

Tuberculosis and Mental Health

Strategies for Care

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Accreditation Statement

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Disclosure

- ✓ **No relevant financial relationships**
- ✓ I will not be discussing off-label or investigational treatments with specific medications or products in this presentation.
- ✓ Content is all human-generated, but slide designs were AI-assisted with the use of Mayo Enterprise ChatGPT Pro Model

The clinical case is a composite teaching case and does not represent a single identifiable patient.

Learning Objectives

- ✓ Describe historical parallels between tuberculosis and mental illness.

- ✓ Recognize how TB, mental health conditions, and treatment influence one another

- ✓ Apply practical strategies for medication safety and treatment completion

01 Historical parallels

Two diseases, similar institutions and transitions



Which statement best describes an important historical relationship between TB and mental illness in the 19th and early 20th centuries?

- A** Tuberculosis was commonly believed to directly cause most mental illness.
- B** People living in asylums had increased TB risk because of institutional living conditions.
- C** Mental illness was usually misdiagnosed as tuberculosis because the symptoms were so similar.



Which statement best describes an important historical relationship between TB and mental illness in the 19th and early 20th centuries?

A Tuberculosis was commonly believed to directly cause most mental illness.

B People living in asylums had increased TB risk because of institutional living conditions. ✓

C Mental illness was usually misdiagnosed as tuberculosis because the symptoms were so similar.

Correct answer

Sanatorium or asylum?

“Absolute and utter rest of mind and body ... lead the life of a log.”

- Regimented rest
- Fresh air and nourishing food
- Self-discipline and emotional control
- Reading and mental occupation

SANATORIUM

A patient's 1940s diary

Treatment through
environment, routine, and
separation

Sanatorium: architecture as treatment



The physical setting reinforced the treatment plan:

- Rest and observation
- Fresh air and exposure to nature
- Predictable routines
- Separation from ordinary roles

“Never give way to self-pity ... improve my mind by reading and thinking.”

Asylum: environment, routine, and boundaries



Women's corridor, St. Louis City Insane Asylum, 1904; <https://www.builtstlouis.net/statehospital01.html> Wikimedia Commons

A parallel institutional logic

- Restricted movement
- Regimented meals and activities
- Scheduled access to outdoor space
- Staff-enforced boundaries
- Long separation from family and community

Different diagnoses, similar reliance on institutional control

Same era, similar institutional design



Purpose-built campuses

Large, self-contained institutions separated patients from ordinary community life

<https://www.builtstlouis.net/statehospital01.html> via Wikimedia Commons



Segregation and surveillance

Layout supported observation, classification, and controlled movement

<http://doi.org/10.3932/ethz-a-000447983> via Wikimedia Commons



Architecture as treatment

Even sacred spaces were redesigned around safety, access, and patient management

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Historical parallels and connections

Era	Tuberculosis	Mental illness
Ancient world	Recognized for millennia; empirical remedies (herbs and spices; Royal Touch)	Recognized for millennia; spiritual and physical remedies (dance, concerts, painting)
1800s–early 1900s	Sanatoriums	Asylums
1940s–1950s	Effective antimicrobial treatment	Effective psychopharmacology
1950s onward	Sanatorium closures	Deinstitutionalization

TB treatment helped launch modern psychopharmacology

Iproniazid, an antitubercular drug, became the first monoamine oxidase inhibitor antidepressant

02 A clinical case

When “nonadherence” is actually a systems problem

Composite Case – Mr. Daniel Bridges

42-
year-old
man

Before TB treatment

- Schizophrenia stable on risperidone
- Opioid use disorder stable on methadone
- Supportive housing
- Reliable clinic engagement

TB treatment begins

- Rifampin-containing regimen
- Directly observed therapy (DOT)
- No immediate problems reported



**10 days
later**

Sleeping 2–3 hours • increasingly paranoid and irritable • sweating and diarrhea • starts missing DOT visits

“These TB medicines are making me crazy. I’m done taking them.”



