



Impact of Psychosocial Factors on TB Treatment

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Impact of Psychosocial Factors on TB Treatment

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Objectives

- Discuss the impact of **psychosocial factors** on TB treatment and adherence
- Discuss **substance use disorder (SUD)** and its impact on TB management
- Discuss specific **TB meds** and their **potential psychiatric effects**
- Review one **patient's personal struggle with mental health** while undergoing TB treatment

Health Disparities in US

- A **health disparity** is a preventable difference in health outcomes that adversely affects populations facing social, economic, or environmental disadvantages (NIH).
 - Differences in rates of diseases, like TB, may occur by race or ethnicity, health conditions, and geographic location.
- **Social determinants of health** are the non-medical factors that influence health outcomes.
 - Social determinants of health (SDOH) encompass a wide range of non-medical factors that influence health and well-being.
 - These include socioeconomic status, education, physical environment, employment, social support networks, and access to health care.
 - Understanding SDOH is crucial because they can lead to health disparities and inequities among different populations.

Health Disparities in US

- Socioeconomic factors can directly or indirectly increase a person's risk for TB disease and make treatment difficult. These factors include:
 - ✓ Poverty:
Limited access to quality health care, employment opportunities, housing, and transportation
 - ✓ Language barriers:
Affects health literacy
 - ✓ Cultural factors:
Stigma associated with the disease (particularly prevalent in low-to-middle-income countries)

Health Disparities and TB Treatment

- Treatment duration and completion
 - TB treatment takes several months to complete. Some people may not be able to, or want to take TB medicines for several months.
- People with TB disease who do not take their medicine correctly could:
 - Get sick with TB disease again
 - Spread TB to others
 - Develop drug-resistant TB
- People with inactive TB may not think treatment is a priority since they do not feel sick.

Fact → Without treatment, **1 in 10 people** with inactive TB will get sick with TB disease. TB disease can spread to others and be deadly.

Racial and Ethnic Disparities

- In 2023, **90.1% of the TB cases** reported in the United States occurred among persons who identified as racial and ethnic minorities.
- In the United States, TB affects some racial and ethnic minority groups more than others.

Medicines or Health Conditions

- Certain medications or health conditions contribute to disparities in the rate of TB.
- Health conditions such as diabetes, cancer, HIV, & severe kidney disease weaken the body's immune system.
 - A weakened immune system lowers a person's ability to fight TB.
 - As a result, people with these health conditions are more likely to develop TB disease if infected.

Geographic Disparities

- TB disease rates vary across the United States. Consistent with previous years, in [2023](#), four states accounted for half of all reported U.S. TB cases:
 - California
 - Texas
 - New York (including New York City)
 - Florida



GEOGRAPHIC DISPARITIES

- People who were born in or frequently travel to countries where TB is more common are more likely to be exposed to TB bacteria.
- In 2023, the TB incidence rate was 18.5 times higher among non-U.S.–born persons compared with U.S.-born persons.

[Health Disparities in Tuberculosis | Tuberculosis \(TB\) | CDC](#)

[WHO: 1.1 TB incidence](#)



People Experiencing Homelessness

- People experiencing homelessness (PEH) are a social group characterized by social inequalities.
- PEH are highly vulnerable to TB and are more susceptible to adverse outcomes of the disease.
- A comprehensive, collaborative and patient-centered care approach is recommended to improve outcomes.

Summary of Disparities

- TB is a socially determined disease.
- Treatment outcomes are closely related to sociodemographic factors.
- With higher risk for treatment failure and loss to follow-up, and progression to death.

TB AND MENTAL HEALTH

TB and Mental Health

- The social stigma and psychological stressors associated with TB diagnosis and treatment, can significantly compromise mental health.
- The burden of a chronic and often stigmatized infectious disease can contribute to heightened levels of stress, anxiety, and depression among TB patients

TB and Mental Health

- The comorbidity of tuberculosis and mental illness is a well-established phenomenon, with studies reporting rates of mental illness as high as 70 % among individuals diagnosed with TB.
- TB exerts a profound impact on the psychological resilience of affected individuals.

