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Caring for Adolescents and Young Adults with Tuberculosis or at Risk of Tuberculosis: Consensus Statement from an International Expert Panel

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Abstract

Background: Despite being a preventable and treatable disease, tuberculosis (TB) is a leading cause of death among young people globally. Each year, an estimated 1.8 million adolescents and young adults (AYAs; 10–24 years old) develop TB. In 2019, an estimated 161,000 AYAs died of the disease. AYAs have unique developmental, psychosocial, and healthcare needs, but these needs have been neglected in both TB care and research agendas. In order to improve outcomes in this age group, the specific needs of AYAs must be considered and addressed.

Methods: Through a consensus process, an international panel of 34 clinicians, researchers, TB survivors, and advocates with expertise in child/adolescent TB and/or adolescent health proposed

interventions for optimizing AYA engagement in TB care. The process consisted of reviewing the literature on TB in AYAs; identifying and discussing priority areas; and drafting and revising proposed interventions until consensus, defined *a priori*, was reached.

Results: The panel acknowledged the dearth of evidence on best practices for identifying and managing AYAs with TB. The final consensus statement, based on expert opinion, proposes nine interventions to reform current practices that may harm AYA health and well-being, and nine interventions to establish high-quality AYA-centered TB services.

Conclusion: AYA-specific interventions for TB care and research are critical for improving outcomes in this age group. In the absence of evidence on best practices, this consensus statement from an international group of experts can help address the needs of AYA with TB or at risk for TB.

INTRODUCTION

Each year, an estimated 1.8 million adolescents (aged 10–19 years) and young adults (aged 20–24 years) become sick with tuberculosis (TB), representing approximately 18% of the annual global TB incidence.^{1,2} Although it is preventable and treatable, TB is a leading cause of death among adolescents and young adults (AYAs) globally.^{3,4} The World Health Organization (WHO) estimates that in 2019, 71,000 adolescents (11,000 between the ages of 10–14 years and 60,000 between the ages of 15–19 years) and 90,000 young adults died of TB (Figure 1).^{5,6} TB is a leading cause of hospitalization and mortality among people with HIV, including AYAs.^{7–9}

AYAs face unique challenges with respect to TB and TB care. The risks of *Mycobacterium tuberculosis* infection and progression to TB disease increase during this period.^{10,11} Females are at greater risk for TB than males during early adolescence; risk among males increases during late adolescence.¹⁰ Risk for TB progression is exacerbated by HIV infection, which is a substantial concern in this age group. In 2021, approximately 28% of new HIV infections worldwide occurred in individuals between 15–24 years of age; moreover, AYAs experience worse outcomes in the HIV care cascade as compared to other age groups.^{12–14} Among AYAs with TB, those who are living with HIV, living in conditions of extreme poverty and/or violence, and/or were previously treated for TB disease are at risk for poor adherence to TB treatment and loss to follow-up.^{15–20}

Between the ages of 10–24 years, individuals undergo rapid growth and development; acquire the physical, cognitive, emotional, and social resources required for achieving health and well-being in adulthood; and become more autonomous and independent of caregivers.^{21,22} TB illness and treatment impact these transitions, and these transitions, in turn, shape how AYAs experience TB illness and treatment.

The WHO and other institutions have highlighted the need for healthcare services and research to address the specific needs of AYAs.^{22–26} However, policies and practices by most national TB programs (NTPs) do not currently account for AYA-specific needs and considerations.^{27–29} In 2021, to inform the update of the WHO guidelines and operational handbook for the management of TB in children and adolescents,^{30,31} the WHO

commissioned an evidence review to answer the following background question: *How can adolescents with TB or eligible for TB preventive treatment (TPT) be optimally engaged in care?* Given the dearth of evidence on best practices in this area,^{2,27,29} we convened an international expert panel to generate a consensus statement regarding needed interventions to optimize TB care for this age group.