After rifampin is started, which paired medication effect best explains the patient's new symptoms?

- ☐ **A** Risperidone exposure decreases; methadone exposure increases
- ☐ **B** Risperidone exposure increases; methadone exposure decreases
- ☐ **C** Risperidone exposure increases; methadone exposure increases
- ☐ **D** Risperidone exposure decreases; methadone exposure decreases



After rifampin is started, which paired medication effect best explains the patient's new symptoms?

A Risperidone exposure decreases; methadone exposure increases

B Risperidone exposure increases; methadone exposure decreases

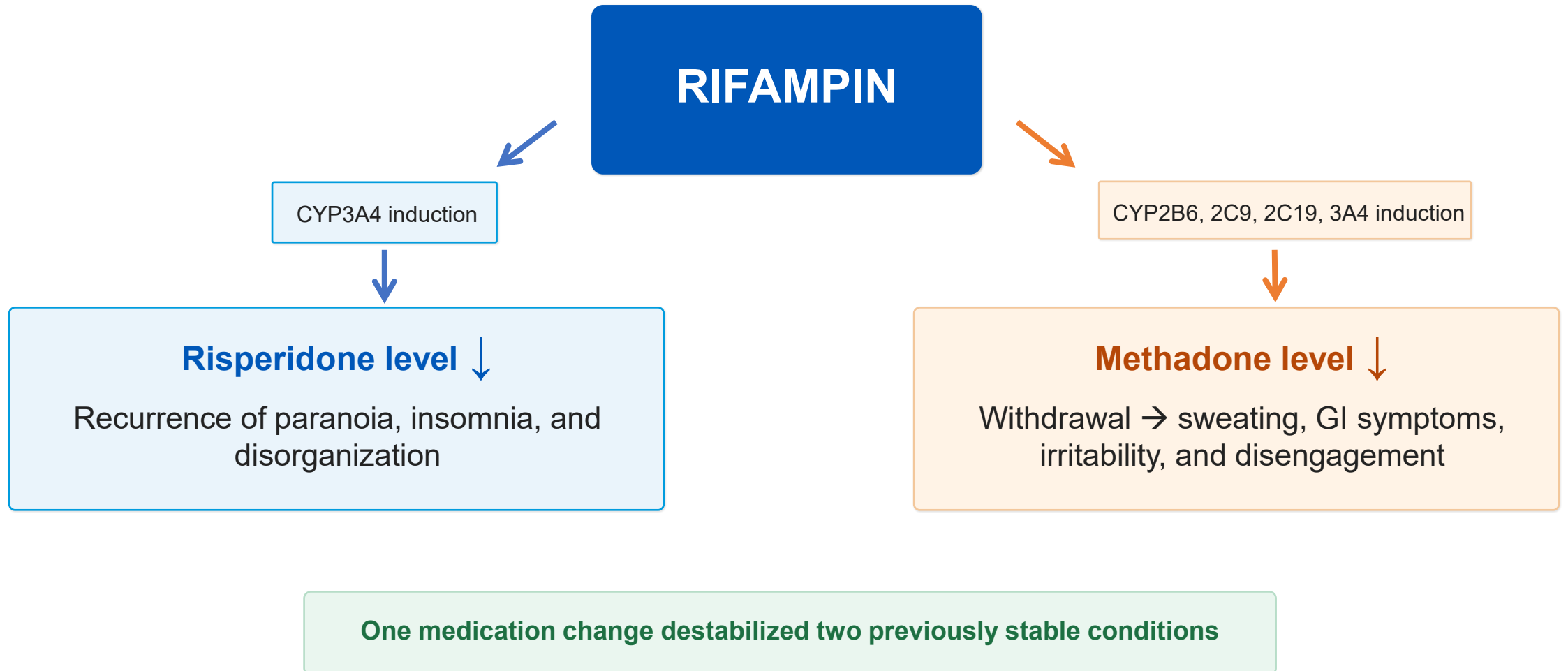
C Risperidone exposure increases; methadone exposure increases

D Risperidone exposure decreases; methadone exposure decreases



Correct answer

What changed? Rifampin's CYP450 Interactions





Which antitubercular medication most strongly raises concern for psychiatric adverse effects?

