



Emotional Impacts of TB amongst Adolescents Patients

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Webcast

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Emotional Impact of TB Among Adolescent Patients

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World TB Day, 2024

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 - My patients, who have taught me so much

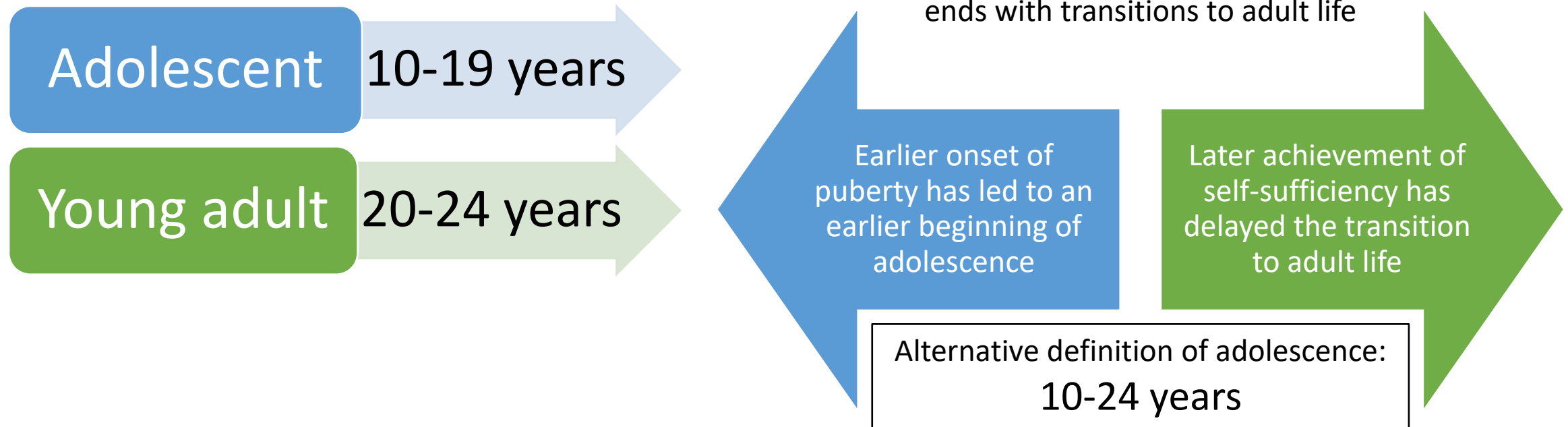
Objectives

- Identify common mental health considerations in adolescent TB
- Recognize validated tools to screen patients if concerns arise
- Identify strategies to make TB care easier for adolescents

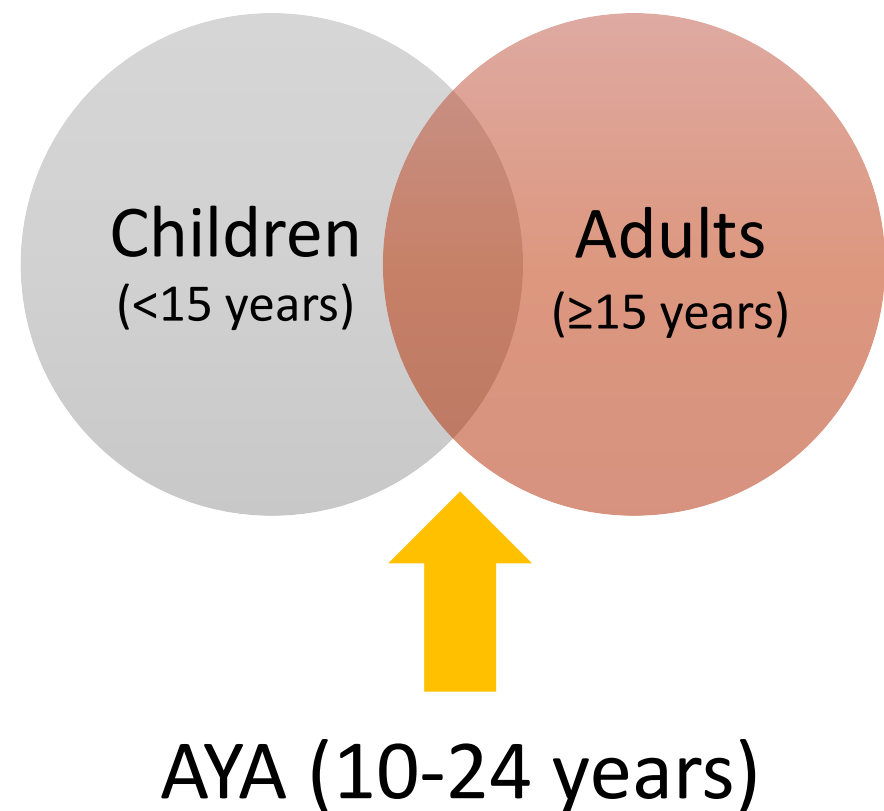
Adolescent TB: Epidemiology

“ADOLESCENTS” AND “YOUNG ADULTS” (AYA)

WHO definitions:



ADOLESCENT TB HAS BEEN INVISIBLE

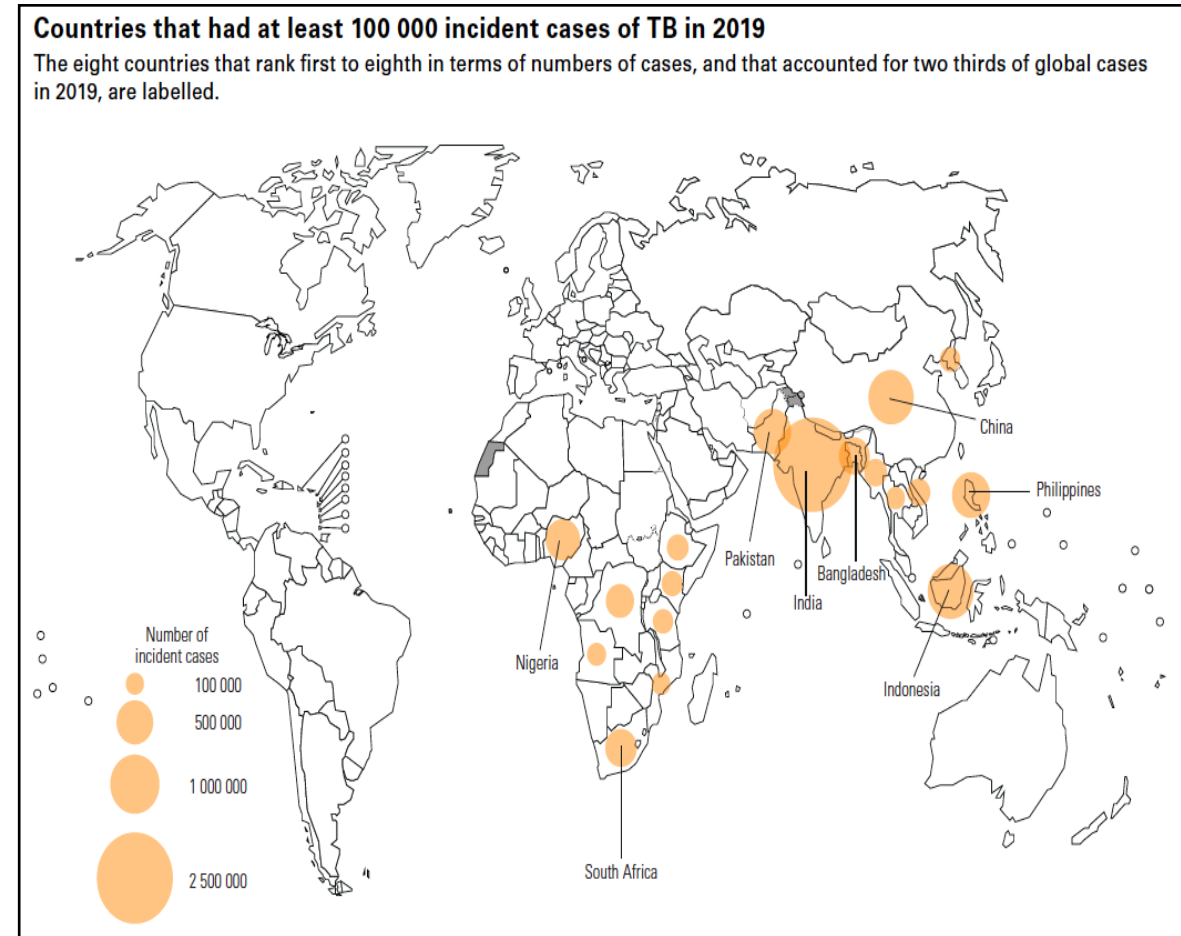
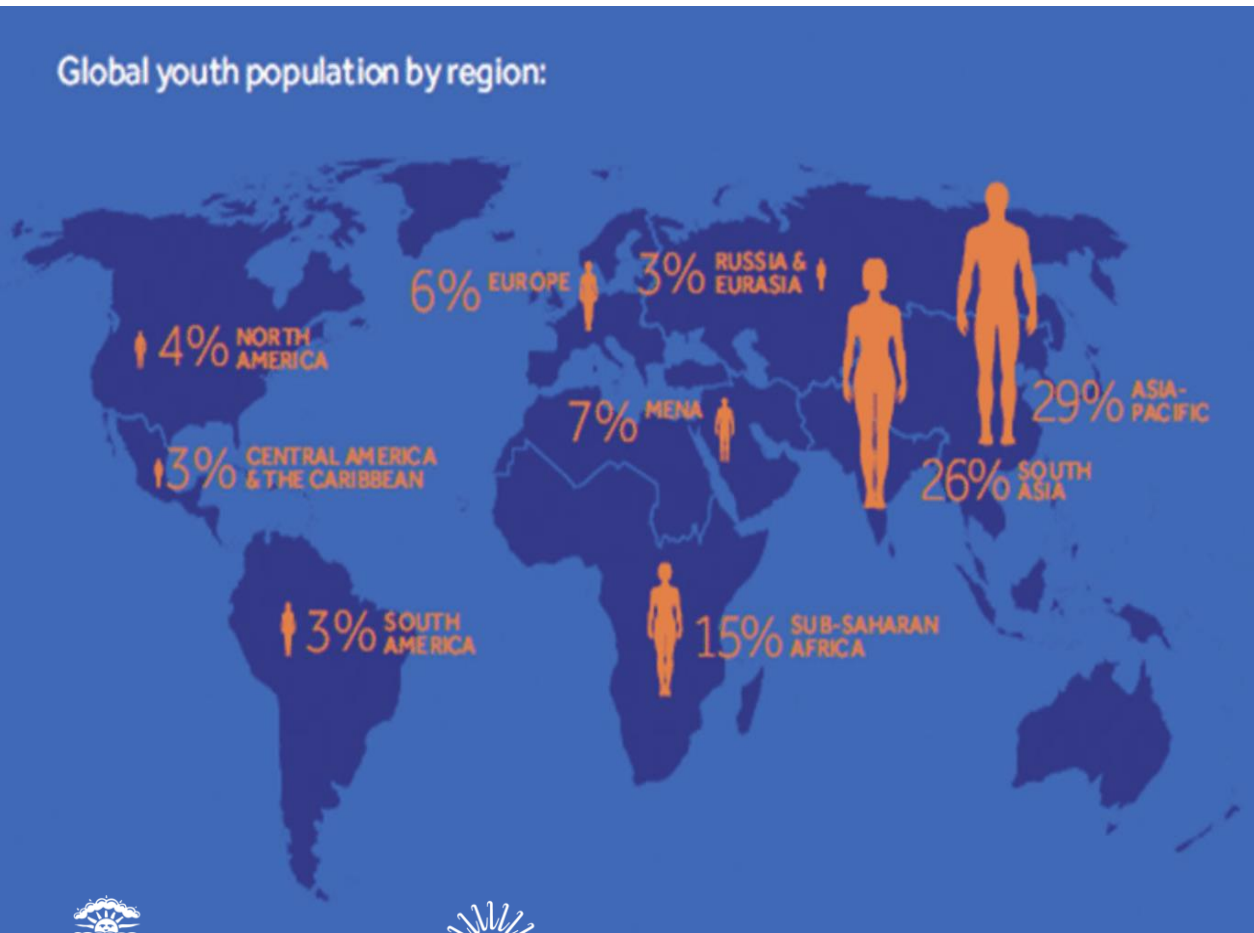


Survey of 28 European NTPs about TB in Adolescence

Policy	High-burden (n=9)	Low-burden (n=19)
Specific TB care policy for adolescents	44%	11%
Expect adolescents to have increased risk of getting TB	44%	16%

EPIDEMIOLOGICAL SIGNIFICANCE

ESTIMATED 1,800,000 INCIDENT TB CASES/YEAR IN 10-24 YEAR-OLDS



Why do we care about mental health in TB?

- Humanistic:
 - Depression is common, but uncommonly addressed
 - Their encounter with us may be one of the few opportunities to establish care for our patients
- Practical:
 - Adherence improves with addressing mental health conditions
 - Clinical outcomes almost uniformly better, across conditions, if patients are not depressed

Are trajectories of depressive symptoms during the first half of drug-sensitive pulmonary tuberculosis treatment associated with loss to follow-up? A secondary analysis of longitudinal data

Results Three trajectories were identified: 'declining', 'growth' and 'high'. These trajectories were observed in 182 (68.7%), 53 (20%) and 30 (11.3%) of the 265 individuals, respectively, during the first half of PTB treatment. Compared with those with a 'declining' trajectory, individuals with a 'growth' trajectory had a higher likelihood of experiencing LTFU during the second half of PTB treatment, after controlling for sociodemographic factors and at least weekly alcohol use (OR 3.9; 95% CI 1.09 to 13.97, $p=0.036$).

Stigma & Guilt

Stigma: What happens when you Google TB?

PHOTOGRAPHS BY NATALLIA GORMALOVA FOR THE NEW YORK TIMES

Weighing a patient with tuberculosis at the Kaneshie Polyclinic in Accra, Ghana. TB has passed Covid as the deadliest infectious disease, despite new medicines and diagnostic tools.

Curable but still so deadly

ACCRA, GHANA

BY STEPHANIE NOLEN

At Kaneshie Polyclinic, a health center in a hardscrabble neighborhood of Accra, the capital of Ghana, there is a rule. Every patient who walks through the door — a woman in labor, a construction worker with an injury, a child with malaria — is screened for tuberculosis.

This policy, a national one, is meant to address a tragic problem: Two-thirds of the people in this country with tuberculosis don't know they have it.

Tuberculosis, which is preventable and curable, has reclaimed the title of the world's leading infectious disease killer, after being supplanted from its long reign by Covid-19. But worldwide, 40 percent of people who are living with TB are untreated and undiagnosed, according to the World Health Organization. The disease killed 1.6 million people in 2021.