METHODS

Background Review

To inform the consensus process, we conducted a background review evaluating published and unpublished data on the impact of TB and its treatment on five domains of adolescent well-being: (1) good health; (2) connectedness and contribution to society; (3) safety and a supportive environment; (4) learning, competence, education, skills, and employability; and (5) agency and resilience.^{29,32}

Composition of the International Expert Panel

Authors SSC, PMW, LAE, and staff from the WHO's Global TB Programme invited individuals from the following groups to participate in an international expert panel: clinicians who treat adolescents with TB; researchers with expertise in adolescent TB and/or adolescent health; adolescent/youth advocates; and survivors of TB illness during adolescence. We aimed to include panelists from diverse settings, including all six WHO regions. Invitations were issued via e-mail.

All invitees agreed to participate with the exception of two individuals from the Eastern Mediterranean Region, who did not respond to the invitations. The thirty-four participants identified themselves as one or more of the following: researchers (n=26), clinicians (n=19), advocates (n=10), and/or TB survivors (n=4). Panelists were from 16 countries, and reported working in adolescent TB, working in adolescent health, and/or receiving TB treatment in 36 countries (Figure 2). Those working as researchers, clinicians, and/or advocates reported a median of 10 (interquartile range: 7–14) years' experience.

Consensus Process

We convened two meetings of the international expert panel; the first occurred on May 17, 2021, and the second, on June 3, 2021. Both meetings were held virtually using the Zoom (Zoom Video Communications, San Jose, USA) platform. Meetings were conducted in English with simultaneous interpretation in Spanish and in Russian.

Ahead of the first meeting, we emailed a draft of the background review to all panelists.²⁹ In addition, using a structured, open-ended survey on Google Forms (Google LLC, Mountain View, USA), we asked panelists to propose interventions to improve the screening, diagnosis, and treatment of *M. tuberculosis* infection and TB disease in adolescents. Interventions were specifically sought for implementation at each of the levels of the health facility, the community, or in national policy.

During the first meeting, we summarized findings from the background review. We then divided into two groups to discuss and begin to prioritize proposed interventions for (1)

screening and diagnosis, and (2) treatment. Based on these discussions, SSC, PMW, and LAE drafted a set of proposed interventions, which were shared with all panelists by e-mail. Through a second Google Forms survey, panelists were asked to provide feedback on each proposed intervention. SSC, PMW, and LAE further revised the interventions based on this feedback.

During the second meeting of the international expert panel, using the anonymous polling feature on Zoom, each panelist voted to approve, approve with modifications, or reject each proposed intervention. We had established an *a priori* requirement of 80% approval to include each intervention in the consensus statement. We discussed all suggested modifications until we reached consensus. The final consensus statement was emailed to all panelists for endorsement.

RESULTS

Target Age Group

Although the WHO defines adolescents as individuals between the ages of 10–19 years,²³ panelists overwhelmingly voted to expand the age range for this consensus statement to include young adults (20–24 years old). As detailed elsewhere,²¹ the physical and social transitions of adolescence – including brain development, completion of education, and independence from caregivers – often extend beyond 19 years of age; therefore, this expanded age range better reflects the group that would benefit from the proposed interventions.

Current Practices in Need of Reform

Part 1 of the consensus statement (Table 1) proposes nine interventions to reform current practices that are detrimental to the well-being of AYAs. A key obstacle to addressing TB in AYAs is that TB programs have traditionally reported data for children <15 years of age and adults ≥15 years of age. Although a modeling approach has been used to estimate the global incidence of TB in AYAs,¹ the lack of epidemiologic data makes it challenging to measure the setting-specific public health impact of TB in this age group. Moreover, grouping younger AYAs with children and older AYAs with adults prevents examination of the unique clinical, developmental, and psychosocial needs of AYAs with TB. Given the age-related differences in TB presentation, diagnosis, and treatment across pediatric and AYA age groups,¹⁰ and building on the 2019 WHO request that NTPs with electronic case-based reporting systems stratify case notifications by five-year age bands for individuals <25 years old,³³ the expert panel emphasized the critical need for data disaggregated by age and, ideally, further disaggregated by sex.

