



Closing -TB GAPS - for people living with HIV: TB Guidance for Adaptable Patient-Centered Service

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TB GAPS Overview

With support from the U.S. Centers for Disease Control and Prevention (CDC), Baylor College of Medicine (BCM) and Texas Children's Hospital (TCH) are implementing a project – the Tuberculosis *Guidance for Adaptable Patient-centered Service* (TB GAPS) – which aims to find and prevent TB in children and youth. BCM and TCH's Global TB Program and BCM Children's Foundation partners will work to determine the most cost-effective prevention strategy and promote best practices to sustain impact. TB GAPS will run from September 2020 through September 2025 in five sub-Saharan African (SSA) countries (Eswatini, Lesotho, Malawi, Tanzania, and Uganda).

The Problem While TB is often seen as an airborne disease of the past, it remains the top infectious disease killer worldwide. TB is the ninth leading cause of death worldwide, the leading cause of death from a single infectious agent, and responsible for nearly 40% of mortality among people living with human immunodeficiency virus (PLHIV)ⁱ. TB is an important and underestimated cause of

child mortality globallyⁱⁱ. Less than 50% of children with TB are accurately diagnosed and reported². This significant TB case detection gap in all children, is likely magnified in children and adolescents living with HIV. The World Health Organization (WHO) estimates there are 10 million TB cases worldwide each year including 1.1 million cases among children 0-14 years of age and a similar number of cases among PLHIVⁱⁱⁱ. Recent evidence suggests that each year approximately 640,000 children with TB are not diagnosed or treated. Among those untreated, case fatality rates approach 22% in all children and increase to 44% in children <5 years of age^{iv,v}. In 2018, WHO estimated there were 1.5 million TB deaths worldwide, including 251,000 deaths among PLHIV and 205,000 deaths among children, including 32,000 in children and adolescents living with HIV^{vi}. In 2014, the proportion of TB patients who died during treatment was four times higher among HIV-infected TB patients compared to HIV-uninfected patients (11% versus 3%)^{vii}. These epidemiologic realities demand earlier diagnosis and treatment to improve outcomes.

TB GAPS Project Map



TB GAP Project Aims

1-FIND: Assess the performance of novel TB screening and diagnostic algorithms among children, adolescents, and adults living with HIV and presenting for routine care across a network of family-centered HIV clinics in five SSA countries as compared to the current WHO recommended symptom based screening and diagnostic strategy.

2-PREVENT: Compare the proportion of PLHIV who initiate and complete TB preventive therapy (TPT) with 1HP, 3HP or 6H within the context of a patient- centered differentiated service delivery model allowing selection of TPT regimen and randomly providing enhanced adherence support versus the standard of care for TPT and adherence support.

3-COSTING: Evaluate the cost-effectiveness of comparative TPT regimens for the prevention of TB disease among children, adolescents and adults living with HIV.

4-SUSTAIN: Disseminate and promote uptake of evidence-based best practices, with emphasis on CDC priority countries.

Capitalizing on the BCM and TCH Global Health Network, TB GAPS provides a unique opportunity to examine these critically important questions in over 6,000 children and adolescents living with HIV in five countries with a high burden of TB.

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ⁱ WHO. Global Tuberculosis Report. Geneva: World Health Organization; 2019. Contract No.: License: CCBY-NC-SA3.01GO.

ⁱⁱ Dodd PJ, Yuen CM, Sismanidis C, Seddon JA, Jenkins HE. The global burden of tuberculosis mortality in children: a mathematical modelling study. Lancet Glob Health. 2017 Sep;5(9):e898-e906. PubMed PMID: 28807188. PMCID: PMC5556253. Epub 2017/08/16.

ⁱⁱⁱ WHO. Global Tuberculosis Report. Geneva: World Health Organization; 2018. Contract No.: License: CC BY-NC-SA 3.0 IGO.

^{iv} Jenkins HE, Yuen CM, Rodriguez CA, Nathavitharana RR, McLaughlin MM, Donald P, et al. Mortality in children diagnosed with tuberculosis: a systematic review and meta-analysis. Lancet Infect Dis. 2016 Dec 07;10.1016/S1473-3099(16)30474-1. PubMed PMID: 27964822.

^v Starke JR. Mortality in childhood tuberculosis: has there been progress? Lancet Infect Dis. 2016 Dec 07;10.1016/S1473-3099(16)30537-0. PubMed PMID: 27964821.

^{vi} Garcia-Prats AJ, Schaaf HS, Draper HR, Garcia-Cremades M, Winckler J, Wiesner L, et al. Pharmacokinetics, optimal dosing, and safety of linezolid in children with multidrug-resistant tuberculosis: Combined data from two prospective observational studies. PLoS Med. 2019 Apr;16(4):e1002789. PubMed PMID: 31039153. Epub 2019/05/01.

^{viii} WHO. Global Tuberculosis Report. Geneva: World Health Organization; 2016. Contract No.: WHO/HTM/TB/2016.13.