

# Trends in tuberculosis in the UK

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The industrial revolution, starting in the 18th-century England and coupled with poverty, urbanisation and squalor, created an optimal environment for the propagation of TB.<sup>1</sup> One in four deaths were due to TB by the early 19th century.<sup>2</sup> Since then, the remarkable decline in the burden of TB at an average annual rate of 3.3% between 1913 and 1940, documented in one of the longest ever recorded time series of data on the burden of TB (figure 1), a notifiable disease in the UK since 1912, was only interrupted by the two world wars. During those years, the temporary peaks in both incidence and mortality were linked to impoverishment of the population and poorer nutrition. In the years following the Second World War, as in other Western European countries, the fall in TB burden significantly accelerated to an average annual decline of 10% between 1955 and 1960 following the advent of modern chemotherapy. This allowed a reduction in transmission and drastically improved the prognosis of the disease, with a case fatality ratio (approximated as the ratio of mortality over incidence) of about 50% in the prechemotherapy era dropping to less than 10% within a decade of the introduction of chemotherapy. A decline in the effective contact rate<sup>3</sup> and low TB rates have also been achieved in other settings that have in common a combination of near-universal access to high-quality TB diagnosis and treatment, social protection and general socioeconomic development with improved nutrition and living and working conditions.<sup>4,5</sup>

In the light of the mid-20th-century successes, it soon became a common belief that TB had been conquered and was a disease of the past. However, some 30 years later in the early 1990s, a resurgence of TB was recorded in many parts of the industrialised world,<sup>6,7</sup> attributed to a variety of factors including the dismantling of TB control programmes,<sup>8</sup> increased migration,<sup>9,10</sup> the spread of HIV,<sup>11</sup> an increase in drug-resistant TB,<sup>12</sup> increases of some non-communicable diseases that are risk factors

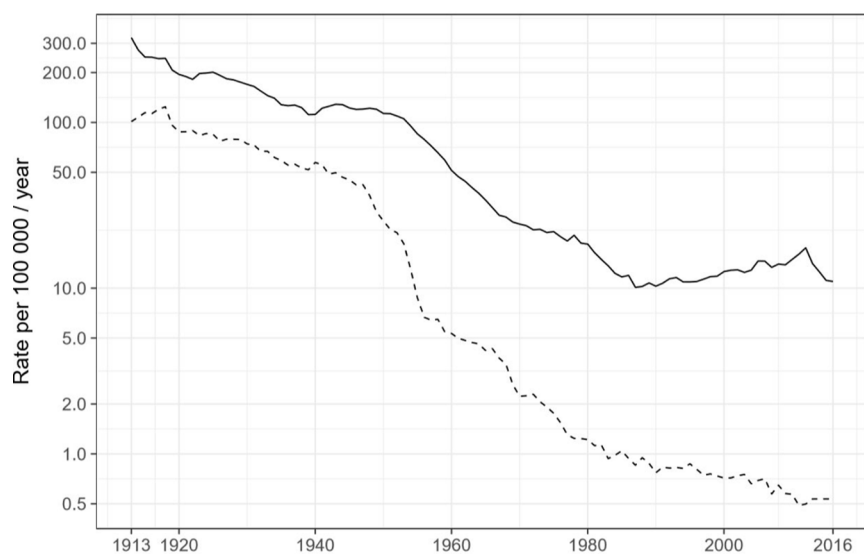
for TB, including type 2 diabetes associated with the global pandemic of obesity,<sup>13</sup> as well as economic crises and growing inequality in wealth and access to health.<sup>4,11</sup> As in most high-income countries, the epidemiology of TB in the UK progressively changed from one of sustained transmission in the general population to one dominated by reactivation of an infection acquired either long in the past or more recently in another country with a high level of TB transmission. There is currently very limited ongoing transmission in the UK, and three out of four cases detected arise in people infected abroad.<sup>14</sup> While TB may sometimes be transmitted within migrant communities, transmission from migrant groups into host country populations is normally limited or undocumented.<sup>9</sup>

After three consecutive decades of a relentless increase of the rate of incidence at an average of 1.9%/year between 1980 and 2012, TB resumed its secular decline in England in the past 5 years. However, the future trajectory of TB incidence is uncertain and maintenance of the current favourable trends will require strict adherence to the measures undertaken lately. Indeed, to achieve these results and eliminate TB as a public health problem in England, 10 key areas for action were prioritised in the Collaborative TB Strategy for England 2015–2020,<sup>15</sup> in line with the WHO

framework towards TB elimination that was developed for low-incidence countries.<sup>10</sup> The key areas included reducing TB among new migrants through testing for latent TB infection and its treatment; reducing diagnostic delay through awareness raising and improving accessibility of services; maintaining the quality of TB treatment and care services to ensure continued high treatment completion; and addressing the social factors associated with TB, including the specific needs of underserved populations.

In *Thorax*, Thomas *et al*<sup>16</sup> present an elegant epidemiological analysis of the reasons for the recent reversal of TB notifications, likely reflecting a real incidence decrease. They argue that a combination of four factors—the pre-entry screening programme targeting immigrants, a reduction in the number of new immigrants from high TB burden countries, improvements in TB control leading to a reduction in TB transmission and the early impact of testing and treating patients with diagnosed latent TB infection—explains this decline.

As a result of these factors, TB rates are decreasing in virtually all subpopulations and getting closer to elimination levels in the non-foreign-born population in the UK. This phenomenon is similar to that observed in other high-income countries.<sup>17</sup> In the globalised world of today with much lower barriers between countries and with easier and rapid travel opportunities, TB can be acquired anywhere and swiftly ‘exported’ worldwide. The prospect of further progress towards



**Figure 1** TB incidence (solid line) and mortality (dashed line) rates per 100 000 populations per year in England and Wales,<sup>20</sup> 1913–2016.

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elimination in low-incidence countries hinges therefore on the effectiveness of measures taken to treat, control and prevent TB anywhere in the world.<sup>18</sup> Commitments made in the Declaration from the WHO Global Ministerial Conference on Ending TB in the Sustainable Development Era that was held in Moscow, Russian Federation, in November 2017 and the upcoming UN General Assembly High-Level Meeting on TB in September 2018<sup>19</sup> provide greater hope that the multisectoral efforts required to put all countries on the path to ending the TB epidemic can be concretely pursued and galvanised. Complacency is in fact one of the greatest risks public health officials and all those engaged in anti-TB activities must face. The lower burden of TB in the UK may lead to lower visibility, a phenomenon already observed almost everywhere in the last decades of the 20th century when the success of treatment programmes made most believe that the multicentury struggle against TB had ended. This may translate into weaker political will, reduction of public interest, insufficient public health responses and clinical capacity domestically. It may also lead to inadequate domestic, bilateral and multi-lateral commitments to funding TB prevention and control efforts where they are needed the most, whether it is the high-incidence, poorest parts of London, or low-income countries where the epidemic is not yet under control.

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