FACT SHEET

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TB in children can be cured...

but only if it is diagnosed

We need better TB tests that work for children!

Every 3 minutes, 1 child dies of tuberculosis (TB). **TB is amongst the top 10 causes of death for children under 5**, according to the World Health Organization's (WHO) Roadmap Towards Ending TB in Children and Adolescents. WHO reported that an estimated 1.25 million children (aged <10 years) and young adolescents (10-14 years) fell ill with TB in 2022, which accounts for 12% of all cases of TB. But more than half of these cases in children and young adolescents were either not diagnosed or not reported to the national TB programmes. The diagnostic gaps are even worse for multidrug-resistant TB (MDR-TB), which is caused by TB bacteria that are resistant to at least isoniazid and rifampicin, the two most potent first-line TB drugs used to treat persons with TB disease.

It is estimated that between 25,000 and 32,000 children and young adolescents fall ill with MDR-TB annually, but **more than 80% of these cases remain undiagnosed or unreported**. As a result, they do not receive appropriate treatment.

Why are so many children who suffer from TB missing out on proper diagnosis?

The fundamental cause is that **there are simply no good diagnostic tests available to detect TB in children**, and the diagnosis of TB in children still largely relies on clinical signs and symptoms.

It is incredibly difficult for most children and especially children under 5 years old to cough up sputum, which is still the most common sample used to detect TB. Even when sputum samples can be collected from a child, the sputum-based test cannot always detect TB in a child who is sick with TB, because **children usually present with low levels of bacteria in the lungs** (paucibacillary TB, which is often undetectable by these tests).

In addition, **TB in children is often located outside the lungs** – referred to as extra-pulmonary TB. This is because children's immune system is not as well developed as that of adults, and TB often progresses more quickly to other parts of the body. **Getting samples and accurate diagnostic results for extra-pulmonary TB is even more challenging than for TB in the lungs** (pulmonary TB).

For many years, medicines to treat TB in children were not available in the appropriate dosage, and treatment providers and caregivers would need to crush or break pills designed for adults to treat children. However, all TB drugs approved for use in children are now available in child-friendly formulations. This means that if children with TB get the right diagnosis, the appropriate TB treatment options are now available. Countries must therefore scale up and accelerate implementation of WHO-recommended regimens to treat TB in children.

In 2022, to address these challenges and better guide TB programmes and health care workers, WHO issued updated guidelines for the management of TB in children with several recommendations that aim to reduce the number of children with TB that continue to go undiagnosed.

First, two evidence-based treatment decision algorithms were developed to guide clinicians to diagnose TB in children using chest X-ray and clinical symptoms or clinical symptoms alone when X-ray is not available.

Second, WHO also recommended using GeneXpert MTB/RIF Ultra on stool alongside other sample types such as gastric aspirate samples; as young children swallow much of their sputum, TB can be detected in stool, and in gastric fluid that is aspirated with a feeding tube passed through the child's nose into the stomach.

However, the sensitivity of GeneXpert MTB/RIF Ultra – its ability to identify the disease – on stool samples is much lower than when using sputum samples. Testing gastric aspirate samples can yield slightly higher sensitivity than stool, but sample collection is more invasive and difficult to tolerate for children. Because of this, gastric aspirate samples are rarely used.

"It's baffling that this deadly but curable disease has existed for millennia, but in the 21st century, still only 40% of children with TB get the treatment they need to stay alive, because the right tools to test TB in kids still don't exist."

- Dr Nasiba Maksumova, MSF Tajikistan

For all these reasons, the treatment decision algorithms, based on clinical signs and symptoms combined with chest X-ray where available, are essential to helping doctors better diagnose TB in children.

In summary, **diagnosing TB in children relies on a combination of approaches**, from assessing clinical signs and symptoms, complemented with radiology, such as X-ray or ultrasound, to GeneXpert MTB/RIF Ultra on stool or other samples when possible. However, **all the available tools are insufficient, and are often not available or integrated at the primary healthcare level**, where most children with TB seek care.

What needs to happen?

We need more research and development in TB diagnostics that are specifically designed for children.

Such child-adapted diagnostic tests should:

- **make use of easy-to-collect samples in children, for instance through finger-prick blood tests or oral swabs;**
- **be highly sensitive and specific, i.e. have a high probability to correctly identify TB in children;**
- **be point-of-care tests, suitable for and easy to use at primary care levels by any health care worker in remote and low-resource settings, i.e. robust and independent of any lab infrastructure; and**
- **be affordable for low- and middle-income countries.**

If a test works in children, it will work in adults, but not the other way around.

MSF and TB

Médecins Sans Frontières (MSF) is the largest non-governmental provider of TB treatment worldwide and has been involved in TB care for 30 years, often working alongside national health authorities to treat people in a wide variety of settings, including conflict zones, urban slums, prisons, refugee camps and rural areas. In 2022, MSF had TB activities in 37 countries, treating a total of 20,417 TB patients, of whom 2,596 had MDR-TB. Almost all MSF facilities that see children, in almost every context, struggle with the challenges of diagnosing and treating TB in children.

MSF has also been involved in efforts to find shorter and safer DR-TB treatment regimens through 3 clinical trials: TB-PRACTECAL, endTB and endTB-Q. The WHO recommendation for two 6-month regimens (BPaLM and BPaL) to treat DR-TB was prompted by evidence mainly from the TB-PRACTECAL trial. We are currently piloting an integrated project (TACTiC - Test, Avoid, Cure TB in Children) to improve the management of TB in children through the implementation of the updated WHO guidelines, operational research, and advocacy for access to existing tools and development of better tools adapted to children.