NTPs generally do not recognize AYAs as a priority group for active TB case-finding, contact tracing, provision of TPT, or treatment of TB disease.²⁷ Yet, as consistently demonstrated by data from the last century, the risk of progression from TB infection to disease increases throughout adolescence and young adulthood.^{10,34–36} Moreover, the risk of primary infection and/or reinfection rises, likely due to AYAs' increased social contacts and higher risk of transmitting *M. tuberculosis*, in comparison to both younger and older

age groups.^{37–43} Further, AYAs are often parents or caregivers to young children, who are vulnerable to rapidly developing life-threatening forms of TB when they become infected in their households.⁴⁴ Because of these increased risks to both individual and public health, AYAs should be prioritized in TB diagnosis, treatment, and prevention.

In some settings, TB treatment is delivered via facility-based treatment support (historically referred to as directly observed treatment, or DOT).⁴⁵ However, schedule conflicts between facility hours and school, vocational training, and work can result in AYAs missing classes, work, and/or treatment doses. Facility-based treatment support creates additional treatment barriers, including transportation costs and wait times, that further contribute to inadequate treatment and/or loss to follow-up. This treatment delivery approach also adds to the burden of caregivers, who may face further barriers to accompany younger AYAs to the health facility, such as missed work and/or loss of income. Furthermore, facilities' separate, labeled entrances or treatment areas for TB services can result in disclosure of TB status. Not only does this facility layout violate patients' right to privacy, it also contributes to both anticipated and enacted stigma, as AYAs fear being seen engaging in TB services and can suffer discrimination from this disclosure.^{15,28,46} For these reasons, the expert panel states that family-oriented, community-based models of care should replace facility-based treatment support for AYAs. Within developmentally appropriate treatment models, treatment support may be delivered in a context-specific manner by community health workers, peer treatment supporters, and/or using digital adherence technologies such as video-supported treatment. Alternatively, medication administration by a family member or another trusted adult who is trained and supported by health providers may be considered for select AYAs.

To prevent TB transmission, AYAs with pulmonary TB are required to isolate at the beginning of treatment. The criteria for ending isolation vary between settings. According to the widely accepted "two-week rule," individuals with TB are released from isolation after two weeks if they are clinically improving and adherent to and tolerating treatment.³⁰ The "two-week rule" is not based in scientific evidence; in fact, multiple human-to-guinea pig studies suggest that in most cases, infectiousness ceases within a few days of effective therapy.^{47–49} However, in other settings, individuals with TB may be required to isolate for longer periods. For instance, in Lima, Peru, health providers instruct AYAs to isolate at home for two months, and in former Soviet countries, AYAs are routinely hospitalized for the full treatment course.^{50–52} Additionally, general isolation guidelines may differ from school policies with respect to when students with TB are permitted to return to class. For example, while China's national TB guidelines are consistent with the "two-week rule" for isolation, many schools will not permit students with TB to return until they complete their entire course of treatment.⁵³ Similarly, only 17 of 28 (61%) European NTPs that participated in a survey about adolescent TB allowed adolescents with non-infectious TB to return to school.²⁷ Adolescence and young adulthood are critical periods for cognitive, social, and psychological development. As shown from data across international settings, prolonged school absence and social isolation lead to the loss of interpersonal relationships and educational setbacks, reinforce stigma, and contribute to mental health challenges. These problems hinder AYAs' ability to accomplish the developmental tasks, educational attainment, and skills needed for their future health and livelihoods.^{29,50–52,54–56} Therefore,

the expert panel states that isolation policies should be implemented only on the basis of evidence for infectiousness, and that AYAs should be encouraged to return to school, vocational training, or work as soon as they are no longer infectious, have demonstrated adherence, and have appropriate support and treatment adherence structures in place.³⁰