Challenges Patients Face

- **The disruption of daily life and routines due to TB treatment:**
 - The prolonged nature of treatment,
 - Potential side effects of medications, and
 - The need for isolation can lead to feelings of frustration and despair.

Mental Health & TB Recovery

- Patients with coexisting mental health disorders exhibited prolonged recovery times and increased rates of treatment failure



TB Meds and Mental Health

Can TB Medicine Cause Mental Health Issues?

Several anti-TB drugs have specific psychiatric side effects that are well-documented in medical literature.



The risks vary significantly depending on the medication, dosage, and individual patient factors.

Mental Health and TB Meds

- Pharmacological interventions employed in the management of psychiatric disorders, such as Depression or Psychosis, may cause drug interactions with anti-TB medications

Mental Health and TB Meds

- Anti-TB medications are well known to cause mental health problems, such as psychosis: for example
 - isoniazid,
 - ethambutol
 - rifampicin

Isoniazid (INH)

- Generally well-tolerated, INH is a known culprit for psychiatric complications.
- The mechanism is primarily linked to its interference with Vitamin B6 (pyridoxine) metabolism, which is crucial for normal brain function and neurotransmitter synthesis.
- A deficiency in pyridoxine can lead to a decrease in gamma-aminobutyric acid (GABA), a calming neurotransmitter, resulting in neurological and psychiatric symptoms.

Cycloserine (CS)

- As a second-line drug used for multi-drug resistant (MDR) TB, cycloserine is notorious for its severe neuropsychiatric side effects.
- It directly affects the central nervous system and is known to cause major depression, anxiety, psychosis, and suicidal ideation.

Ethambutol (EMB)

- Ethambutol is primarily known for causing ocular toxicity (optic neuritis), but it has also been linked to psychiatric issues.
- Cases of psychosis and mania have been reported, although they are less common than with isoniazid.
- The risk increases with higher doses and pre-existing psychiatric vulnerabilities.

Rifampin (RIF)

- While generally well-tolerated, rifampin has been associated with rare but notable psychiatric adverse effects.
- These are less frequent than with isoniazid or cycloserine but can still occur.

Comparison of Major TB Drugs and Psychiatric Risks

Medication	Primary Psychiatric Risk	Mechanism	Commonality	Management Strategy
Isoniazid (INH)	Psychosis, depression, anxiety, insomnia	Interferes with Vitamin B6 (pyridoxine) metabolism, affecting neurotransmitters	Common for first-line drugs; risk is notable	Pyridoxine supplementation, withdrawal if symptoms severe
Cycloserine	Major depression, psychosis, suicidal ideation	Direct CNS effects, impacts GABA and NMDA receptors	High risk for second-line drugs	Close psychiatric monitoring, discontinuation if severe
Ethambutol (EMB)	Psychosis, mania, confusion	Neurobiological mechanisms likely involve neurotransmitter alterations	Rare for first-line drugs	Discontinuation and alternative therapy if symptoms arise
Rifampin	Confusion, depression, rare psychosis	Possible enzyme induction actions affecting other drugs, rare direct effect	Very rare	Monitor and assess other causes, consider dosage adjustment
Pyrazinamide	Elevated risk of depression (less clear link)	Less direct CNS effect, but may be implicated in some studies	Possibly associated, but weaker link compared to INH/cycloserine	Monitor, but rarely the primary cause; address other risk factors

[Can TB medicine cause mental health issues? Yes, here's how.](#)

Can TB Medicine Cause Mental Health Issues? Understanding the Connection

Risk Factors for Drug-Induced Mental Health Issues

- Pre-existing Mental Health Conditions
- Substance Abuse
- Nutritional Status
- Genetic Factors

Mental Health Interventions

- INTERVENTION RESEARCH
 - Peer-led interventions
 - Cognitive-behavioral therapy (CBT)
 - Integrating mental health screening and treatment within TB clinics.
 - Pharmacological interventions for mental health concerns in TB patients have also been explored.