The numbers are all the more troubling because this is a moment of great hope in the fight against TB: Significant innovations in diagnosing and treating it have started to reach developing countries, and clinical trial results show promise for a new vaccine. Infectious disease experts who have battled TB for decades express a new conviction that, with enough money and a commitment

An end to tuberculosis could be within reach. So why are millions dying from it?



Examining scans at the Kaneshie clinic. Worldwide, 40 percent of people who are living with TB are untreated and undiagnosed, according to the World Health Organization.

to bring those tools to neglected communities, TB could be nearly vanquished.

"This is the best news we've seen in tuberculosis in decades," said Puneet Dewan, an epidemiologist with the TB

vealed both the progress and the remaining barriers. Despite the clinic's policy of screening everyone for TB, which most often attacks the lungs, by asking a few questions about coughs and other symptoms, patients streaming into the single-story building were sent for care without any such queries. A member of the TB team, it turned out, was on holiday, another was on maternity leave and a third was out sick. That left just two, who were busy processing tests and doling out drugs.

So no one was screened, not that day or any other day in the previous week.

"It is a good policy, it works well when we can do it, but personnel is a problem," said Haphsheitu Yahaya, the tuberculosis coordinator at the clinic.

When the screening policy is working, new medications — the first to come to market since the 1970s — can be taken as just a couple of pills each day, rather than as handfuls of tablets and painful injections, the way TB treatments have been delivered in the past.

Those diagnosed with drug-resistant TB receive medication to take for six months — a far shorter time than previously required. For decades, the standard treatment for drug-resistant TB was to take drugs daily for a year and a half, sometimes two years. Inevitably, many patients stopped taking the medicines before they were cured and ended up

TUBERCULOSIS, PAGE 2

Dire TB warning to SA

South Africa must declare emergency, says World Health Organisation

Super resistant TB rife in KZN

MANDELA, 27 NOVEMBER 2022

Tugela Ferry unites to fight double disease crisis



Outbreak of killer TB at Tugela Ferry

THE TUGELA FERRY COMMUNITY HEALTH CENTRE

Cup's most unlikely hero: Afghanistan

RICHARD MIL

STIGMA

“My neighbors knew I had TB, so they used to tell everyone that they should stay away from me else I will spread the disease to them. I was asked not to sit outside home; they used to scold me that don’t come outside.” |

— 15-year-old female, Mumbai, India

“Wealthy people were there [at a tennis court in front of the hospital] . . . they disliked our company because we were poor. They humiliated us . . . said unpleasant things . . .”

— 19-year-old female, Kyiv City, Ukraine

“[The children in the neighborhood] call me names and they hit me and stuff like that. [They say] ‘TB thing, just go away.’ They think I’m going to infect them.”

— 12-year-old adolescent, Cape Town, South Africa

“When I had tuberculosis, I felt that, as if no one wanted to get close to me, because they found out that I had the disease and they thought I was going to infect them ... I felt like, as if I was something from another world no one wants to get close to me.”

— 11-year-old female, Lima, Peru

Adaptation and validation of a TB stigma scale for adolescents in Lima, Peru

>15 years ($n = 181$)*

- 1 Scared to tell my family members that I have TB
- 2 Scared to go to the health center to get my pills for fear that others will see me
- 3 Scared to tell other people I have TB because they may think I have AIDS
- 4 Guilty that I got TB because I didn't eat well
- 5 Guilty because I have TB and therefore am a burden for my family
- 6 Careful about whom I tell I have TB
- 7 Scared that I will lose my friends if I tell them I have TB
- 8 Scared to tell people outside my family that I have TB
- 9 Alone because I have TB
- 10 Hurt because of the way others have reacted when they find out I have TB

Adaptation and validation of a TB stigma scale for adolescents in Lima, Peru

Table 3 Correlations between adolescent TB stigma scale scores and other key psychosocial indicators among adolescents undergoing TB treatment in Lima, Peru, stratified by age*

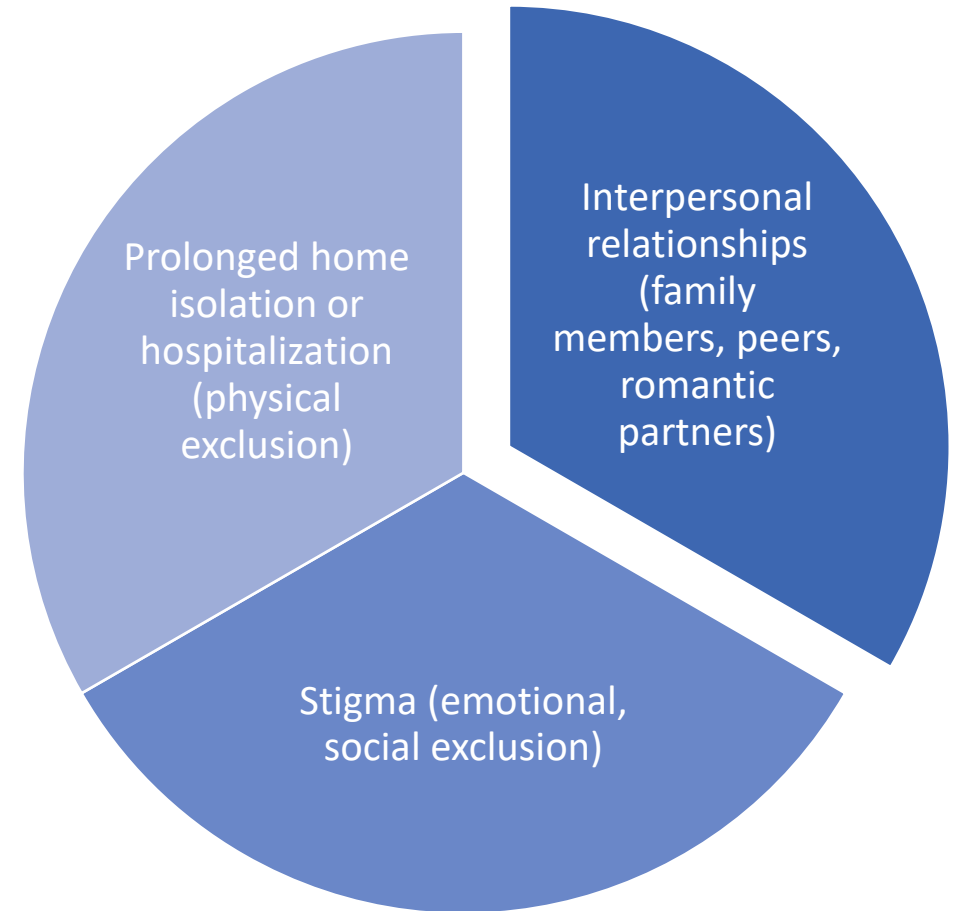
	γ	<i>P</i> value
Overall (<i>n</i> = 231)		
Adverse childhood events	0.13	<0.05
Depression	0.39	<0.001
Suicidal ideation	0.27 [†]	<0.001
Self-efficacy	0.01	
Social support	−0.19	<0.01
Age ≤15 years (<i>n</i> = 65)		
Adverse childhood events	0.17	
Depression	0.36	<0.01
Suicidal ideation	0.25 [†]	<0.05
Self-efficacy	−0.07	
Social support	−0.06	
Age >15 years (<i>n</i> = 166)		
Adverse childhood events	0.11	
Depression	0.39	<0.001
Suicidal ideation	0.28 [†]	<0.001
Self-efficacy	0.05	
Social support	−0.26	<0.01

Feelings of Guilt

- Risk to family, friends
- Understanding of causation
- Cannot contribute economically
- Increased costs to families (transport to clinics, CXRs)

Isolation: respiratory isolation → social isolation, school disruption

- Meaningful interpersonal relationships
- Being valued, respected, and accepted as part of the community



