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Study shows 10% of children in high-burden TB settings may develop the disease by age 10

New findings also indicate that children who live in settings with a high burden of TB have a consistently high annual risk of developing TB infection throughout childhood

A groundbreaking study by researchers from the University of Cape Town's (UCT) [Department of Paediatrics and Child Health](#), Boston University School of Public Health (BUSPH), and the University of São Paulo, has revealed a critical gap in understanding the risk of tuberculosis (TB) in children. The researchers found that there was a high risk of TB infection and disease in children up to 10 years old who lived in areas where TB spread was common. The findings are published in [The Lancet Child & Adolescent Health](#).

An estimated 1.2 million children develop TB, and 200 000 kids die from TB worldwide each year, but the risk of developing TB infection and disease throughout childhood remains under-studied. Furthermore, the majority of studies on the paediatric burden of TB are informed by data from patients in healthcare settings, rather than people in real-world, community settings.

The study is the first birth cohort study to assess TB infection and active TB disease during children's first decade of life in high-burden settings. The new results found that there was a consistently high rate of annual TB infection among children in the study group – between 4 and 9% – and that more than 10% of children developed TB disease by the time they were 10 years old. The study builds upon a previous analysis by some of the researchers, which also found high rates of TB infection and disease in children up to five years old.

"Despite reasonable nutrition and almost no children living with HIV, there was an extraordinarily high, concerning rate of TB infection and disease in this cohort," said co-senior author [Professor Heather Zar](#), principal investigator of the [Drakenstein Child Health Study](#) and chair of the Department of Paediatrics and Child Health at UCT. She is also the director of SAMRC Unit on Child & Adolescent Health.

"Many children with TB disease were diagnosed when they presented with acute pneumonia, suggesting that in areas of high TB prevalence, children with pneumonia should be investigated for TB."

For the study, the team observed and followed a birth cohort of 1 137 pregnant women and their 1 143 children enrolled in the Drakenstein Child Health Study and living near Cape Town between 2012 and 2023. They tested the children for TB infection and disease at age six months, 12 months, and then annually for those who produced negative test results, as well as whenever they developed lower respiratory tract infection.

By eight years old, the team estimated that children's cumulative risk of developing TB infection was a substantial 36%. New cases of TB disease were highest during the first year of life, and even though this risk decreased as children grew older, one in 10 children afflicted by TB disease by age 10 is still an alarming finding because it portends that this population will likely have weakened immune systems that may make them susceptible to future health issues and challenges later, both in young adulthood and in older age.

[Dr Leonardo Martinez](#), assistant professor of epidemiology at BUSPH and study co-senior author, said: "These results are striking and show that children in these communities in South Africa are at extraordinarily high risk. Perhaps 1 000 to 2 000 South African children are at greater risk of TB than their young counterparts in the United States. It's clearly an urgent health problem with both short and long-term impacts on these children and their families."

With TB drugs, TB disease is highly treatable, and the researchers found that preventative treatments were broadly effective for infected children who accessed this care – but only a small proportion of the cohort did so. Most eligible children with TB infection did not receive preventive treatment, and the majority of those who developed TB disease had not received preventive medicine.

As part of its Sustainable Development Goals, the World Health Organization has pledged by 2030 to reduce TB incidence by 80% and TB deaths by 90%, and to ease the financial burden among individuals and families dealing with this illness. Decreasing paediatric TB is a critical component of this goal, and one that requires a layered approach, the researchers say.

Much work still needs to be done to tackle the paediatric TB epidemic in South Africa and other high-burden countries, said Martinez. "If we are to reduce paediatric TB globally, a multisectoral approach is needed that brings together researchers, policymakers, healthcare workers, funders, and advocates to find comprehensive solutions."

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