Screening Tools

Patient Health Questionnaire (PHQ-9)

- The PHQ-9 is a validated, nine-item questionnaire used to screen, assess, and monitor the severity of depression.
- Assesses mood, energy, sleeping patterns, appetite, and suicidal thoughts.
- A score of **10 or higher** is generally considered a positive screen for major depression
- Item 9 specifically screens for **suicide risk**, and any positive response requires immediate follow-up by a qualified professional.

Screening Tools

Anxiety: General Anxiety Disorders 7 (GAD-7)

The GAD-7 is a widely used screening tool for anxiety to help healthcare providers identify individuals with GAD and other anxiety disorders.

- The following cut-offs correlate with level of anxiety severity:
- Score 0-4: Minimal Anxiety
- Score 5-9: Mild Anxiety
- Score 10-14: Moderate Anxiety
- Score greater than 15: Severe Anxiety

Fostering Supportive Communication

Listening is a skillful, active intervention.

It should be non-judgmental.

Understanding must precede action – listen to understand

Don't underestimate the healing power of supportive listening & empathy

Active Listening

Do's:

- ✓ allow patients time and space to voice their concerns
- ✓ listen to what the patient is telling you - ask open questions to find out what the patient is thinking or feeling.
- ✓ maintain an appropriate level of eye contact
- ✓ demonstrate interest in what the patient is saying with verbal reassurance and non-verbal communication (e.g. moving or nodding of head)
- ✓ demonstrate you are listening by summarizing and paraphrasing what the patient has told you

Active Listening

Don'ts:

- X rush to fill pauses or silence
- X interrupt people, allow them to finish
- X plan what to say next without listening to what people are telling you now

Mental Health Takeaways

- The relationship between TB and mental health is complex
 - People may have undiagnosed mental health issues before they start treatment, or
 - they may develop mental health issues during their care as they try to cope with illness, treatment regimens, the costs of treatment and the stigma and discrimination associated with TB.
 - In general, people with undiagnosed mental health issues experience worse treatment outcomes.

Mental Health Takeaways

- Specific Drugs Are Implicated
- Pyridoxine Deficiency is a Factor
- Multi-Drug Resistant (MDR) Regimens Pose Higher Risk
- Integrated Care Is Essential
- Risk Factors Increase Vulnerability
- Stigma Exacerbates Mental Health Issues

SUBSTANCE USE DISORDER (SUD)

SS

Substance Use Disorder (SUD) Alcohol Use Disorder (AUD) & TB

Meta-Analysis

> Syst Rev. 2025 Jul 5;14(1):139. doi: 10.1186/s13643-025-02888-y.

Impact of alcohol consumption, substance use, and smoking on treatment outcomes in tuberculosis: a systematic review and meta-analysis

Bahram Heshmati ^{1 2}, Sanaz Omid ^{1 2}, Younes Mohammadi ^{3 4}

Substance Use Disorder (SUD) & TB

- **Risk of tuberculosis disease among people who use drugs**
- Drug injection is a prominent determinant of tuberculosis infection and disease.
- Immunosuppressive effects have been associated with opioids and with frequent co-infections among people who use drugs, such as hepatitis C virus.
- Stimulants such as methamphetamines and cocaine might be related to tuberculosis risk via group smoking sessions, direct deterioration of the bronchial epithelia, and/or immunological impairment

Substance Use Disorder (SUD) & TB

- Per the WHO, substance use disorders (both alcohol and drug use disorders) comprise two major categories

Substance Use Disorder (SUD) & TB

- Harmful Substance Use
 - a pattern of continuous, recurrent or sporadic use of a psychoactive substance
 - that has caused clinically significant damage to a person's physical or mental health.