When prescribing TB regimens, clinicians do not consistently consider or address adverse drug effects that are particularly harmful to AYAs. Because rifampicin and other rifamycins interfere with hormonal contraception, clinicians should explore with AYAs the need for alternative forms of contraception. This issue is particularly important given that TB disease in pregnancy is associated with increased risks of obstetric complications, low birthweight, and infant death.^{57,58} Skin discoloration associated with clofazimine—a frequent and effective component of regimens for multidrug-resistant TB (MDR-TB)—is distressing for AYAs. In settings with high MDR-TB prevalence, clofazimine-related skin discoloration is commonly recognized as a sign of MDR-TB treatment; as a result, it may be stigmatizing and may have implications for social relationships, such as described impacts on potential marriage for young women in India.⁵⁴ Healthcare providers should counsel AYAs and their family members about this adverse effect, and provide reassurance that skin discoloration resolves soon after clofazimine discontinuation. The irreversible sensorineural hearing loss associated with injectable agents (amikacin, streptomycin, kanamycin, and capreomycin), which are still used to treat MDR-TB, is devastating for AYAs, many of whom are in school or vocational training or entering the workforce and can be expected to have decades of healthy life ahead of them. Moreover, facility-based administration of injectable agents interrupts schooling, vocational training, and work. Therefore, injectable agents should be particularly avoided for AYAs, unless absolutely needed as part of a salvage regimen when there are no alternative options.

Finally, younger AYAs are often excluded from TB research, either given ethical concerns, logistical barriers for obtaining consent from the parent/guardian and assent from the adolescent, and/or preference among some researchers for enrolling only participants with microbiologically confirmed TB (as few pre-pubescent adolescents have microbiologically confirmed TB).⁵⁹ Some studies do not enroll individuals <18 years because they cannot consent to participation themselves, while others restrict enrollment to “adults” and exclude individuals <15 years. Even when studies that are primarily focused on adults include AYAs <18 years, they often enroll few participants in this age group, resulting in limited power for any age-stratified analysis; consequently, clinicians may feel uncomfortable applying study findings to the management of individual adolescents.⁶⁰ Exclusion from research hinders or, at a minimum, delays the ability of younger AYAs to access and benefit from advances in TB diagnostics and treatment regimens. For example, the BPaLM (bedaquiline, pretomanid, linezolid, moxifloxacin) and BPaL (bedaquiline, pretomanid, linezolid) regimens for MDR-TB are not recommended for individuals <15 years old.⁶¹ Yet, because these regimens are shorter, all-oral, and consist of fewer drugs, they enable AYAs to complete treatment with fewer missed doses and return more promptly to their education, work, and social lives. The expert panel concludes that AYAs—especially those under the age of 18 years—should be prioritized in TB research, including clinical trials and observational studies of new regimens. The panel also proposes that AYAs aged 10–24 years receive the shortest effective TB treatment recommended by WHO, given their particular challenges for treatment

adherence and the negative impact of TB treatment on their education and psychosocial development.²⁹

Development and Implementation of High-Quality AYA-Centered TB Services

AYAs experience many barriers to accessing health services, including conflicts between clinic hours and classes/work; concerns about privacy and confidentiality; anticipation of being judged and/or treated disrespectfully by providers; lack of services tailored to their specific clinical and developmental needs; limited health literacy; and challenges navigating care independently. To address these and other challenges, the WHO—informed by analyses of existing studies and policies, as well as by surveys of 735 primary care providers in 81 countries and 1143 adolescents in 104 countries—has established five principles and eight standards for quality health services for adolescents (Table 2).^{23,24}

To our knowledge, no published studies have evaluated the impact of AYA-specific interventions on TB outcomes. Multiple studies, however, highlight needs for AYA-centered TB care and key sources of support for AYA. In qualitative studies from the Russian Federation and Ukraine, adolescents hospitalized for TB treatment described the emotional and psychological benefit of friendships with each other during an otherwise profoundly isolating and distressing experience.^{51,52} The study from the Russian Federation further emphasized the importance of providers' attentiveness to both the medical and emotional challenges faced by AYAs receiving inpatient treatment for TB.⁵¹ Similarly, adolescents with drug-resistant TB in India recommended that TB care include peer support platforms and improved provider-patient communication.⁵⁴ In another qualitative study, health providers in Botswana identified unmet needs for achieving AYA-friendly TB services.^{28,46} Potential interventions included establishing peer support programs; providing community-based (rather than facility-based) treatment support; offering clinic hours that do not conflict with school or work; shortening clinic wait times; addressing TB-related stigma; providing more support for adherence and psychosocial needs, particularly for AYAs from socially vulnerable families; and training healthcare workers on how to provide high-quality care to AYAs.²⁸ Current gaps in the integration of TB services with other health services for AYAs may also contribute to inadequate care, as AYA health needs—including those related to mental health and sexual and reproductive health—may not be fully managed within current non-differentiated models of TB care.²⁹

