

TECHNICAL BRIEF

TACKLING TB AMONG CHILDREN

Background

The management of pediatric tuberculosis (TB), including prevention, diagnosis and treatment, has long been neglected by TB control advocates as the majority of infectious cases occur in adults. As a result, TB remains a serious threat to child health in many parts of the world. In the era of HIV/AIDS and with the spread of drug-resistant TB, the long-standing idea that TB is a disease of adults is being proven false.

In its 2012 Global Tuberculosis Report, the World Health Organization (WHO) estimated that of 8.7 million incident cases of TB around the world in 2011, approximately 500,000 were among children, leading to 64,000 deaths. This was the first year estimates of pediatric TB were included in the report. Notification of childhood TB cases remains low, accounting for only 6% of notified cases in 2011 among the countries reporting TB data disaggregated by gender and age. Moreover, only 37 countries out of a total of 135 reported incidents of multi-drug resistant (MDR) TB in children, and of these 37 countries, children represented 1-13% of total enrolments (WHO Global Tuberculosis Report, 2012).

Identifying and diagnosing TB and MDR-TB in children remains difficult, as the disease may present non-specific symptoms among children. Furthermore, routine diagnostic tests for TB are not child friendly, as it is difficult to collect sputum specimens from infants and young children. Laboratory tests used to find TB in sputum are less likely to have a positive result in children (this is due to the fact that children are more likely to have TB disease caused by a smaller number of bacteria). Moreover, once infected with TB bacteria children are more likely to get sick with disease, and they are at an increased risk of

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developing disseminated disease with high mortality, such as TB meningitis or miliary TB. All these factors put children at high risk and may lead providers to overlook or misdiagnose the disease in children. The current TB vaccine provides some protection to young children against the most severe forms of TB, such as meningitis and disseminated TB disease, but does not prevent transmission from an infectious contact, and its safety in the HIV-infected children population is questionable.

Gaps in Pediatric TB Management

Much work is needed to strengthen systems to identify and treat pediatric TB cases. Specific gaps in the health system should be targeted, including:

Pediatric TB and strategic partnerships across the health system

- Weak linkages between individual pediatricians, pediatric hospitals and national TB programs: children diagnosed with TB are not always reported to national surveillance systems

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- A focus on pediatric TB control is rarely included in the strategic plans and budgets of National TB Programs (NTPs) and Ministries of Health
- Weak collaboration between actors in TB and maternal and child health
- Less priority to TB including pediatric TB as a disease in National Medical/Pediatric curriculum and more emphasis on a clinical rather than programmatic approach
- Low attention to childhood nutrition and to improvement in the socioeconomic and environmental condition of communities to minimize impact on TB transmission to children
- Insufficient surveillance and reporting of pediatric TB cases

Diagnosis

- Insufficient knowledge of health workers on diagnosis and management of pediatric TB and MDR-TB
- Lack of easily operated diagnostic tests
- No universally applied diagnostic algorithm

Treatment

- Lack of appropriate child-friendly fixed-dose combination drugs for treatment
- Recommendations for provision of isoniazid preventive therapy (IPT) for children under 5 years of age is rarely implemented
- Insufficient identification and management of Drug Resistant TB (DRTB) among children

Steps to be Taken

The WHO Stop TB Partnership and global TB advocates have emphasized the following steps which need to be taken to reduce the number of pediatric TB cases:

- **Advocacy/social mobilization:** mobilize commitment at global and national levels, promote partnership across the health system, and advocate for family-based approaches
- **Research:** improve access to child-appropriate diagnostic tools and anti-TB medications, chemo prophylactic drugs and vaccines
- **Application:** increase contact investigation and provision of IPT to children under 5 (This treatment is recommended by WHO for children less than 5 years of age who come in contact with someone with infectious TB disease, and for children with HIV infection).

TB CARE II addresses challenges in child TB management both in core funded and field activities and focuses on improving quality and accessibility of care and capacity building.

TB CARE II and Pediatric TB

The USAID TB CARE II Project, a five-year cooperative agreement implemented by a wide consortium of health and development organizations and led by University Research Co., LLC (URC), began in 2010 with the aim of complementing and building upon existing and planned projects in the Bureau for Global Health to provide global leadership and support to NTPs and other in-country partners. The project works closely with the Centers for Disease Control and Prevention and other USG partners at the global level and in high burden TB countries.

The TB CARE II project implements field and core supported activities. Field support activities are implemented in Malawi and Bangladesh and are focused on the following TB technical areas:

- DOTS Expansion and Strengthening
- Programmatic Management for DRTB
- TB/HIV Care and Treatment
- Health Systems Strengthening

Core-funded activities are short term activities designed to target critical technical resource gaps and provide global leadership to expand successful strategies.

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Global leadership to improve quality of TB care

Interventions for improving delivery of IPT for latent tuberculosis infection to children and people living with HIV: an overview of systematic reviews

The WHO recommends IPT for children under age five who are close contacts to patients with infectious TB, and for people with HIV. Despite its proven efficacy, uptake of IPT to reduce future TB cases has been poor.

