

### Médecins Sans Frontières in Pakistan

Médecins Sans Frontières (MSF) started supporting Pakistan in 1986 and currently has over 1000 staff in the country. MSF teams work in collaboration with the Ministry of Health to improve access to health care in urban and rural communities, informal settlements and areas affected by conflict, including two projects that aim to improve the diagnosis, prevention and treatment of tuberculosis (TB) in children.

In Gujranwala, an urban setting in Punjab, MSF in collaboration with the National and Provincial TB programs provides a comprehensive service of diagnosis and treatment for people affected by drug-resistant tuberculosis (DR-TB). Since 2023, the project focuses on the introduction of shorter treatment regimens for DR-TB for adolescents and adults, and on increasing contact investigation amongst children who have been exposed to a person with drug resistant TB in their household. MSF provides care in a patient-centered approach, including support groups, home visits and follow-up consultations. A paediatric DR-TB clinic in the MSF project in Gujranwala was initiated in June 2024. Following the implementation of the 2022 WHO guidelines for the management of TB in children in the TACTiC project, the number of children between 0 and 14 years of age treated for DR-TB in the MSF project in Gujranwala increased from 2 in 2023 (2.2% of cohort) to 42 in 2024 (20% of cohort).

The second MSF project started in 2025 at the Rural Health Center of Baldia in Keamari district of Sindh. MSF will support implementing a decentralized model of care for TB, with a focus on paediatric TB. This will include diagnostic services, such as GeneXpert testing on stool specimens and X-ray, as well as curative services, both in the health facility and in the communities through outreach activities. The project will conduct innovative operational research to generate local data on implementing the WHO recommended treatment decision algorithms for diagnosing pulmonary TB in children and 4-month all-oral treatment regimen for children with non-severe pulmonary or extrapulmonary TB.

### The burden of paediatric TB in Pakistan

According to the latest WHO Global TB Report, a total of 475,761 new and relapse TB cases in Pakistan were notified in 2023, of which 67,140 (14%) were children aged between 0 and 14 years old. The WHO data report that an estimated 29% of the children between 0 and 14 years old who have TB were missing diagnosis and treatment. In addition, WHO estimates that in Pakistan only 25% of eligible children under 5 years old who are household contacts of TB cases received TB preventive treatment (TPT).<sup>1</sup>

In Pakistan, paediatric TB care is mostly provided in secondary and tertiary care facilities which for many children require a longer distance travel than the primary care facilities, reducing access to care. Services for drug-susceptible TB (DS-TB) in the country are decentralized to the primary healthcare level. However, there remains a significant gap in the decentralization of paediatric DR-TB services, which are currently highly centralized. On top of that, not all Programmatic Management of Drug-Resistant TB (PMDT) sites offer paediatric services. For instance, Karachi with a population of 20 million people, has only 3 PMDT sites and only one is offering paediatric DRTB services.

Additionally, the country has a high prevalence of underweight children, affecting almost a third of the children under 5 years of age (29%),<sup>2</sup> making them particularly vulnerable to TB. Nutrition is one of the major determinants in the development of TB disease and there is a strong relationship between the incidence of tuberculosis and the prevalence of malnutrition. Nutritional support to all children living in households with a person with TB will help prevent the development of TB in those children.

TB can affect any part of the body. Inside the lungs is the most common (pulmonary TB), but TB can affect any other part of the body outside (extrapulmonary TB) – for example, brain, bone, eye, and the gastrointestinal tract. The WHO data show that up to 20% of the persons with TB in Pakistan have extrapulmonary TB. There is a strong association between extrapulmonary disease and children, with extrapulmonary TB affecting children twice as frequently as adults.<sup>3</sup>

<sup>1</sup> World Health Organization, [Global Tuberculosis Report 2024](#)

<sup>2</sup> UNICEF, [Pakistan National Nutrition Survey 2018](#)

<sup>3</sup> Tahseen et al. 2020. Extrapulmonary tuberculosis in Pakistan- A nation-wide multicenter retrospective study. PLoS One 15:e0232134

### Test Avoid Cure TB in Children (TACTiC) project

Today, children who fall ill with TB have less than a 1-in-2 chance of being diagnosed and offered treatment globally. Alarming, 96% of children who die from TB never reached diagnosis and treatment.<sup>4</sup> Underdiagnosis in children is multifactorial but one main reason is that the laboratory tests to aid in the diagnosis of TB are not adapted to children. Children have lower levels of bacteria in the lungs than adults, which means that laboratory tests often fail to detect TB in children. In addition, available tests require specimens such as sputum which are difficult to collect from children.