Impact of prolonged isolation on adolescents with drug-susceptible tuberculosis in Lima, Peru: a qualitative study

... He was sad because he doesn't like to miss school, he doesn't like it ... He felt sad, a little depressed because he wanted to go to school, but they forbade him to go to school. (Participant #82, mother of a 14 years old male)

At the beginning [I felt] a little, a little down, like sad ... because all of your progress in your studies stops. You were moving forward, and from one moment to another everything ends. You have to stay away from people because you are infectious to others. (Participant #6, 19 years old male)

For the first few months I did feel a bit, like, forgotten, closed off ... from my friends ... I was separated [from them]. (Participant #52, 18 years old male)

The most difficult thing for me is to leave my family and feel alone ... and live alone for a while until I recover ... during those days I felt alone, without even a single family member. (Participant #32, 18 years old male)

[She was] different, depressed. My daughter is [usually] very happy ... She was sad, down ... [for] three months she was like this here at home. (Participant #8, mother of a 12 years old female)

IMPACT OF ISOLATION IN LIMA, PERU

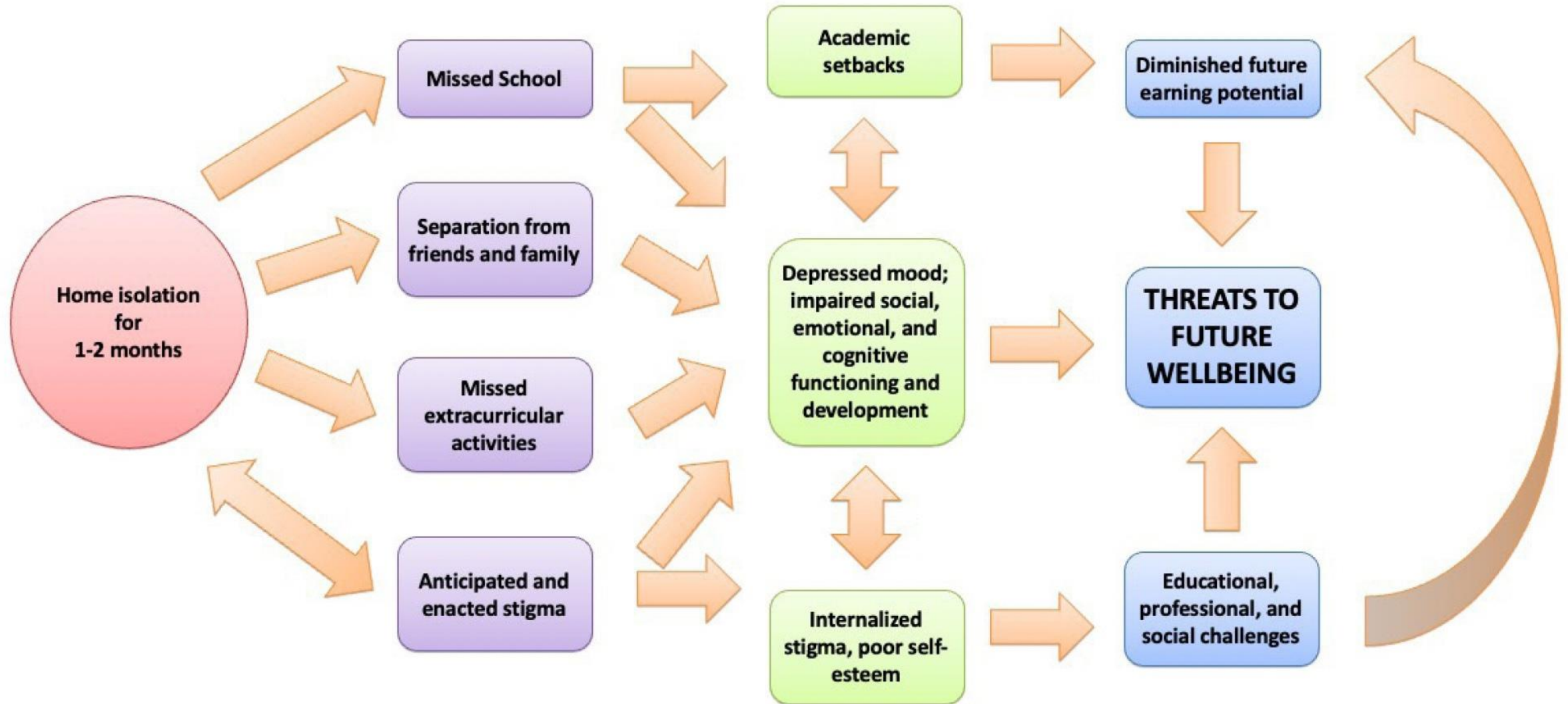


Figure 2 Pathways between prolonged home isolation and threats to adolescents' future well-being.

EDUCATIONAL DISRUPTIONS

“I couldn’t read Afrikaans [anymore].”

— 12-year-old female, Cape Town, South Africa

“It’s not easy when you have a child with MDR, because those tablets were making him very, very dizzy. I was worried in the morning when he must go to school, you can see he is dizzy.”

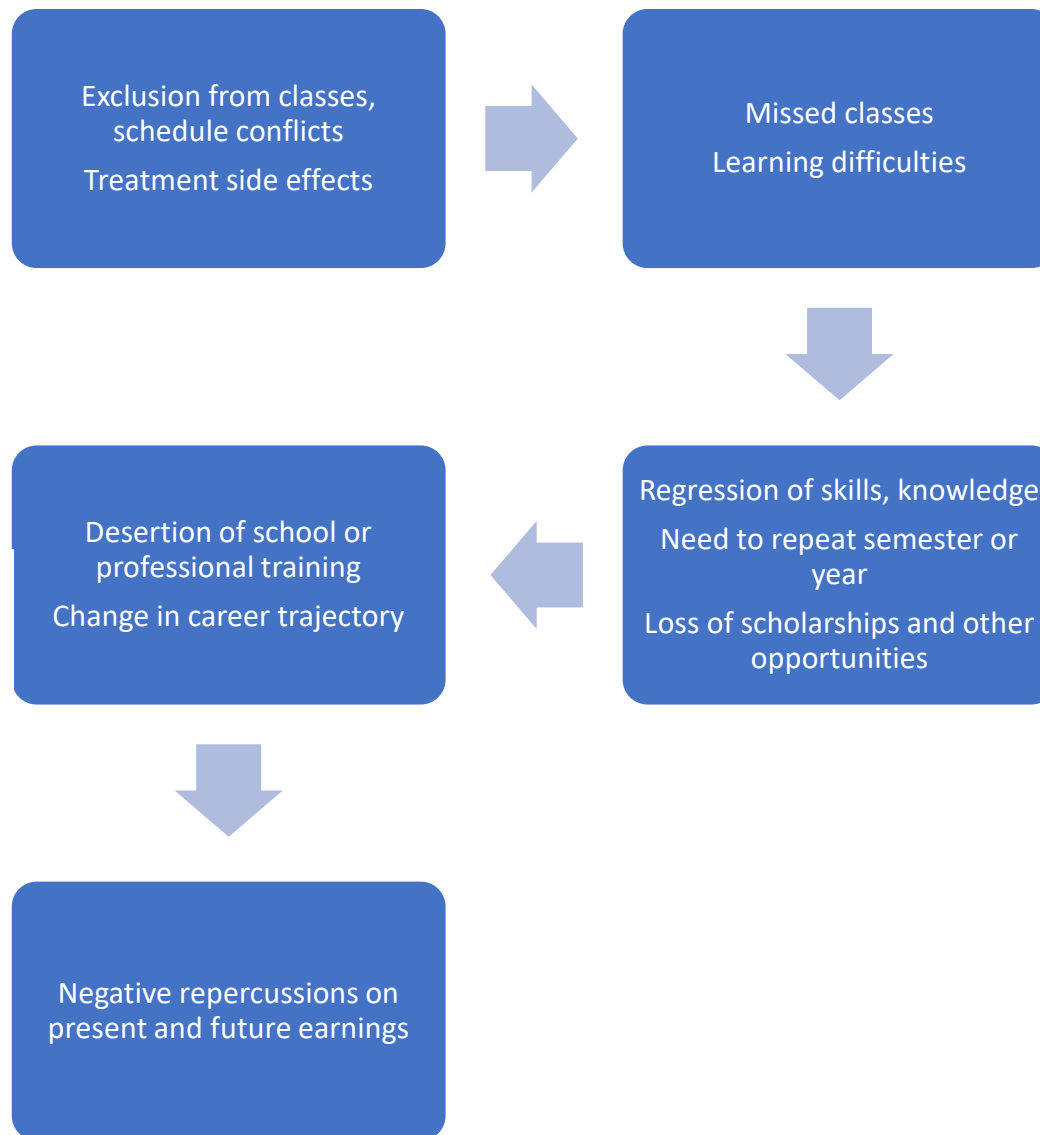
— Caregiver of a 14-year-old male, Mumbai, India