A Rifampin

B Isoniazid

C Cycloserine



Which antitubercular medication most strongly raises concern for psychiatric adverse effects?

A Rifampin

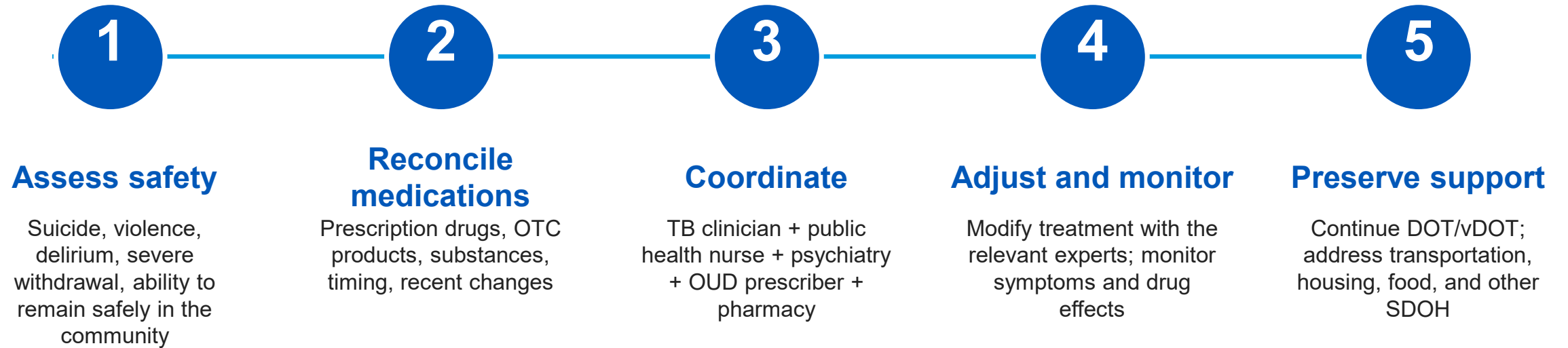
B Isoniazid

C Cycloserine



Correct answer

Bridging Care for Mr. Bridges



Mental health care is part of TB treatment

Across the bridge: Why TB and mental illness travel together

Shared determinants

- Housing instability
- Migration and displacement
- HIV and medical illness
- Substance use and tobacco
- Undernutrition and poverty
- Stigma and social isolation

Mental health → TB care

- Exposure risk
- Access to care
- Organization of complex treatment
- Persistence through adverse effects
- Tolerance of isolation
- Trust and communication

TB → Mental health

- Illness burden and uncertainty
- Stigma and isolation
- Financial and family stress
- CNS or systemic disease
- Medication adverse effects
- Drug–drug interactions

The relationship is bidirectional

Considerations when mental health symptoms emerge during TB care

Mental health condition

- Relapse of psychosis
- Depression or anxiety
- Substance use or withdrawal
- Trauma-related symptoms

TB or medical illness

- CNS TB or tuberculoma
- Hypoxia or severe systemic illness
- Delirium
- Metabolic or neurologic causes

Treatment effect

- Cycloserine toxicity
- Isoniazid-associated symptoms
- Fluoroquinolone CNS effects
- Drug–drug interactions

Environmental Factors

- Isolation
- Stigma
- Housing or financial crisis
- Family disruption
- Communication barriers

New symptoms are not automatically “psychiatric” nor automatically a medication effect