In 2022, WHO revised its guidance for the management of paediatric TB to be in line with the most recent scientific evidence. The new WHO guidelines include a number of important updates on how to improve the diagnosis, treatment and prevention of TB in children that, if adopted and implemented, could dramatically reduce the number of deaths due to TB amongst children.

The project **Test Avoid Cure TB in Children (TACTiC)** was launched by MSF immediately after the publication of the updated WHO guidelines in 2022. The project aims to support the implementation of the WHO recommendations for paediatric TB care in MSF projects, especially in integrated care facilities which have a high burden of undiagnosed TB, as well as generating evidence and advocating for better tools to diagnose, treat and prevent childhood TB. The MSF TACTiC project covers 12 countries with a high burden of TB and in which MSF provides TB care, including Pakistan.

### Key new recommendations by the World Health Organization (WHO)

**Improved treatment decision algorithms** based on latest scientific evidence, making it possible to diagnose children based on clinical symptoms (with or without X-ray), and initiate treatment in children even when laboratory tests (such as GeneXpert) are not available or have inconclusive or negative results which are common in children with TB. [Annex 1]

**Short all-oral treatment regimens (4 months) for non-severe, drug-susceptible tuberculosis.** Children with non-severe tuberculosis can be offered a more appropriate, shorter and less costly 4-month treatment regimen, rather than the standard 6-month regimen.

**Short all-oral curative treatment regimens (9 months) for drug-resistant TB.** All children with MDR-TB, regardless of age, can be treated with bedaquiline and delamanid based all-oral 6 to 9-month regimens with lower pill burden and good efficacy, as recently recommended by WHO.<sup>5,6</sup>

**Short all-oral preventive treatment (3 months) children who are household contacts of a person with drug susceptible TB.** Isoniazid and rifampicin daily for 3 months (3HR) and isoniazid and rifapentine once-a-week for 3 months (3HP) are more convenient and easier to take than longer preventive treatments for drug-susceptible TB. WHO now recommends rifapentine for all ages which means that 3HP can be used for all children, including those who are less than 2 years old. Rifapentine is available as dispersible tablets that can be used with isoniazid dispersible tablets, ensuring child friendly formulations for all ages. For household contacts of a person with DR-TB, WHO recommends 6 months of levofloxacin.<sup>7</sup>

<sup>4</sup> Dodd et al. The global burden of tuberculosis mortality in children: a mathematical modelling study. Lancet Global Health 2017

<sup>5</sup> WHO Rapid Communication: [Key updates to the treatment of drug-resistant tuberculosis: rapid communication](#), 2024

<sup>6</sup> Guglielmetti L et al. endTB: nine-month, all-oral regimens for rifampin-resistant, fluoroquinolone-susceptible tuberculosis. N Engl J Med 2025

<sup>7</sup> WHO consolidated guidelines on tuberculosis. [Module 1: prevention – tuberculosis preventive treatment, second edition](#), 2024

### Paediatric TB in national policies: new opportunities

Within the TACTiC project, MSF teams have surveyed the alignment of national policies with the latest WHO recommendations for paediatric TB care, including in Pakistan. Data collection took place between October 2023 and May 2024, and analysis was based on the guidelines issued by the NTP in Pakistan in 2019. The report was published on 15 October 2024 and can be downloaded here: [TACTiC: Test avoid cure TB in children | MSF](#)

In the meantime, the NTP in Pakistan has updated its National TB Guidelines which were published in December 2024.<sup>8</sup> The new guidelines in Pakistan have incorporated important updates in paediatric TB care aligned with the WHO recommendations, and there are new opportunities for further improvement.

## UPDATED TACTIC POLICY SURVEY DASHBOARD PAKISTAN

*Last reviewed January 2025*

### DIAGNOSIS

DS-TB treatment for children can be initiated without bacteriological confirmation or chest X-ray (ie based on clinical evaluation only)



WHO treatment decision algorithms are included in national policy documents



Xpert MTB/RIF Ultra test on stool specimens is included in national guidelines



### PREVENTION

National guidelines recommend 3HR or 3HP as a short TPT regimen option for children below age 5 who are household contacts



National guidelines recommend 3HR or 3HP as a short TPT regimen option for children and adolescents living with HIV



TPT can be provided to PLHIV and children below age 5 without a test (TST and/or IGRA)