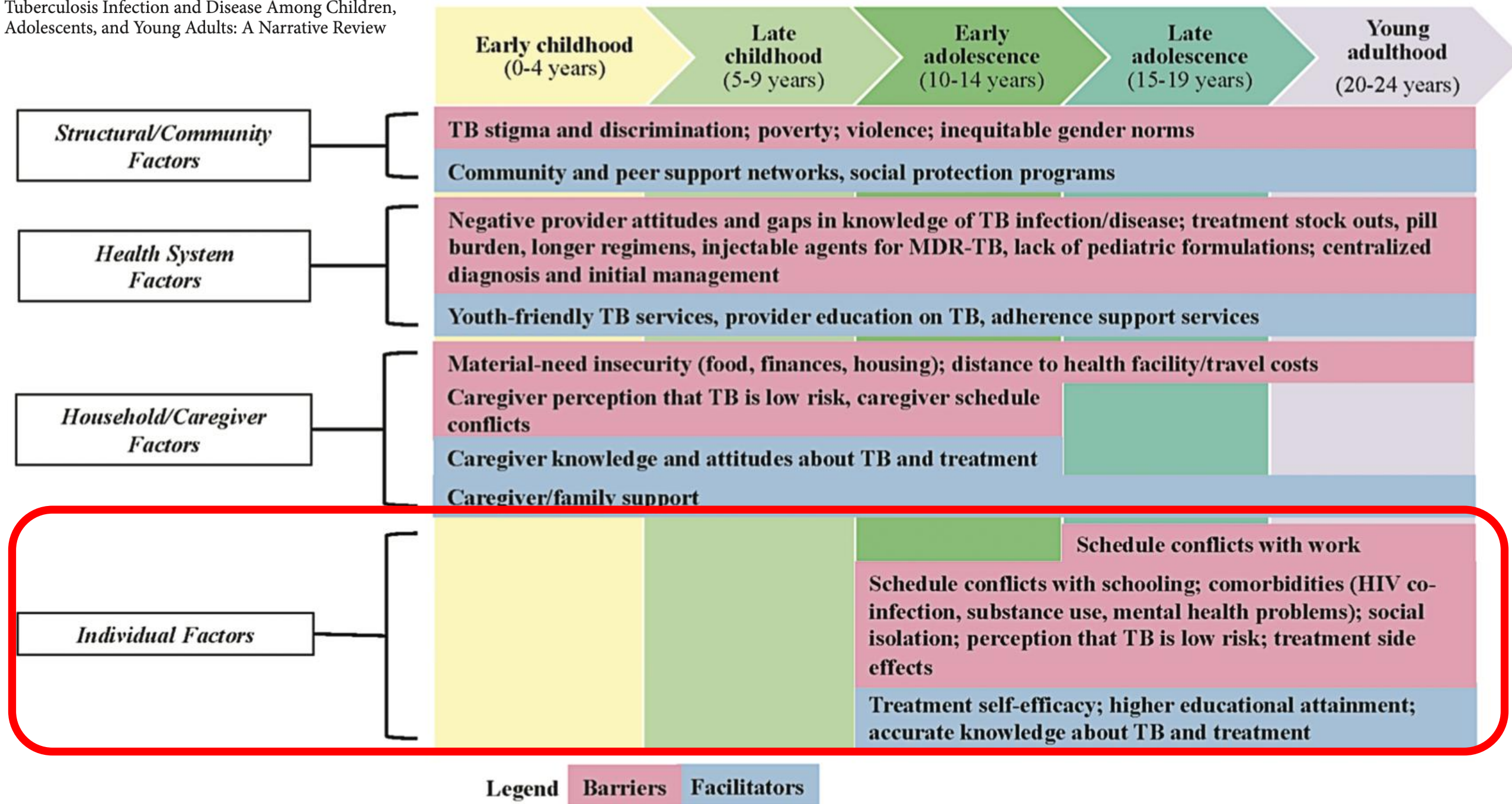
“I felt bad because I was doing fine in everything, grades [and] all that, and to leave all that . . . Yes, I lost the year . . . I had to leave my vocational [school] and then dedicate myself to the health center.” |

— 17-year-old male, Lima, Peru

“I spent 4 years with TB. I wanted to study more, become a teacher. This disease has taken important years of my life.”

— 15-year-old female, Mumbai, India





Adolescent, caregiver and provider perspectives on tuberculosis treatment adherence: a qualitative study from Lima, Peru

	Adolescents and caregivers	Healthcare providers
Health system related	<ul style="list-style-type: none">▶ The most substantial barrier was the requirement of daily, in-person DOT, which was administered during limited hours. This barrier was mitigated by allowing adolescents to access treatment after-hours. However, after-hours DOT was not always reliable.▶ Adolescents could receive DOT only at the health centre nearest their home. Therefore, adolescents had difficulty accessing treatment when they travelled, relocated, and for those with divorced/separated parents, stayed at the other parent's house.▶ A few adolescents and caregivers reported disrespectful treatment by health providers.▶ Very few adolescents complained about long wait times at the health centre.	<ul style="list-style-type: none">▶ DOT hours conflicted with school or work; however, healthcare providers allowed adolescents to access treatment after-hours. Unlike adolescents and caregivers, healthcare providers did not report any problems with after-hours DOT.