Despite the absence of data on AYA-targeted interventions to improve TB outcomes, evidence-based interventions for other AYA health priorities serve as a guide for the development of AYA-friendly TB services. For example, peer-support interventions have been associated with improved AYA well-being, including decreased internalized stigma, HIV care retention, and adherence to antiretroviral therapy among AYAs living with HIV.^{62–66} Other adolescent-centered HIV care interventions—including adolescent-friendly HIV treatment clinics and family-based economic empowerment interventions—positively impact AYA retention in HIV services and HIV viral suppression.^{13,67–69} While efforts to scale-up and evaluate support for AYAs in HIV programs are in progress, the benefits for AYA outcomes are becoming clear.^{13,62–69}

Consistent with current evidence and the principles and standards for quality health services for AYAs outlined by the WHO, the expert panel proposed that NTPs develop plans to provide setting-specific AYA-friendly services (Table 3). The development of these plans should be overseen by a committee of AYAs who have been treated for TB and their families, youth advocates, experts in AYA health services, and experts in TB care. The committee should be actively involved in assessing current gaps and barriers to delivering quality AYA health services within TB programs. Plans should be informed by AYA-disaggregated TB data and indicators, as well as by existing evidence and frameworks for AYA-friendly models of care for HIV, sexual and reproductive health, and other health conditions. Furthermore, the implementation of AYA-centered services should be monitored and disclosed as part of national reporting.

CONCLUSION

Despite being a preventable and treatable disease, TB kills approximately 161,000 AYAs each year.^{5,6} To improve these outcomes—and to minimize the negative consequences of TB and its treatment on AYA well-being²⁹—NTPs and clinicians who provide TB care must consider and address the specific needs of AYAs. This consensus statement on improving care for AYAs with TB or at risk of TB outlines the steps needed to reform current practices that are harmful to AYAs, and to develop high-quality AYA-friendly TB services across the globe. This work represents a milestone for addressing AYA needs in TB care and mapping the ways forward to optimize AYA treatment outcomes and well-being. As such, this work contributed to the WHO's operational handbook on the management of TB in children and adolescents.³⁰

Informed by this expert consensus statement, the global TB community can ensure that TB prevention, diagnosis, and treatment are optimized for this age group, with full consideration of AYAs' development and well-being. These reforms are needed to address the needs of individuals in this vulnerable age group in order to achieve improved TB outcomes—and ultimately, to help end the global TB epidemic.