In 2012, TB CARE II, in coordination with Dartmouth University, undertook a systematic review aimed at identifying evidence on structural interventions to increase rates of IPT treatment completion. The review systematically collected, appraised, and organized evidence on IPT delivery to children and adults living with HIV following a comprehensive search of the Cochrane Database of Systematic Reviews, the Database of Abstracts of Reviews of Effects (DARE), and MEDLINE (PubMed).

Key findings: While most organizational interventions were not accompanied by improvements in IPT treatment completion overall, the integration of TB and HIV services did yield high treatment completion rates in some settings. This overview reveals the need to perform high quality studies targeting at-risk populations in high TB-burden settings in order to determine the best models for IPT delivery.

Field Guide for the management of Pediatric DRTB

Children represent a significant proportion of the DRTB cases; however they lack the same access to diagnosis and treatment as adults. Evidence has shown that eighty percent of children have a positive outcome when treated for DRTB and, moreover, are able to tolerate second line medication well (Ettehad, D. et al, 2012).

To address the gap in DRTB care among children, the TB CARE II project along with the Sentinel Project on Pediatric Drug-Resistant TB developed a field guide for the management of Pediatric DRTB. The guide is meant to serve as a tool for practitioners working with children at risk of DRTB infection.

The guide was developed by the team of experts from Sentinel Project on Pediatric Drug-Resistant TB who jointly have treated hundreds of children with DRTB in the last 2 decades all over the world. The guide is designed to address the following topics:

- **Diagnosis of DRTB:** includes algorithms for suspecting MDR-TB in children, management of child contacts of MDR-TB cases, each supported with case examples from different corners of the world
- **Regimen design:** includes principles of treatment regimens supported with case examples from different areas of the world, weight-based dosing in children for each anti-TB medicine group
- **Monitoring:** includes monitoring schedule, table for management of side effects of anti TB medication, addressing co-morbid conditions, management

of children on treatment for MDR-TB and HIV, and adherence and nutritional monitoring of children with MDR-TB

- **Infection Control:** covers facility based infection control supported with case examples from different corners of the world

The guide was published in November 2012 and is also available for download at: <http://sentinel-project.org/?s=field+guide> and <http://tbcare2.org/content/tb-care-ii-introduces-field-guide-management-multidrug-resistant-tb-children>*

Improving access to and quality of care in high burden countries

Bangladesh

TB is a major public health problem in Bangladesh. The country ranks sixth among the 22 highest burden TB countries in the world and is also listed among the 27 highest MDR-TB burden countries. Reporting of pediatric TB in Bangladesh is very low, and according to the WHO 2012 TB report, in 2011 only 4,667 cases of all forms of pediatric TB (children aged less than 15) have been notified in the country, making up approximately 3% of all notified TB cases.

The TB CARE II Bangladesh project activities complement the country's efforts to strengthen all components of the Stop TB Strategy, with a major emphasis on universal and early access to TB services, programmatic management of drug resistant TB, and health systems strengthening. The project has assisted the NTP in developing a TB control and prevention plan for all 64 of their districts. Significant progress has been made in strengthening DOT for increased detection and management of all types of TB, expanding national capacity for community based

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programmatic management of MDR-TB, strengthening laboratory services and systems, and increasing private sector participation in the TB control program.

A major project activity centers on strengthening *NTP capacity for management of childhood TB in Bangladesh*.

Key Activities

TB CARE II works in close partnership with the NTP, professional medical associations such as the Bangladesh Pediatric Association, and district and community-based TB service providers to strengthen systems and capacities to combat pediatric TB in Bangladesh. The project's work to date focuses on:

- Development of a detailed plan to support NTP in adopting appropriate policies, engaging multi-disciplinary medical professionals, and strengthening case identification and management of childhood TB
- Training pediatricians, general physicians and non-graduate medical practitioners on diagnosis, referral and management of children with TB-orientation and materials developed
- Training of Trainers on Management of Childhood TB
- Facilitating development information, communication, and education materials and job aids for pediatric TB diagnosis

Main Outcomes/Outputs

- Development of National Guidelines for Management of Childhood Tuberculosis-the guideline is available at (<http://tbcare2.org>)*
- Development of National Child TB Working Group with TB CARE II representation
- Development of trainers' pool to support country wide capacity development amongst health care professional
- Orientation of doctors on National Guidelines for the Management of Childhood TB
- Adoption of IPT as a national policy
- Development of card, register and quarterly report forms for IPT
- Increase in IPT prophylaxis therapy: around 1,078 eligible children (less than 5 years) have been registered for IPT prophylaxis in the project supported districts
- Increase in active tracing and screening of child TB contacts by applying a simple symptom-based approach under the guidance of national program
- Introduction of training modules targeting medical doctors and field workers.

* To acquire the guideline go to the websites or contact Nina Blustein

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