Potential solution:

- vDOT
- Texting reminders

Adolescent, caregiver and provider perspectives on tuberculosis treatment adherence: a qualitative study from Lima, Peru

Socioeconomic related	<ul style="list-style-type: none">▶ One adolescent needed to work to support his family, and the best job opportunity for him was located in a rural part of Peru where TB treatment was difficult to access.▶ Two adolescents with divorced/separated parents missed doses when they went to stay with their fathers and lacked bus fare back to the health centre, which was near their mothers' homes.▶ TB diagnosis and treatment were free, but sometimes CXR machines at health centres did not work, and families had to pay for CXRs at private facilities. One adolescent did not have enough money for the CXR that is required to transition to the continuation phase of treatment.	<ul style="list-style-type: none">▶ Occasionally, adolescents did not have enough money for transportation to the health centre.▶ Like adolescents and caregivers, providers also reported that TB diagnosis and treatment were free of charge, but sometimes CXR machines at health centres did not work, and adolescents had to pay for CXRs at private facilities.
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Potential solution(s):

- Food baskets
- Assistance with transport
- Flexibility to see adolescents without parent physically present or telemedicine visits

Adolescent, caregiver and provider perspectives on tuberculosis treatment adherence: a qualitative study from Lima, Peru

Patient related	<ul style="list-style-type: none">▶ Adolescents often felt ashamed to be seen in the TB treatment area of their neighbourhood health centre.▶ Some adolescents felt invulnerable to TB and believed that they would be fine regardless of TB treatment adherence.▶ Adolescents occasionally forgot to go to the health centre for DOT, but forgetfulness was not a major treatment barrier.▶ Three adolescents missed doses due to fears about TB treatment. One adolescent missed a dose because she skipped breakfast one morning and thought the pills would harm her if she did not eat first. Another adolescent was nearly lost to follow-up because she was pregnant, and family members told her that TB treatment would harm her fetus. The third adolescent missed doses because he feared TB medications were addicting.	<ul style="list-style-type: none">▶ Adolescents who were not supervised and supported by their parents or other family members during treatment tended to have worse adherence.▶ Providers also observed that many adolescents felt ashamed to be seen in the TB treatment area of their neighbourhood health centre.▶ Some adolescents were described as too 'lazy' or 'unmotivated' to adhere to treatment. A few healthcare providers complained that some adolescents could not manage to show up at the health centre during the designated hours.▶ Most adolescents and their families were able to be educated about the importance of treatment, though occasionally, adolescents' family members believed that alternative therapies (such as herbs or moving to the mountains) were sufficient to cure TB.
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Potential solution(s):

- vDOT
- Addressing food insecurity
 - <https://www.feedingamerica.org/find-your-local-foodbank>
- Family-based care

Adolescent, caregiver and provider perspectives on tuberculosis treatment adherence: a qualitative study from Lima, Peru

Therapy related	<ul style="list-style-type: none"> ▶ Adolescents had difficulty staying motivated throughout the long treatment. ▶ Adolescents did not like to take so many pills at once. ▶ Adolescents experienced frequent adverse treatment events. For some adolescents, these adverse treatment events were barriers to adherence. ▶ Two of the youngest adolescents were unable to swallow the pills, which had to be crushed by their caregivers. 	<ul style="list-style-type: none"> ▶ Providers agreed that adolescents had difficulty staying motivated throughout the long treatment and did not like to take so many pills at once. ▶ According to healthcare providers, adverse treatment events occurred infrequently in adolescents, especially in comparison with older patients.
Condition related, including comorbidities	<ul style="list-style-type: none"> ▶ Once adolescents began feeling better, they became less motivated to adhere strictly to TB treatment. ▶ Comorbidities, specifically depression and substance use disorders, were treatment obstacles for several adolescents. 	<ul style="list-style-type: none"> ▶ Multiple factors that occur at the transition from intensive to continuation phase—symptom resolution, treatment fatigue, three times a week (instead of daily) dosing and resumption of normal activities—impeded treatment adherence. ▶ Substance use disorders were mentioned much more frequently by healthcare providers than by adolescents or caregivers.

Potential solution(s):

- Communicating directly with adolescent (vs parent)
- Educational materials targeting adolescents, addressing perceptions of invulnerability
- Fixed-dose pills
- Dissolving tablets and other child-friendly formulations
- Incorporate medicines into daily routine
- ‘Treasure chest’ or cell phone minutes

Tying adherence to positive outcomes

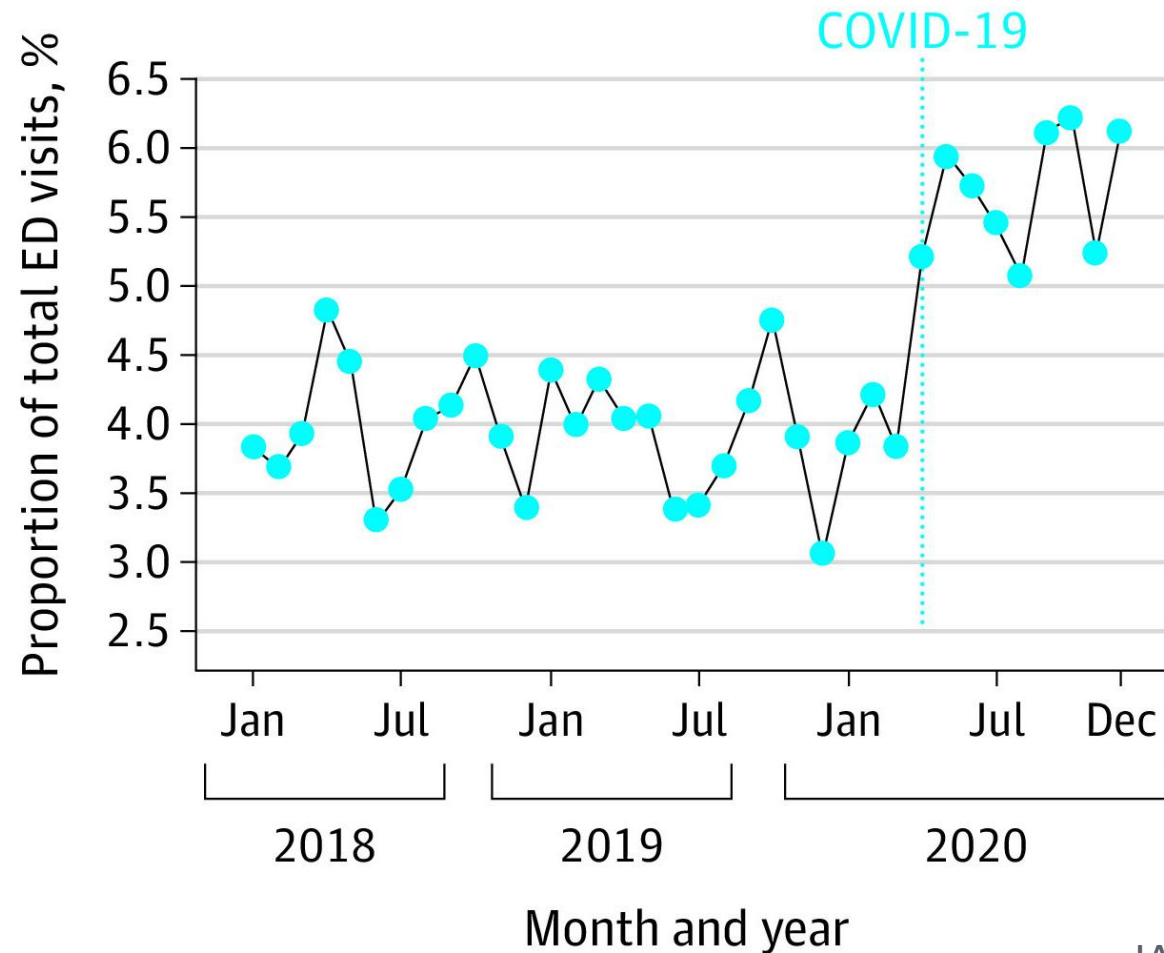
- Pilot in South Africa using urine dipsticks
- If have therapeutic concentrations of TB medication metabolites in urine, a code appears
- Code could be redeemed for cell phone minutes