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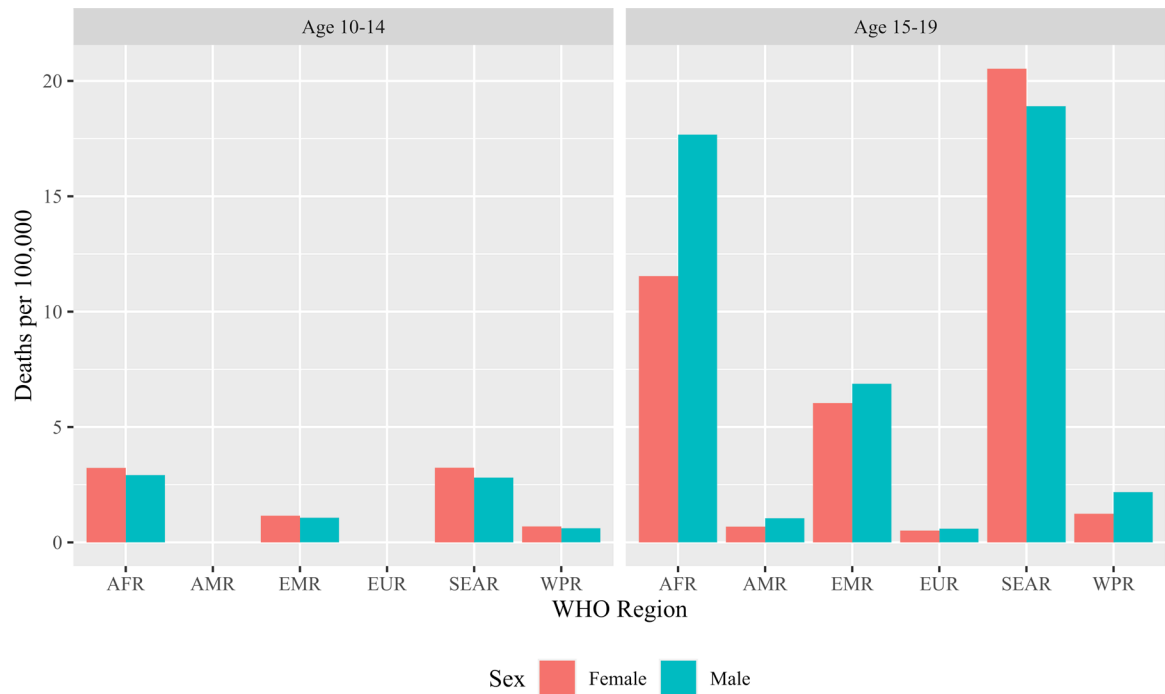
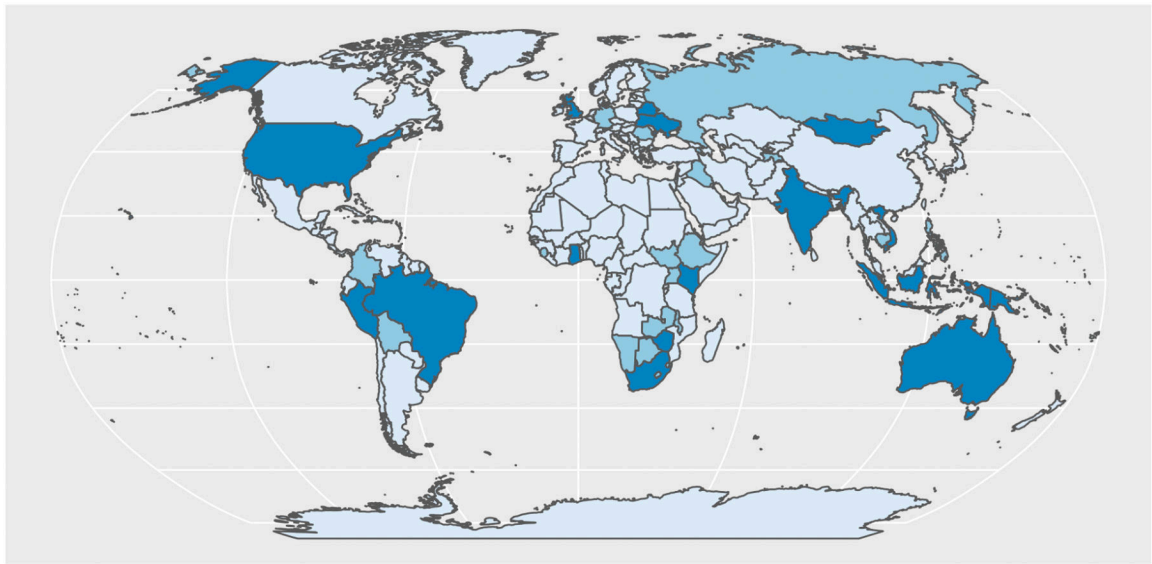


Figure 1: Tuberculosis Mortality among Adolescents by Sex and World Health Organization Regions, 2019*⁵

*Data not available for adolescents 10–14 years old in the Region of the Americas or for the European Region.

Abbreviations: AFR, African Region; AMR, Region of the Americas; EMR, Eastern Mediterranean Region; EUR, European Region; SEAR, South-East Asian Region; WHO, World Health Organization; WPR, Western Pacific Region.



Legend Neither Work/Treatment Location Only Residence and Work/Treatment Location

Figure 2: Countries Where Panelists Reside, Have Worked, and/or Have Received Tuberculosis Treatment*

*Many participants have worked in more than one country.