### DS-TB TREATMENT

A 4-month treatment regimen for children and adolescents with non-severe DS-TB is included in national policies



Paediatric formulations of HR, HRZ and ethambutol are procured



### DR-TB TREATMENT

National policies recommend the use of bedaquiline for children with DR-TB of all ages



National policies recommend the use of delamanid for children with DR-TB of all ages



Injectables are not recommended for children with MDR/RR-TB



Paediatric formulations of bedaquiline and delamanid are procured



Paediatric formulations of other second-line TB drugs are procured



*National guideline is fully aligned with WHO guideline*



*National guideline is partly aligned with WHO guideline*



*National guideline is not aligned with WHO guideline*

<sup>8</sup> Pakistan Ministry of National Health Services, Regulations and Coordination, Common Management Unit AIDS, TB & Malaria. [Resource center](#).

### Diagnosing TB in children

If a child presents with symptoms that are suggestive of pulmonary TB, the WHO guidance offers improved treatment decision algorithms based on latest scientific evidence to help healthcare workers assessing TB symptoms in children to initiate treatment even when laboratory tests are not available, inconclusive or negative.

Despite this being the WHO recommendation, Pakistan has not yet incorporated the improved treatment decision algorithms in their recently updated national guidelines, nor has it included the recommendation that treatment for children with drug-susceptible TB (DS-TB) can be initiated without a positive result from a laboratory test such as GeneXpert. The 2024 national TB guidelines recommend the use of the Pakistan Paediatric Association (PPA) scoring card for the diagnosis and treatment for TB in children, which was last revised in 2016 and relies heavily on positive laboratory test results which are not available for most children with TB and which may contribute to underdiagnosis and children with TB missing treatment.

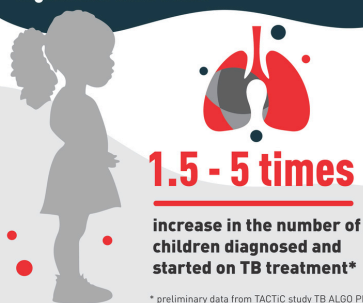
The WHO guideline development group agreed that it was most important to avoid missing a diagnosis in a child who has TB, while accepting a certain degree of over-diagnosis with the new treatment decision algorithms, considering the large case detection gap and the consequences of a missed diagnosis of TB.<sup>9</sup>

### Treating TB in children

Historically, children with drug-susceptible forms of TB were treated with a 6-month regimen of antibiotics. However, the 2022 SHINE trial showed that a shorter 4-month regimen worked equally well as the 6-month regimen for children with non-severe forms of TB. As a result, the new WHO guidelines recommend this short all-oral regimen, composed of 2 months of isoniazid, rifampicin and pyrazinamide, with or without ethambutol, followed by 2 months of isoniazid and rifampicin (2HRZ(E)/2HR), for all children and adolescents aged between 3 months and 16 years with non-severe TB and no suspicion or evidence of drug resistance.

While the 2024 national guidelines in Pakistan have endorsed the 4-months regimen (2HRZ(E)/2HR), shorter treatment regimen to treat children with non-severe DS-TB, the guideline restricts its use by pediatricians only or under operational research, excluding many eligible children. While this is a good start, given that an estimated 70% of children with TB could be eligible for this treatment, efforts must be made to issue a specific recommendation that prioritises the 4-months DS-TB over the 6-months regimen in children when possible, for programmatic use outside operational research and in settings where there is no paediatrician, so that more children can access this short and all-oral regimen.

MSF supported facilities implementing the WHO recommended treatment decision algorithms have seen:



Data from the MSF supported facilities implementing the WHO recommended treatment decision algorithms show an increase of 1.5 to 5 times the number of children diagnosed with TB when using the WHO algorithms.<sup>10,11</sup>

Preliminary results from an ongoing MSF study in 5 African countries on the implementation of the WHO recommended treatment decision algorithms, show that up to 80% of the children who started TB treatment were diagnosed with the clinical or clinical-radiological scores of the algorithms.<sup>12</sup>

<sup>9</sup> WHO operational handbook on tuberculosis. Module5: Management of tuberculosis in children and adolescents. 2022, [Annex 5. Treatment Decision Algorithms](#)

<sup>10</sup> Armour-Marshall et al. TB diagnosis in children with severe acute malnutrition using the 2022 WHO algorithms in nutrition insecure contexts. World Conference on Lung Health 2024 of the International Union Against Tuberculosis and Lung Disease, 12 – 16 November 2024, Bali, Indonesia

