the International Diabetes Federation (IDF) estimates that the number of people with diabetes will rise by 21%, which corresponds to an overall [diabetes prevalence](#) in adults of more than 10%. Mathematical modelling conducted for the Series [Paper 3] estimates that as a result of diabetes on this scale, global [tuberculosis](#) incidence would be 3% higher than the projected downward trend by 2035, or even 8% higher in a pessimistic scenario (a large 25% increase in the number of people with diabetes)—which might be the reality in regions where diabetes risk factors are increasing fastest [see

paper 3, page 7, figure 3, scenarios 1 and 3].

However, the authors also calculate the maximum positive effect of public health efforts to prevent and improve care for diabetes globally (eg, improved case identification, glucose control in patients with diabetes, and chemoprophylaxis in people with latent TB infection). Such efforts could further reduce tuberculosis cases by 15% or more by 2035 compared with the present rate of decline [see paper 3, page 7, figure 3, scenario 5].

According to Dr Lönnroth, "If we are to achieve the ambitious post-2015 global TB target to reduce TB incidence by 90% by 2035, increased efforts to diagnose and treat both TB and diabetes, especially in countries with a high burden of both diseases, will be crucial."

An Editorial accompanying the Series warns that, as papers from the Series clearly show, continued progress in reducing communicable diseases like TB cannot be made without adequate provision of resources to combat diabetes. According to the Editorial, this knowledge should be a wake-up call to the global community and local providers to invest further in the prevention and treatment of chronic diseases like obesity and diabetes, which continue to be relatively ignored when it comes to health care funding.

More information: *382 million people have diabetes worldwide, and the majority in high-income countries have type 2 (85% to 95%). This percentage may be even higher in low- and middle-income countries. It is the increase in prevalence of type 2 diabetes specifically that is worrying in terms of the global impact of the 'double burden' of diabetes and TB. Many studies in this area do not differentiate between type 1 and type 2. Both types have a negative impact on TB outcomes.

www.thelancet.com/series/tuberculosis-and-diabetes

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