Preventing and treating tuberculosis among children living with HIV

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01 Rationale

Tuberculosis (TB) is a major contributor to morbidity and mortality in children living with HIV (CLHIV), particularly in TB endemic settings. TB in CLHIV is a preventable and treatable disease. WHO recommends a cascade of TB services for all CLHIV that begins with routine screening for TB symptoms and/or recent contact with an infectious TB case. It would end with either; 1) diagnosis of active TB disease and prompt initiation of TB treatment, or 2) exclusion of active TB disease and prompt initiation of TB preventive therapy (TPT). Prompt, appropriate treatment for active TB disease is effective in CLHIV.[1] Similarly, TPT (such as isoniazid preventive therapy) is effective in preventing TB disease and reducing mortality in CLHIV.[2,3] Effectiveness of both TPT and TB treatment is maximized when CLHIV receive early antiretroviral therapy (ART) to manage HIV infection.[4] However, implementation of these evidence-based interventions to treat and prevent TB in CLHIV remains poor.

02 Barriers and facilitators of implementation

Barriers

- Competing demands on healthcare workers (HCWs) reduce time and attention for screening CLHIV or recent TB contacts for TB disease as recommended.
- Young children cannot expectorate sputum and access to alternative specimen collection (gastric/nasopharyngeal aspirate, induced sputum, stool) is often limited.
- Access to chest x-ray (CXR) and TB laboratory diagnostics is often limited.
- Bacteriological confirmation or exclusion of TB is difficult because children are often paucibacilliary.
- Frontline HCWs are often not confident to clinically diagnose TB in children.
- Infrequent availability of child-friendly fixed-dose combination (FDC) medications for TB treatment or TPT results in crushing or splitting of adult pills, creating dosing and adherence challenges.

Facilitators

- Job aides and systems to facilitate comprehensive TB symptom and contact screening, including task-shifting to other cadres (for example, lay counsellors)
- Optimal placement of pediatric specimen collection facilities, with laboratory diagnostics (for example, Xpert MTB/RIF) and CXR equipment at high-volume pediatric sites
- Training and mentorship of HCW to collect pediatric specimens and clinically diagnose or exclude TB to improve timely access to TB treatment or TPT
- Supply chain systems to ensure uninterrupted supply of child-friendly regimens
- Job aides to assist HCWs with correct weight-band dosing and reporting to facilitate uptake and monitoring of TB treatment and TPT

03 Policy and legal considerations

Consider recommending TB screening, evaluation for TB disease, and either TB treatment or TPT for all CLHIV (as indicated) and addressing pediatric clinical and laboratory algorithms, regimens and dosing, as well as clinical monitoring and management in National TB, HIV and TB/HIV guidelines.

Consider eliminating or subsidizing service fees associated with pediatric TB diagnosis or treatment (for example, clinic visit and radiology fees) that may preclude timely treatment or prevention.

04 Steps for scale-up

Programs can assess the current implementation status of TB interventions for CLHIV using routinely reported national, regional and site-level data and routine monitoring and supervision visits to assess sites. For example: *How many sites currently routinely screen all CLHIV for TB at every clinical visit? How many sites currently initiate TPT for all eligible CLHIV?* Programs can convene task forces or technical working groups composed of key stakeholders to develop and execute a responsive, feasible plan to scale up necessary interventions. Existing and anticipated funding, commodities supply chain, TB and HIV burden, and clinical and laboratory resources are key considerations. Since CLHIV typically access health services across multiple entry points, integration and coordination across national and facility-level HIV, TB, maternal newborn and child health (MNCH) and nutrition programs are necessary to optimize access to TB services.

Programs can consider country-specific barriers and facilitators for pediatric TB screening. For example: *Is there a standard pediatric TB screening algorithm for CLHIV nationally and is it fully implemented?* Programs may consider task-shifting TB screening to trained lay counsellors or integrating TB screening into HIV standards of care or clinical checklists as a prompt/reminder. Additionally, as programs shift towards differentiated service delivery models for ART, family-centered approaches can ensure TB symptom and contact screening of all adults and children with TB risk and appropriate referrals continue, despite fewer clinic visits.