Medication interactions: three rules

1 Rifamycins

- Many drug levels go DOWN
- Loss of efficacy, relapse, withdrawal, or contraceptive failure are common
- Reassess again when the rifamycin stops as levels can then INCREASE
- Relevant interactions
 - Antipsychotics
 - Methadone
 - Mood stabilizers
 - Anticonvulsants
 - Antidepressants
 - Hormonal contraception
 - Anticoagulants

2 Isoniazid

- Some drug levels can go UP
- High-yield examples are phenytoin and carbamazepine
- Check rather than memorize

3 Linezolid / Fluoroquinolones

- Specific interaction syndromes
- Linezolid: serotonergic drugs; serotonin syndrome
- Fluoroquinolones: QT-prolonging combinations and CNS effects

Do not memorize the CYP table, but check interactions as a habit

Make treatment easier to complete

1 Simplify

Use the simplest effective regimen and dosing plan when clinically appropriate

2 Anticipate

Discuss likely adverse effects and interaction symptoms before they occur

3 Connect

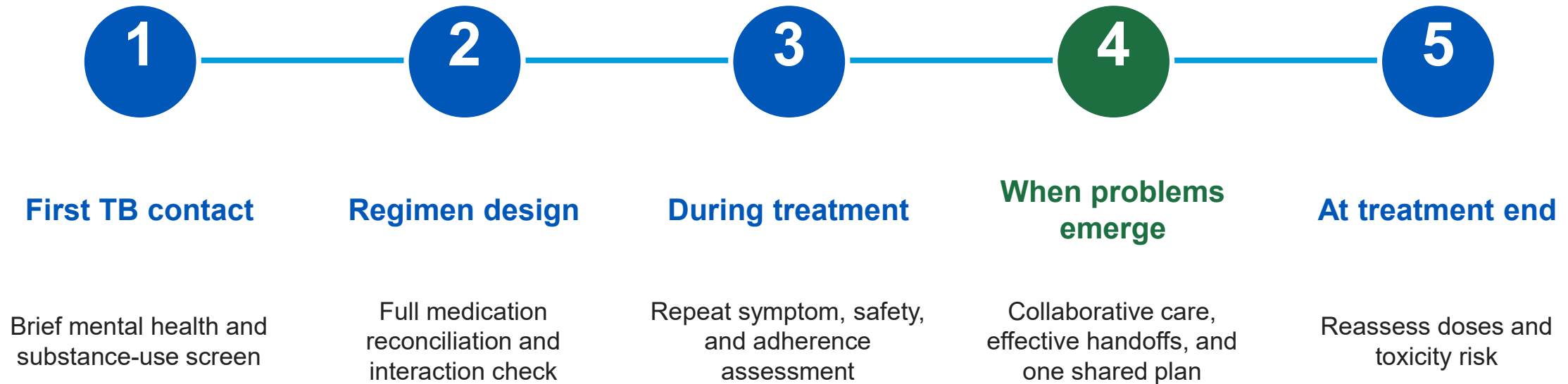
Build on DOT/vDOT, ACT teams, OUD programs, primary care, and trusted relationships

4 Enable

Address transportation, housing, food, language, technology, and competing demands

Ask not only “Will this patient adhere?” but, “What systems will make completion likely?”

Integrated care: a simple workflow



Goal: reliable detection, referral, communication, and follow-through

Take-home messages

1

The relationship is bidirectional

Mental health affects TB care and TB, treatment, and isolation can affect mental health

2

New symptoms can have a broad differential

Consider illness, treatment, medication interactions, withdrawal, and environmental factors before assigning a cause

3

Rifamycins in particular can destabilize stable treatment

Plan for interaction risk when they start and when they stop

4

Coordination is a TB intervention

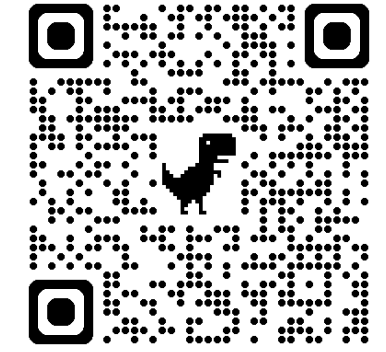
Integrated care and practical supports improve safety and make completion more likely

