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## **Tiny drop, big hope: new blood test could make it easier to find TB in children**

In an important breakthrough that could transform how childhood tuberculosis (TB) is diagnosed, scientists have identified a small set of blood proteins that accurately signal TB disease in children, even in the absence of reliable sputum samples. Published in [\*Nature Communications\*](#), the research led by a global team of scientists, including experts from the University of Cape Town (UCT), paves the way for a fast, non-invasive test that could save thousands of young lives.

TB remains one of the leading causes of death from infectious disease in children around the world. In 2023, nearly 1.3 million people died of TB, and a significant portion of these deaths occurred in children under the age of 15 years. The difficulty in diagnosing paediatric TB is a major contributor to this death toll.

Unlike adults, children with TB often cannot produce sputum required for standard TB tests. Their TB also tends to be less detectable with current lab tools, resulting in many missed or delayed diagnoses. According to the World Health Organization (WHO), nearly half of all TB cases in children go unreported or undiagnosed, with even higher rates among children under five.

In this new study, the team used mass spectrometry to examine proteins in children's blood. They studied blood samples from 511 children across four countries: The Gambia, South Africa, Uganda and Peru. These children either had confirmed TB, were suspected of having TB based on symptoms, or had other respiratory illnesses. By analysing hundreds of proteins in each child's blood sample, the team discovered that a small set of just three to six proteins could accurately identify which children had TB. This group of proteins, called a biosignature, acts as a fingerprint of the disease in the bloodstream.

The test achieved strong results across multiple countries and child groups and also met the accuracy thresholds set by the WHO for a screening test. Specifically, the biosignature demonstrated over 90% sensitivity, correctly identifying most children who had TB disease. It also showed over 70% specificity, meaning it could reliably distinguish between children with TB and those with other respiratory illnesses. Importantly, this new method could work with just a small drop of blood, making it less invasive and more practical for young children than sputum-based tests.

"This could be an important step forward in diagnosing TB in children," said Professor Heather Zar, co-senior investigator of the study and chair of the [Department of Paediatrics and Child Health](#) at UCT. "Many children with TB are not diagnosed, and this test brings us closer to detecting TB in children in a simple and reliable way, using just a small blood sample."

Professor Zar added: "The implications of this study are especially relevant to low-resource settings where the TB burden is high, and diagnostic tools are limited. Early detection is crucial, as delays in diagnosis and treatment initiation contribute significantly to the mortality rate among children with TB and development of severe illness. The introduction of a reliable, non-sputum-based diagnostic test could improve TB diagnosis in children, leading to timely treatment and improved health outcomes."

**ENDS**

***Issued by: UCT Communication and Marketing Department***

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