<sup>11</sup> Chara et al. Impact on paediatric TB diagnosis of implementing the new WHO Treatment Decision Algorithms in an MSF nutritional centre, Maiduguri, Nigeria. World Conference on Lung Health 2024 of the International Union Against Tuberculosis and Lung Disease, 12 – 16 November 2024, Bali, Indonesia

<sup>12</sup> Huerga et al. How accurate are new diagnostic TB algorithms in children? Interim results from a Médecins Sans Frontières study in 5 countries. World Conference on Lung Health 2024 of the International Union Against Tuberculosis and Lung Disease, 12 – 16 November 2024, Bali, Indonesia

## CALL TO ACTION

### Médecins Sans Frontières (MSF)

- In collaboration with the NTP, conduct operational research to generate data on clinical impact and feasibility of implementing the WHO recommended treatment decision algorithms in local settings in Pakistan.
- Support the NTP and national actors to revise the PPA scoring system based on data generated by piloting the WHO recommended treatment decision algorithms and support the implementation.
- Support the NTP and national actors in implementing shorter treatment regimens for drug-susceptible and drug-resistant TB in children, adolescents and adults, and to increasing contact investigation and provision of preventive treatment amongst children who have been exposed to a person with TB in their household.

### The National Tuberculosis Program (NTP), supported by its national and international stakeholders

- Update the national TB guidelines to fully align with the latest WHO recommendations, including the WHO-recommended treatment decision algorithms to increase the diagnosis of TB as well as recommending the 4-month regimen for non-severe DS-TB should be used over the 6-month regimen for eligible children, including in settings where there is no paediatrician, such as primary health care settings and outside of operational research.
- Develop national paediatric TB roadmaps, setting out specific plans and timelines to increase access to TB diagnosis, treatment and prevention of TB in children, in line with UN High-Level Meeting commitments.
- Prioritise paediatric TB within national strategic plans, monitoring and accountability processes, and ensure sufficient resources are allocated to paediatric TB in both national budgets and donor funding requests.
- Expand PMDT sites providing paediatric services in tertiary hospitals with in-patient departments (IPD), as well as expanding integrated DS/DR-TB including paediatric services in secondary and primary care hospitals (decentralized model of care) with access to DR-TB diagnostic services and X-ray.
- Support family and community centered models of care for screening, diagnosis, treatment and prevention of TB in children, including the integration with other service delivery platforms for maternal and child health – such as antenatal care, immunization, nutrition and HIV programs.
- Given the high prevalence of underweight children in the country, ensure collaborative services and linkages between TB and nutrition programs. Programs providing nutrition support in Pakistan must include the families affected by TB in the eligibility criteria for nutrition support.

### The Global Fund and other funders

- Support the NTP and its stakeholders with targeted funding for policy reforms and their implementation, inside and outside the usual funding cycles.
- Support the NTP and its stakeholders to scale up investments for paediatric TB interventions within funding requests. Improving the PPA scoring systems based on the WHO recommendation will lead to more children diagnosed with TB, who all should have access to paediatric services as well as the medicines for the short all-oral regimens.
- Support the NTP and its stakeholders in the preparation of funding requests to secure sufficient community health workers for household screening as well as TPT and food to the family of a person diagnosed with TB.