Substance Use Disorder (SUD) & TB

- Dependence
 - is defined as a disorder of regulation of psychoactive substance use arising from repeated or continuous use.
 - The characteristic feature of dependence is a strong internal drive to use substances.

Substance Use Disorder (SUD) & TB

- Physiological features of dependence may be present:
 - increased tolerance to the effects of the substance or a need to use increasing amounts to achieve the same effect
 - withdrawal symptoms following cessation of or reduction in the use
 - repeated use of the substance or pharmacologically similar substances to prevent/alleviate withdrawal sx.

Substance Use Disorder (SUD) & TB

- Individuals with AUD/SUD have a significantly higher risk for acquiring TB, TB reinfection, and worse treatment outcomes.
- Alcohol is a factor in about 20% of TB deaths.
- According to the World Drug Report, about 8% of people who inject drugs (PWID) have TB disease (some research suggests this number is higher).
 - As well as up to 68% of PWID *and* active TB as having multidrug resistant TB.

SUD & TB Treatment

- **Opioid Addiction and TB medication interactions**
- **Rifampin, rifabutin, and rifapentine:**
 - Induce CYP3A4
 - Can cause significant reduction in methadone and buprenorphine plasma concentrations
 - May precipitate opioid withdrawal
 - May require increased dose

[Impact of alcohol disorder and the use of illicit drugs on tuberculosis treatment outcomes: a retrospective cohort study – PMC](#)

AUD & TB Treatment

- Alcohol can interact negatively with TB medications.
- AUD weakens the immune system.
- AUD can worsen prognosis. AUD can lead to a worse prognosis for TB patients.

AUD/SUD Screening

- Evaluating SUD via standardized screening
 - ✓ Alcohol Use Disorders Identification Test (AUDIT)
 - ✓ Alcohol, Smoking and Substance Involvement Screening Test (ASSIST)
 - ✓ Tobacco, Alcohol, Prescription Medication, and other Substance Use (TAPS) Tool

Identifying and managing care for mental health conditions and substance use disorders in people affected by TB | TB Knowledge Sharing

[Tobacco, Alcohol, Prescription medication, and other Substance use \(TAPS\) Tool](#)

LOCAL RESOURCES

MHMR of Tarrant County

If You or a Loved One is Experiencing a Mental Health Crisis

Call or text our ICARE Call Center, 24 hours, 7 days a week, 365 days a year:

- (800) 866-2465 (text)
- TTY: (817) 569-4488

ICARE Services offered:

- Emergency mental health services
- Urgent care
- Crisis follow-up
- Relapse prevention
- Support and reassurance
- Information and referral
- Crisis intervention services



Interested in Our Services?
Call Us at 817-335-3022

My Health My Resources Tarrant County

MHMR of Tarrant County

Adult and Young Adult Centers

- **North Center (Mid Cities):** 4525 City Point Drive, North Richland Hills, 76180
New patient intake: Wednesday and Friday, 8 a.m. – 2 p.m.
- **South Center (Circle Drive):** 1200 Circle Drive, Fort Worth 76119
New patient intake: Monday and Friday, 8 a.m. – 2 p.m.
- **Central Center (Penn):** 300 Pennsylvania Ave, Fort Worth 76104
New patient intake: Monday thru Friday, 8 a.m. – 2 p.m.
- **East Center (Arlington):** 601 W. Sanford Suite 11, Arlington 76011
New patient intake: Monday and Friday, 8 a.m. – 2 p.m.
- **Northwest Center:** 2400 NW 24th Street, Fort Worth 76106
New patient intake: Monday and Friday, 8 a.m. – 2 p.m.
- **West Center (Western Hills):** 8808 W. Camp Bowie Blvd, Fort Worth 76116
New patient intake: Thursday and Friday, 8 a.m. – 2 p.m.