Depression & Suicidality

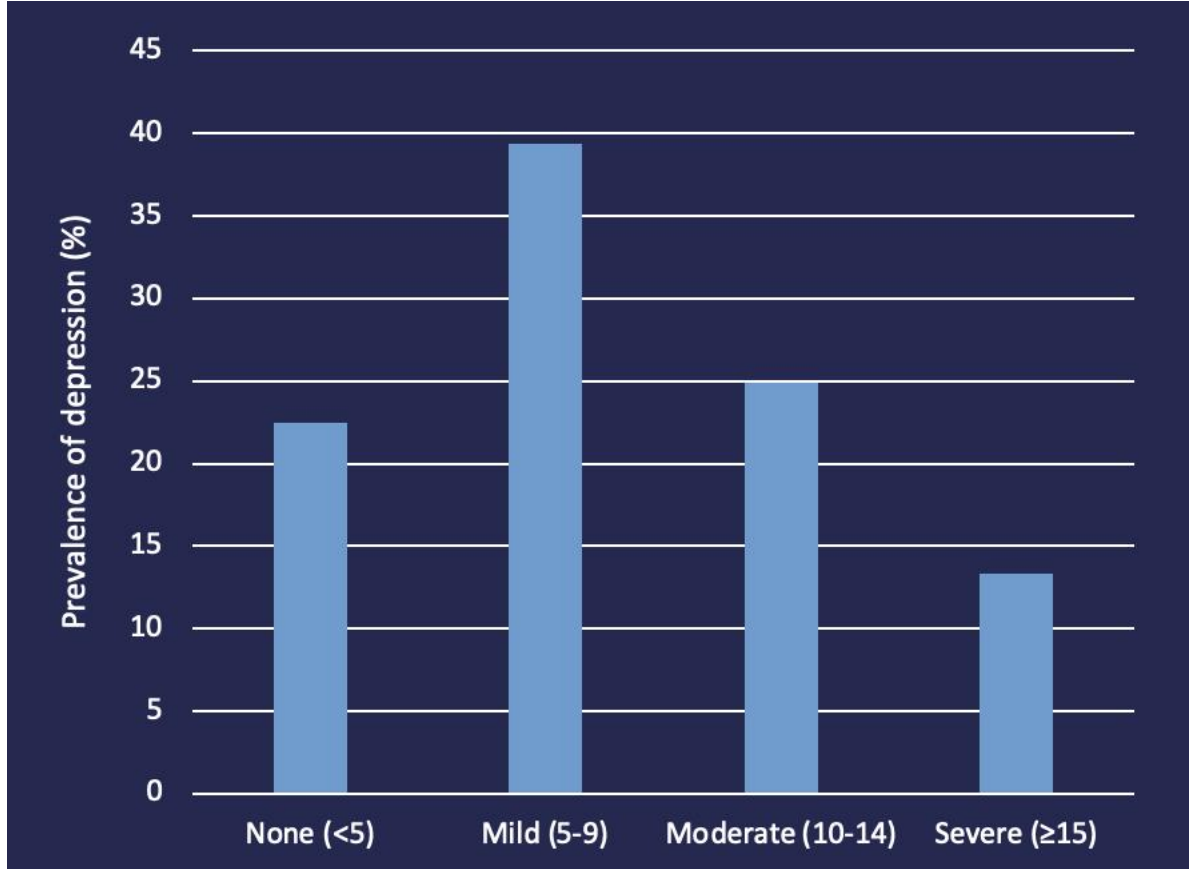
*Depression seen in 30-65% of adults with TB

COVID and Mental Health

B Proportion of ED visits for MH conditions



MENTAL HEALTH



*Preliminary data from Lima cohort
(n = 249) using PHQ-9*

Variables associated with depression (χ^2):

- Gender (female > male)
- Age group (highest in 13-16 year-olds)
- ACEs
- Hunger

Suicide Screening Tools: ASQ [Ask Suicide (screening) Questions]

- In the past few weeks, have you wished you were dead?
- In the past few weeks, have you felt that you or your family would be better off if you were dead?
- In the past week, have you had thoughts about killing yourself?
- Have you ever tried to kill yourself?

Interaction with psychotropic medications:

RIF and INH

Drug Class	Drug	Interaction
Mood stabilizers	Valproate	↓ valproate
Antipsychotics	Olanzapine	↓ olanzapine
Antidepressants	SSRIs	↓ SSRI (INH can increase levels)
	SNRIs	(INH can increase levels)
	Tricyclics	↓ TCAs
Anxiety	Benzodiazepines	↓ benzodiazepine (INH can increase levels)

Don't you forget about me: TB
infection

Latent TB and depressive symptoms in household contacts of persons with active TB

Table 1 Association between baseline LTBI and depressive symptoms at 12 months of follow-up among HHCs of patients receiving TB treatment

Baseline LTBI status	Depressive symptom status at 12 months of follow-up*		Univariate (n = 557) cOR (95% CI)	Multivariate (n = 514) [†] aOR (95% CI)
	PHQ-9 scores 0–4 n (%)	PHQ-9 scores 5–27 n (%)		
Negative	375 (89.5)	44 (10.5)	Reference	Reference
Positive	113 (81.9)	25 (18.1)	1.89 (1.09–3.19)	1.93 (1.08–3.39)

After adjusting for potential confounders, HHCs with LTBI at baseline had almost two times the odds of exhibiting depressive symptoms at follow-up compared with those without LTBI at baseline

TB Infection

- Emphasize isolation not needed
 - Privacy and vDOT
 - Can avoid giving medication at school
 - Chest 'clearance' letter
 - Social media considerations
- Discuss substance use/abuse
- Rifamycin urine and the adolescent boy



SUBSTANCE USE

among adolescents

What leads to youth drug use?

- the desire for new experiences
- wanting to deal with problems
- lack of positive peer or parental support
- availability of substances, lack of adult supervision
- family drug use
- genetic predisposition

Prevalance of substance use among adolescents

By 12th grade,



47%
of teens will have
tried alcohol



39%
of teens will have
vaped nicotine



41%
of teens will have
used an illicit drug



Marijuana
is the most common illicit
drug used by adolescents



8 out of 10
high school seniors
say it would be easy
to get marijuana if
they wanted some.

Risks and outcomes

Substance use disorder or prolonged use can lead to:

- mental health problems
- school failure
- impaired memory
- loss of interest in activities
- problems with family and other relationships
- increased risk of contracting an infectious disease
- overdose and/or death

2 out of 3
juveniles with a substance
use disorder also have at
least one mental
health disorder

Multisystemic Therapy (MST) is an evidence-based program endorsed by the National Institute on Drug Abuse (NIDA) and the Substance Abuse and Mental Health Services Administration (SAMHSA). MST effectively treats troubled youth and their families by utilizing a built-in suite of services within the home, school, and community settings. Services include but are not limited to: drug and alcohol intervention, social skills training, mental health services, and peer management.