Efficient referral mechanisms for CLHIV with positive TB symptom screening can facilitate clinical and diagnostic evaluation. Programs can capacitate HCWs to promptly diagnose and treat TB disease (bacteriologically confirmed or clinically diagnosed) or exclude TB disease and initiate TPT. Immediate TB treatment initiation is indicated for CLHIV diagnosed with TB disease. In contrast, promptly initiated on TPT is indicated for CLHIV who do not have disease. National and regional mapping of TB diagnostic and clinical services, such Xpert MTB/RIF, CXR and gastric and nasopharyngeal aspirate relative to ART service delivery points may inform (re) allocation of resources to maximize coverage, especially in high-volume pediatric sites.

Establishing TPT eligibility criteria for CLHIV and ensuring that all pediatric and adult HCW are sensitized and trained accordingly can improve TPT scale-up. Programs can forecast the number of CLHIV eligible for TPT at the facility level to ensure adequate supply of pediatric TB medications (preferably child-friendly FDCs). Inclusion of correct regimen and weight-band dosing for children in HCW training can facilitate appropriate treatment. Materials (such as job aides and standard operating procedures) can be developed and used to educate and empower caregivers and communities to identify children at risk for TB, identify TB symptoms and monitor adherence to TPT or TB treatment. In addition, HCWs, caregivers and community leaders can be encouraged to access available community services to support adherence and retention. These may include peer support groups, orphans and vulnerable children programs and facility outreach, for example.

05 Case example of successful implementation

In 2016, the Ministry of Health in Uganda, supported by UNICEF and partners, conducted a comprehensive case study aimed at integrating TB services, including TB screening and TPT, into MNCH, child health, HIV and nutrition services. Findings then informed rapid scale-up of TB services for children at risk for TB, including CLHIV. Full case study can be accessed here:
https://www.unicef.org/health/files/2016SEP19_FINAL_Casestudy_childhood_TB_Uganda.pdf

06 Tools to support implementation

Latent TB infection: Updated and consolidated guidelines for programmatic management (WHO 2018: http://www.who.int/tb/publications/2018/latent-tuberculosis-infection/en/)

TB screening, diagnosis, treatment and prevention children and adolescents living with HIV pocketcard and poster (CDC/CSWG 2017: https://childhoodtb.theunion.org/system/resources/attachments/000/000/083/original/TB-HIV_Poster_30Oct.pdf?1509592210
https://childhoodtb.theunion.org/system/resources/attachments/000/000/084/original/TB-HIV-Card_30Oct_%281%29.pdf?1509592412)

Childhood TB Portal with free clinical resources, including information, education, and communication materials and courses (The Union: https://childhoodtb.theunion.org/)

07 Monitoring

Regular monitoring of CLHIV who initiate TB treatment or TPT can help HCW identify and address poor adherence and adverse events. Recognition, monitoring and reporting adverse events can be included in HCW training.

Additionally, programs can develop and implement systems, such as standard operating procedures and registers, to identify and track CLHIV/ caregivers who are at risk of being, or who have become, lost to follow-up.

TPT registers can help programs with clinical and programmatic monitoring and reporting. TPT data recording and reporting harmonization between HIV and TB clinic settings can improve efficiency, consistency and coordination.

08 Conclusion

- TB is a major cause of preventable disease and death in CLHIV, underscoring the need for appropriate TPT, with access to TB diagnosis and treatment as required.
- Progress to reduce the burden of TB in CLHIV has been slow, and programs should develop family-centered approaches and bring to scale ambitious, feasible plans for diagnosing, treating and preventing childhood TB.
- In addition to strengthening overarching clinical and laboratory resources for TB, pediatric-specific guidelines, training, tools and supply chain systems are necessary to ensure CLHIV are symptom-screened for TB at every clinical visit and promptly linked to TB treatment or TPT as appropriate.

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