Table 1:

Proposed interventions to address needs of adolescents and young adults (AYAs) with or at risk of tuberculosis (TB), Part I

Reforming current practices to improve AYA well-being.	
1	AYAs—defined as individuals 10–24 years of age—have unique healthcare needs, dynamic trajectories in growth and development, and TB-related risks. Therefore, national TB programs (NTPs) should report age-disaggregated data for AYAs aged 10–14, 15–19, and 20–24 years . Ideally, the data should be further disaggregated by sex.
2	AYAs have high epidemiological risks for TB exposure and biological risks for developing TB disease after infection. They also have a propensity to develop cavitary lung disease, with its potential for high transmissibility of TB to others in the household or community. Thus, AYAs should be included as a priority group for active TB case-finding, contact tracing, treatment of <i>M. tuberculosis</i> infection and TB disease, and TB education .
3	Facility-based treatment support (historically referred to as directly observed treatment, or DOT) disrupts AYAs' social relationships, education, and vocational training; creates additional financial burdens and barriers to adherence; and exacerbates anticipated and enacted stigma associated with accessing TB care. Therefore, developmentally-appropriate, family-oriented, community-based models of care should be ensured for AYAs , with delivery of treatment support by community health workers, peer supporters, and/or digital adherence technologies such as video supported treatment. Alternatively, for select AYAs and contexts, treatment support may be delivered by family members or caregivers who are trained and supported by health providers.
4	AYAs treated for TB across global settings report loss of interpersonal relationships, interruptions to education, and mental health burdens that are exacerbated by prolonged isolation and/or hospitalization for TB treatment. Thus, country-specific approaches should minimize isolation and hospitalization for AYA with TB, with implementation of isolation policies based in evidence for infectiousness (i.e., allowing AYAs to return to school or higher education, vocational training, or work as soon as they are no longer infectious and appropriate support and treatment adherence structures are in place).
5	AYAs younger than 18 years of age are often excluded from TB research; as a result, they are unable to benefit from new advances in TB therapeutics. AYAs—especially those aged under 18 years—should be prioritized for inclusion in clinical trials and observational studies of treatments for infection and disease caused by drug-susceptible and drug-resistant <i>M. tuberculosis</i> , as well as research on diagnostics and social determinants of disease and outcomes.
6	AYAs experience substantial barriers to treatment adherence and are at risk for loss to follow-up from TB care, and TB treatment often interferes with their education and psychosocial development. These challenges distinguish them as a group that would benefit substantially from shorter regimens for TB preventive treatment (TPT) and for TB treatment. The shortest possible effective TPT and TB treatment regimens recommended by the WHO should be implemented for adolescents to facilitate adherence and minimize interference with education and other developmental tasks .
7	Adverse effects of first- or second-line treatment, including consideration of the acceptability to AYAs of a medicine's potential adverse effects, should be discussed with AYAs and their caregivers prior to starting treatment. For example, the reversible skin discoloration associated with clofazimine can lead to discrimination and negative impacts on social relationships. Sharing clear information with AYAs and caregivers regarding potential adverse effects, including the reversibility of certain effects, may help avert significant distress for AYAs and their families.
8	Sexual and reproductive health care is important for AYA health and well-being. Rifamycins render hormone-based contraception less effective. TB providers should counsel AYAs on contraception methods and ensure that AYAs have access to effective contraception .
9	Injectable agents should be avoided for AYAs, unless absolutely needed as part of a salvage regimen . Hearing loss associated with injectable agents is particularly devastating for AYAs. Moreover, facility-based daily administration of injectable agents is time-intensive and interrupts schooling, vocational training, and work.

Table 2:

Summary of the World Health Organization's Principles and Standards of Adolescent-Friendly Health Care