Patient and peer-support resources



we are TB: TUBERCULOSIS SURVIVORS & ADVOCATES

we are TB offers comprehensive peer support for current TB patients and TB clinics. *we are TB* is a growing survivor network that is fighting to achieve change in TB diagnostics, treatment regimens, and funding to support US-based public health programs. The group specializes in connecting medical professionals and current TB patients to TB survivors. We bring an unparalleled depth of knowledge and provide compassionate support while using personal stories to empower survivors to break the stigma.



Peer support can reduce isolation and stigma and provide practical encouragement from people with lived experience.

wearetb.com

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Questions and Answers





Thank you

Mayo Clinic Center for Tuberculosis

03 Appendix

Reference slides

Appendix: psychiatric and neurologic effects of selected TB drugs

Medication	High-yield concern	Practical response
Cycloserine	Depression, behavior change, psychosis, suicidal thinking, seizures	Screen, educate, monitor closely; urgent evaluation for severe symptoms
Isoniazid	Uncommon psychosis or mania; peripheral neuropathy	Consider medication effect in the differential; use pyridoxine when indicated
Fluoroquinolones	CNS effects can include confusion or psychiatric symptoms; QT prolongation	Review other QT-prolonging drugs and medical risk factors
Linezolid	Serotonin syndrome with serotonergic agents; neuropathy with prolonged use	Perform interaction review and monitor clinically

Appendix: selected rifamycin interaction patterns

Medication / class	When rifamycin starts	When rifamycin stops
Methadone	Withdrawal or craving may emerge	Reassess if dose was increased; oversedation or respiratory depression may occur
Antipsychotics (agent-specific)	Loss of efficacy / psychiatric relapse	Levels may rise if doses were increased
Mood stabilizers / anticonvulsants	Loss of efficacy or breakthrough symptoms	Toxicity risk after prior dose escalation
Hormonal contraception	Reduced effectiveness	Return toward baseline after induction wanes
Anticoagulants	Reduced anticoagulant effect for many agents	Bleeding risk if doses were increased

Agent-specific effects vary. Use an authoritative interaction resource and pharmacist support.

Appendix: selected effects on drug-metabolizing enzymes

Agent	1A2	2B6	2C8	2C9	2C19	2D6	2E1	3A4/5/7
Rifampin	—	↑	↑	↑	↑	—	—	↑
Isoniazid	—	—	—	—	↓	—	—	↓

↑ Induction

Faster metabolism → lower concentrations of many co-medications

↓ Inhibition

Slower metabolism → higher concentrations of selected co-medications

Use this only as a conceptual map; clinically relevant interactions also involve transporters and non-CYP pathways.

Appendix: two interaction syndromes worth recognizing

Linezolid + serotonergic medications

- Linezolid is a reversible monoamine oxidase inhibitor
- Risk: serotonin syndrome with serotonergic antidepressants and some opioids
- Look for agitation, confusion, autonomic instability, hyperreflexia, clonus, and fever
- Management is individualized; involve the treating clinicians and pharmacist

Fluoroquinolones + QT-prolonging medications

- Moxifloxacin and some other fluoroquinolones can prolong the QT interval
- Risk rises with other QT-prolonging drugs, electrolyte abnormalities, bradycardia, and underlying cardiac disease
- Review ECG and risk factors when clinically indicated

Appendix: legal interventions are jurisdiction-specific and last-resort

1 Use the least restrictive effective approach

Begin with engagement, DOT/vDOT, incentives, enablers, and intensive coordination

2 Separate legal frameworks

Psychiatric commitment authority and public-health TB authority are not interchangeable

3 Individualize and document

Assess infectiousness, risk, capacity, barriers, attempted supports, and reasons for escalation

4 Consult locally

Work with the state/local TB program and legal counsel; statutes and procedures vary