For more information, visit www.mstservices.com

MST
Services

Substance use screening questions

NIAAA single screening question for alcohol (data suggest it also is correlated with use of other substances:

- How many times in the past year have you had...
 - 4 or more drinks in a day? (for women)
 - 5 or more drinks in a day? (for men)

Figure 3.7 Current Alcohol Use among Persons Aged 12 to 20, by Age: 2002-2013

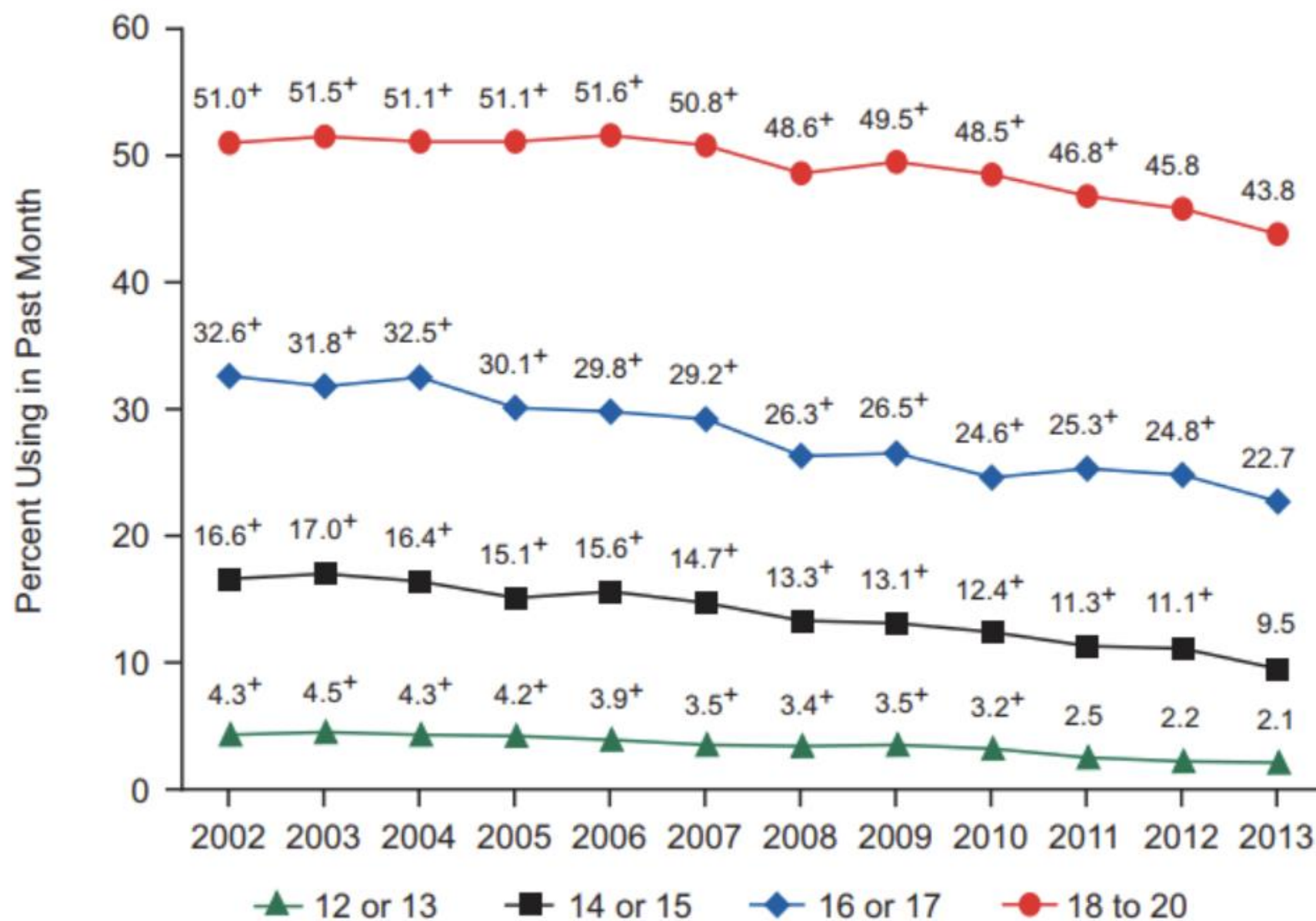
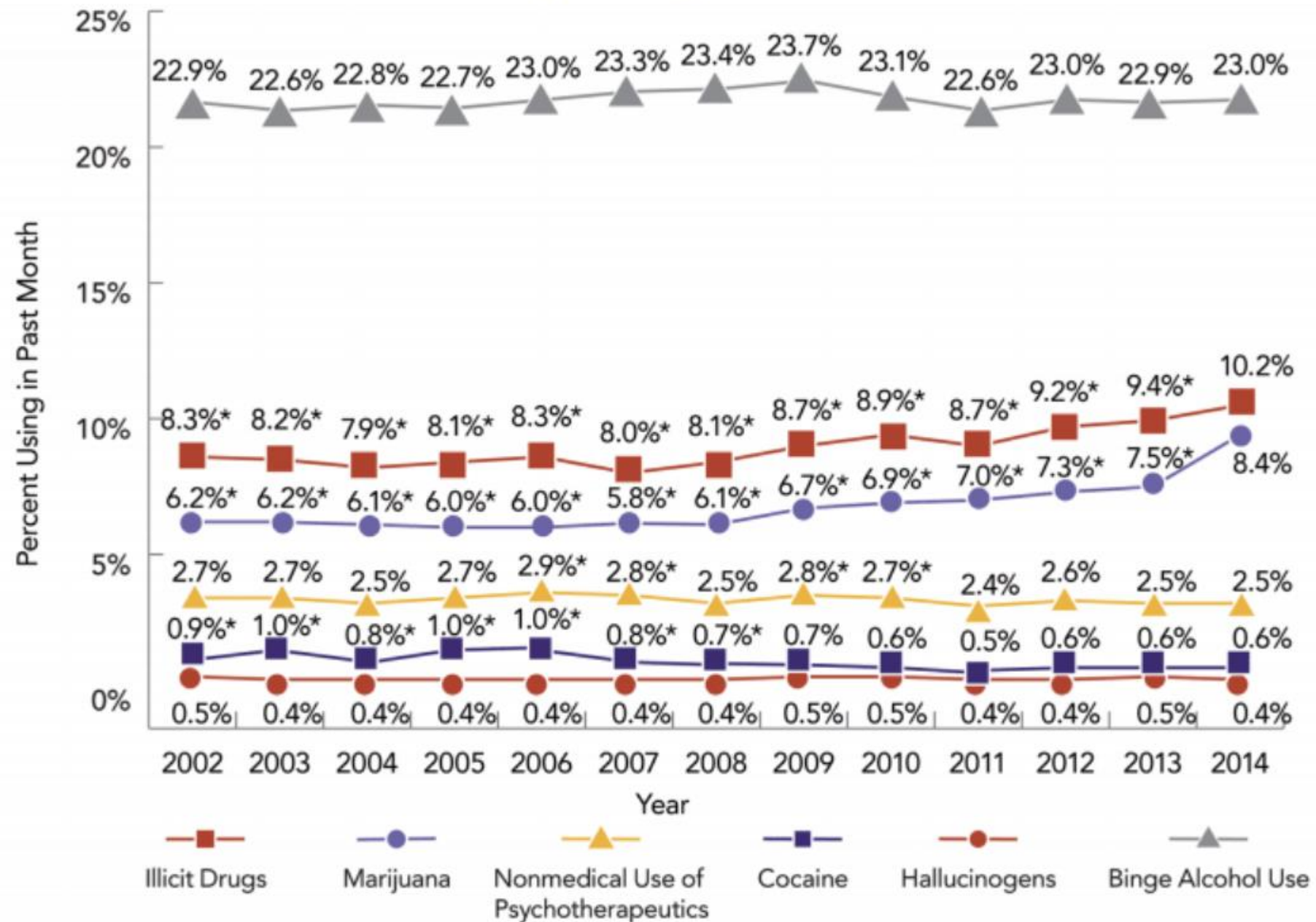


Figure 1.2: Trends in Binge Drinking and Past 30-Day Use of Illicit Drugs among Persons Aged 12 Years or Older, 2014 National Survey on Drug Use and Health (NSDUH)



Rifamycin urine





**LET'S
GO
ASTROS!**

Take-home message: we can help!

- Obtain frequent sputum smears to clear to return to school
- Use validated depression/suicidality screening tools
- If concern, do NOT leave TB medications in the home
 - INH and seizures in overdose