

US TB rates in young people are declining but disparities persist

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Tuberculosis (TB) cases among children and adolescents in the USA have almost halved within a ten-year period, yet stark differences exist in the incidence rates between different ethnic, racial, and geographical communities, according to an observational study using national TB surveillance and census data from 2007-2017, published in *The Lancet Public Health* journal.

This study reports the first update of national estimates of TB in [children](#) and adolescents since 2010, analysing all the data from the National TB Surveillance System during 2007-17. It looks at trends by race and ethnicity, and, for the first time, in US territories (American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the Virgin Islands) and freely associated states (Federated States of Micronesia, Marshall Islands, and Palau), and by parental country of birth.

Although potentially fatal, TB in children and adolescents is preventable and curable. In the context of historically low TB incidence in the USA, information about groups at highest risk is useful to inform tuberculosis testing decisions.

Lead author of the study, Tori Cowger, Harvard T H Chan School of Public Health, USA, says: "These wide-ranging and pervasive disparities probably reflect structural inequalities that give rise to disproportionate exposure, vulnerability to infection and disease, and unequal access to prompt diagnosis and treatment. The findings suggest that TB care prevention strategies in the USA are succeeding in reducing overall

burden among children and adolescents, but more attention and possibly new approaches are needed to address the inequalities."

During 2007-17, one in every 100,000 young people was diagnosed with TB annually, and this rate almost halved over the decade (reduced by 48%, from 1.4 cases per 100,000 children and adolescents in 2007 to 0.8 cases per 100,000 in 2017).

Despite low rates of new cases overall in the USA, [incidence rates](#) among all other single racial or [ethnic groups](#) were at least 14 times higher than among non-Hispanic white children and adolescents between 2007-2017—there were 0.1 new cases per 100,000 non-Hispanic white young people per year, compared with four, two and two cases per 100,000 for Asian, Black and Hispanic young people per year, respectively.

Rates were even higher in indigenous populations. Incidence rates in Native Hawaiian or Pacific Islanders were more than 100 times higher than their non-Hispanic white counterparts—14.4 cases per 100,000 young people per year versus 0.1.

Geographic comparisons also showed disparities. Incidence rates were much higher in children living in US-affiliated islands, compared to those in US states —12 cases compared to one case per 100,000 young people per year, respectively. Despite the relatively small population size, cases occurring in US islands accounted for 15% (897 of 6,072) of overall cases, while 85% (5,175 out of 6,072) cases occurred in US states from 2010-17. Children and adolescents living in Marshall Islands and Federated States of Micronesia faced a particularly high burden, accounting for 11% (995 out of 9,276) of TB cases during 2007-17 and more than half of all TB deaths during 2010-17, despite representing less than 0.1% of the estimated population.

Incidence rates were higher for children born outside the USA themselves (7 new cases per 100,000 young people per year) or with parents born outside the USA, and risk increased depending on whether one or both parents were born outside the US (2 per 100,000 annually for US-born children with both parents born outside the US, and 1 per 100,000 annually for US-born children with one parent born outside the US). In contrast, the incidence rate was only 0.3 cases per 100,000 young people annually for US-born children with both parents born in the US.

Approximately two-thirds (66%, 2,565 of 3,896) of children aged younger than 15 years with TB in US states from 2010 to 2017 would have been recommended for TB testing under current targeted testing guidelines—38% (1,465 of 3,896) were identified through contact tracing, and 21% (807 of 3,896), and 8% (294 of 3,896) were born or travelled outside the USA for at least two months, respectively.

An additional 21% (806 of 3,896) did not meet guidelines for testing but did have at least one parent born abroad. The remaining 13% (524 of 3,896) had none of these characteristics reported.

Cowger says: "Two-thirds of children with TB diagnosed in U.S. states had at least one risk-factor covered by current clinical practice guidelines. Nevertheless, a third of TB cases occurred outside of the groups currently identified for targeted testing, highlighting the need, to consider additional characteristics, such parental place of birth, in appropriate settings, to improve TB care and prevention."

The authors suggest the underlying causes of the disparities they found in different racial, ethnic, and geographical groups, might be related to underlying inequities in social, economic and environmental conditions. A previous study suggested that socioeconomic status explained more than half of racial disparities in adult TB. Other factors that might contribute to disparities in TB burden include food security and

nutrition, poverty, residential segregation, exposure to second-hand smoke, air quality, lasting effects of historical trauma, and health-care policy.

The authors note some limitations of their study. The birthplace of one or both of their parents was unknown for approximately 31% of children, so incidence rates on parental nativity may underestimate the numbers of children with TB who had at least one non-US-born parent. Additionally, data on parental place of birth and international travel had only started being collected in 2009 and only for children under 15, limiting the ability to draw conclusions on these trends.

Writing in a linked Comment, Professor Michael Lauzardo, from University of Florida, USA, comments on the findings: "These results have several important implications for the control and eventual elimination of tuberculosis in the USA and other countries on the path towards elimination. The first is that this report is generally good news. Imagine the incidence of any other disease decreasing by almost half within a 10-year period. This trend should be encouraging to those working to eliminate tuberculosis and provide evidence that current strategies of control, including early initiation of therapy, screening of close contacts, and aggressive treatment of latent tuberculosis infection, are highly effective when applied consistently. However, these data are overshadowed by the most important finding of this report: the stark disparity between various subpopulations."

More information: *The Lancet Public Health* (2019).
[www.thelancet.com/journals/lan ... \(19\)30134-3/fulltext](http://www.thelancet.com/journals/lan... (19)30134-3/fulltext)

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