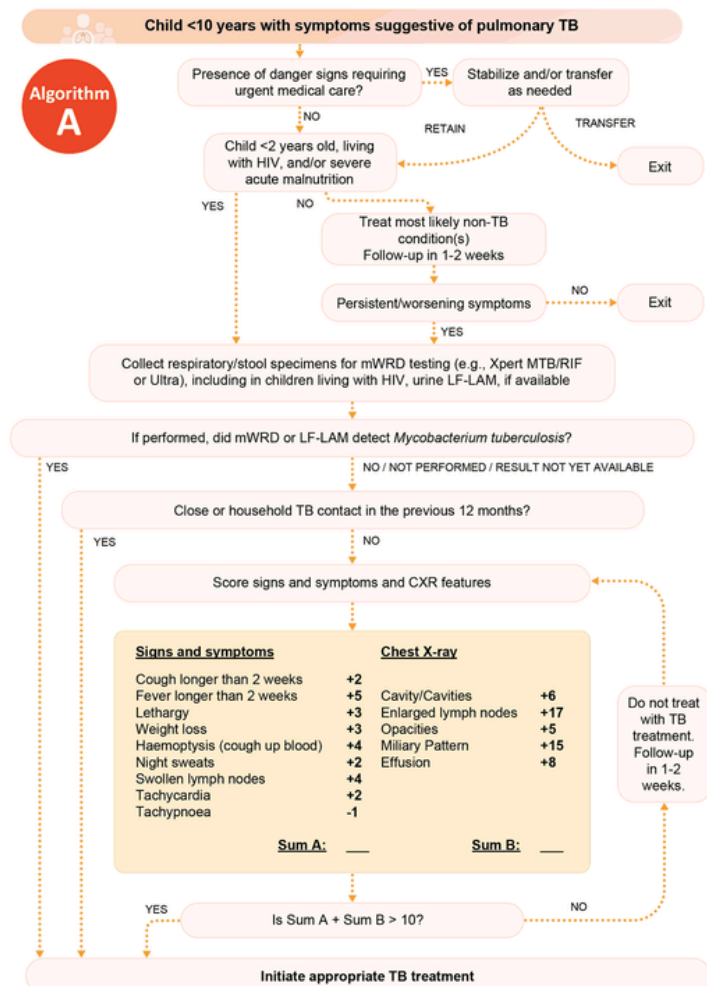
### Civil society and affected communities

- Advocate with the NTP and its stakeholders that national guidelines must be fully aligned with the latest WHO guidelines for the management of TB in children.
- Advocate for ambitious national paediatric TB roadmaps, policy reforms aligning with the latest WHO guidelines, and the implementation in national and provincial strategic plans (NSP and PSP) and funding requests to donors.
- Monitor the implementation of national policies at health facility level and hold leaders accountable.
- Advocate for children with TB in existing national governance forums, including country coordinating mechanisms and multisectoral accountability frameworks.

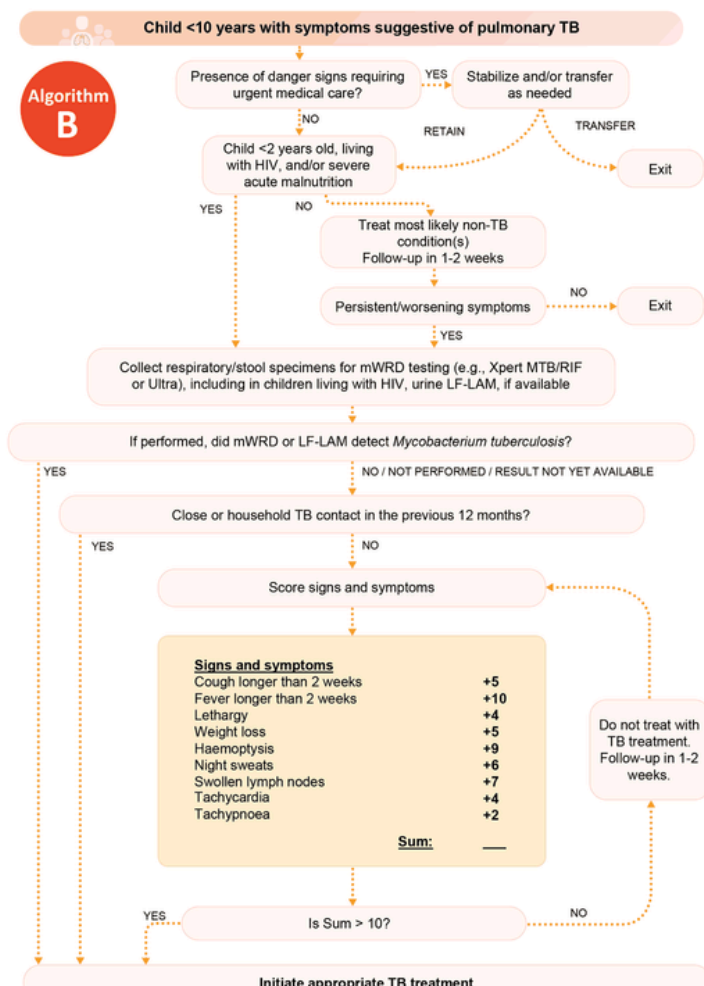


### ANNEX 1. The WHO recommended treatment decision algorithms<sup>9</sup>

#### Algorithm A for settings with chest X-ray



#### Algorithm B for settings without chest X-ray



<sup>9</sup> World Health Organization, Global Tuberculosis Report 2024, Operational Handbook, [Annex 5. Treatment Decision Algorithms](#)