Child and Family Centers

- **North Center (Keller):** 6032 Innovation Way, Fort Worth 76244
- **East Center (Arlington):** 601 W Sanford St., Suite 201, Arlington 76011
New patient intake: Monday and Tuesday's by appointment only.
- **Central Center (Hemphill) :** 1527 Hemphill St., Fort Worth 76104
- **West Center:** 6777 Camp Bowie Blvd., Suite 500, Fort Worth 76116

MHMR of Tarrant County

▶ **Adult Substance Use Treatment**

▶ **Youth Outpatient Substance Use Treatment**

▶ **Youth Residential Substance Use Treatment**

[Substance Use \(Addiction\) Services – My Health My Resources of Tarrant County](#)

MHMR of Tarrant County

^ Adult Substance Use Treatment

Pine St Rehabilitation Center is a 50 bed residential facility whose primary goal is to help adults with substance and alcohol use disorders.

^ Youth Residential Substance Use Treatment

The Youth Recovery Campus (The Campus) houses a 16-bed, full-time residential program for male youth, age 13-17. Our youth are referred from several Juvenile Probation officers, truancy courts, and school districts. We also accept youth who are self-referred. The average stay for treatment is 45-60 days.

JPS PEC



Psychiatric Emergency Center

1652 May Street
Fort Worth, TX 76104

817-702-4151

Open 24 hours

JPS Behavioral Health

- For emergency mental health services, call our Psychiatric Emergency Center at 817-702-4151
- For non-emergency care, contact Outpatient Mental Health (817-702-3100) or Inpatient Mental Health (817-702-3636).
- You can email us at psychinfo@jpshealth.org with non-emergency questions.

Hotlines

- Suicide & Crisis Lifeline: You can call or text 988.
- Trevor Lifeline for LGBTQ community: 1-866-488-7386 or text START to 678678.

Local Resources

<https://www.tarrantcares.org>



Find Services

City/Zip Code




Local Resources

<https://www.tarrantcares.org>

Find Services

Select a target population.

Mental/Behavioral Health 

How can we help? (Example: mental health support, food pant



 [Back to Zip Code](#)

I need counseling or mental health support

Where can I find crisis or therapy services?

Mental Health Takeaways

- Routine Screening and Early Detection
- Medication Management
- Psychological Support
- Addressing Stigma and Social Factors

Source:

[Can TB medicine cause mental health issues? Yes, here's how.](#)

Can TB Medicine Cause Mental Health Issues? Understanding the Connection

Q&A

- What kind of mental health issues can TB medicine cause?
- TB medications can cause a range of mental health problems, including anxiety, depression (mild to severe), psychosis (with hallucinations and delusions), agitation, confusion, and insomnia.

Q&A

- Why does isoniazid cause mental health side effects?
- Isoniazid can interfere with the body's metabolism of Vitamin B6 (pyridoxine), which is necessary for proper brain function. This can lead to a deficiency that disrupts neurotransmitters like GABA, resulting in psychiatric and neurological symptoms.

[Can TB medicine cause mental health issues? Yes, here's how.](#)

Q&A

- Which TB medications are most likely to cause mental health issues?
- Isoniazid (INH) and cycloserine are the two most commonly cited TB medications that cause mental health issues. Isoniazid can cause psychosis, anxiety, and depression, while cycloserine, used for drug-resistant TB, is known for inducing major depression, psychosis, and suicidal thoughts.

[Can TB medicine cause mental health issues? Yes, here's how.](#)

Patient Spotlight



Safar Naimov
Before → he got sick
After ← he got sick

Parting Quote

“People will forget what you said, people will forget what you did, but people will never forget how you made them feel.”

~ Maya Angelou



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Main Address:

1101 S. Main Street
Fort Worth, Texas 76104



Phone:

817-321-4700



Scan the QR code or visit:

www.tarrantcountytx.gov/health