Principles²³	
1. Accessibility:	adolescents are able to obtain health services (e.g., convenient operating hours, transportation costs and time not prohibitive)
2. Acceptability:	adolescents are willing to obtain health services (e.g., confidentiality, privacy, non-judgmental providers, appealing care environment)
3. Equity:	all adolescents, regardless of social standing, are able to obtain the available health services
4. Appropriateness:	the health services that adolescents need are the ones that are provided, either directly or through referral
5. Effectiveness:	the appropriate services are provided in a way as to make a positive contribution to adolescents' health (e.g., providers trained to provide care for AYAs, evidence-based protocols and guidelines)
Standards²⁴	
1. Health literacy	<ul style="list-style-type: none"> • programs and social media to promote adolescent knowledge about their own health and where and when to obtain health services
2. Community support	<ul style="list-style-type: none"> • systems to ensure that parents/guardians, and community members/organizations recognize the value of providing health services to adolescents and support such provision and the utilization of services by adolescents
3. Appropriate package of services	<ul style="list-style-type: none"> • package of information, counselling, diagnostic, treatment and care services that fulfils the needs of all adolescents • service provision in the facility and through referrals and outreach
4. Providers' competencies	<ul style="list-style-type: none"> • technical and communication competence to provide effective health services to adolescents • commitment to respect, protect and fulfil adolescents' rights to information, privacy, confidentiality, non-discrimination, non-judgmental attitude, and respect
5. Facility characteristics	<ul style="list-style-type: none"> • convenient operating hours • welcoming and clean environment • privacy and confidentiality maintained • equipment, medicines, supplies and technology to provide effective care to adolescents
6. Equity and non-discrimination:	<ul style="list-style-type: none"> • provision of quality services to all adolescents irrespective of their ability to pay, age, sex, marital status, education level, ethnic origin, sexual orientation, or other characteristics
7. Data and quality improvement:	<ul style="list-style-type: none"> • collection, analysis and use of data on service utilization and quality of care, disaggregated by age and sex, to support quality improvement • support for health providers to participate in continuous quality improvement
8. Adolescents' participation:	<ul style="list-style-type: none"> • adolescent involvement in the planning, monitoring and evaluation of health services and in decisions regarding their own care, as well as in certain appropriate aspects of service provision

Table 3:

Proposed interventions to address needs of adolescents and young adults (AYAs) with or at risk of tuberculosis (TB), Part II

The following setting-specific components can be included in national plans to develop and provide AYA-centered TB services	
1	Ensure management of AYAs by providers who are knowledgeable and skilled in caring for this age group. Carry out regular training of TB clinicians, nurses, and multidisciplinary staff in AYA health , with the goal of better understanding and responding to the needs, values, and preferences of AYAs, and providing confidential, nonjudgmental, destigmatizing care.
2	Train general and specialist health care providers to increase their awareness of AYA-specific risks with respect to TB, and appropriate use of TB screening, diagnostics, and referral.
3	Increase AYAs' access to TB services , such as by offering after-school and weekend clinic hours; minimizing clinic wait times for AYAs; providing community-based or decentralized TB care for AYAs; and facilitating easy transfer between TB care sites when AYAs need to relocate, such as for school, work, or changing living situations.
4	Actively identify wider healthcare needs of AYAs with TB by integrating TB care with other health services, such as within comprehensive AYA health clinics. In the absence of co-located services, ensure clear referral pathways and linkages for common health concerns and conditions, such as sexual and reproductive health care, prenatal care, HIV care, treatment of substance use disorders, and mental health care.
5	Provide education and youth-friendly information that is accessible to AYAs, their caregivers, and the general public , with the goal of reducing TB-related stigma and increasing public awareness about AYAs' susceptibility to TB, TB symptoms, and ways to access TB testing.
6	Address the psychosocial and mental health needs of AYAs with TB , including risks for depression and substance use. Interventions to prevent common mental disorders (e.g., depression and anxiety) can promote social connectedness. Consider routine screening for mental health disorders, provision of counseling and other forms of psychological support, employment of trained peer counselors, and formation of peer support groups.
7	Empower caregivers to effectively support AYAs' TB treatment , including through education, counseling, and identifying and addressing family or caregiver needs, such as financial hardship.
8	Collaborate with the education sector to develop policies that promote school engagement and retention of students with TB, facilitate TB screening and contact tracing, and provide adherence support for TB treatment if needed for students at school. Actively engage with local schools to build their understanding of TB, and support schools to practically and positively respond to students with TB.
9	Collaborate with other sectors to address basic needs for AYAs with TB and their families . These needs may relate to catastrophic financial impacts (direct and indirect) of TB and its treatment, food security, needs for continued education, and protection against violence.