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**境外学者发表的结核病英文文章摘要**

**（114篇）**

**PubMed Publication date: 2025/8/18 --- 2025/8/24**

**(tuberculosis[Title/Abstract]) AND (English[Language])**

**1. BMC Nephrol. 2025 Aug 20;26(1):473. doi: 10.1186/s12882-025-04411-w.**

Insight into blood proteinase-inhibitor system and pathogenesis of renal

tuberculosis induced by phylogenomically different Mycobacterium tuberculosis

strains in rabbit model.

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**BACKGROUND:** This study aimed to evaluate the impact of different Mycobacterium

tuberculosis strains on the blood proteinase-inhibitor system and structural

changes in the renal parenchyma during the pathogenesis of renal tuberculosis in

a rabbit model.

**METHODS:** Renal tuberculosis was modeled on 60 male Soviet Chinchilla rabbits.

The susceptible virulent strain M. tuberculosis H37Rv (Euro-American lineage,

group 1) and the low-lethal multidrug-resistant strain 5582 (Beijing Central

Asian/Russian cluster; group 2) were injected into the cortex of the lower pole

of the left kidney. Blood levels of biomarkers and enzymes were measured at

baseline (pre-infection), and 2.5 and 22 weeks after infection. Morphological

changes in nephron structures were assessed using 26 indicators at 22 weeks.

Whole genome sequencing of M. tuberculosis DNA was performed on the DNBSEQ-G50

MGI platform.

**RESULTS:** At 2.5 weeks, group 1 exhibited a significant increase in matrix

metalloproteinases (MMP)-1/9 and cystatin C compared to group 2 (p = 0.02).

After 22 weeks, group 1 showed elevated levels of MMP-9 and ceruloplasmin,

alongside reduced levels of tissue inhibitor of metalloproteinases-1 (TIMP-1),

cystatin C, and albumin (p = 0.02). Group 1 demonstrated a larger area of

specific inflammation and less severe fibrotic changes compared to group 2

(p = 0.02). Genome of clinical strain 5582 harboured 55 frameshift and 8 stop

codon mutations some of which were in genes known to be involved in

intracellular survival and pathogenesis.

**CONCLUSIONS:** In quantitative terms, the structural changes observed in the

kidneys of rabbits were inversely related to the virulence of the strains.

Specifically, the more virulent strain (H37Rv) induces less pronounced

structural changes. Renal tuberculosis induced by H37Rv is characterized by a

pronounced imbalance in the MMP/TIMP-1 system, marked by increased MMP-1 and − 9

levels and decreased TIMP-1 levels in the blood. This imbalance is associated

with structural kidney damage, including specific and paraspecific changes

typical of an immediate hypersensitivity reaction. In contrast, infection with

Beijing 5582 maintained a relative balance in the MMP/inhibitor system, with a

significant increase in cystatin C and moderately pronounced productive changes

in the renal parenchyma, consistent with a delayed hypersensitivity reaction.

SUPPLEMENTARY INFORMATION: The online version contains supplementary material

available at 10.1186/s12882-025-04411-w.

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PMCID: PMC12366148

PMID: 40836283

**2. Sci Rep. 2025 Aug 24;15(1):31106. doi: 10.1038/s41598-025-15076-8.**

Genomic epidemiology of Mycobacterium tuberculosis in Wales.

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Identification of factors contributing to tuberculosis (TB) transmission can

guide targeted measures to reduce morbidity. Varying findings for factors

associated with TB genomic clustering exist. We describe Mycobacterium

tuberculosis strain diversity, drug-resistance, and ongoing transmission in

Wales using single nucleotide polymorphisms (SNP)-based typing to infer lineage

and clusters. TB cohort data on isolates from Welsh residents from 2012 to 2022,

patient level data from the National TB Surveillance System and SNP-based data,

were merged. Descriptive epidemiology and logistic regression modelling were

used to identify factors associated with genotypic clustering. 215 cases were

included in the cluster analysis (66% male and 46% born outside of the UK);

115/215 belonged to 30 genomic clusters belonging to lineages 2-4. Most clusters

corresponded to Lineage 4 and were distributed within South Wales. There were

significant differences in the distribution of ethnicity, age group, and

deprivation (Welsh Index of Multiple Deprivation, WIMD) in our sample compared

to the Welsh population. Resistance to rifampicin and isoniazid and predicted

resistance to ethambutol, aminoglycosides, pyrazinamide, and quinolone was low.

Factors associated with increased odds of clustering included being UK-born and

having pulmonary disease. Due to the identification of the above factors

associated with TB genomic clustering, as well as the differences in ethnicity,

age group, and WIMD quintile, prevention strategies for TB screening targeted

towards these groups may be considered. Future work may evaluate the utility of

additional control measures within these populations when the onset case in a

genomic cluster has any of these characteristics.

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DOI: 10.1038/s41598-025-15076-8

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**3. Sci Rep. 2025 Aug 24;15(1):31104. doi: 10.1038/s41598-025-16453-z.**

Combined in vivo and silico assessment of melatonin's protective effects on

rifampicin-induced liver damage in rats.

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Liver injury is a globally serious problem that may be observed

post-chemotherapeutic administration in chronic crises such as tuberculosis

(TB). Rifamycin (RIF), particularly, is an indispensable treatment regimen for

TB with a significant negative hepatic impact. Therefore, this research aims to

assess the restorative role of melatonin (MEL) against rifampicin

(RIF)-associated hepatic damage in rats. Moreover, to investigate the ultimate

mechanism of the antioxidant potential of MEL with multimodal assessment and in

silico molecular conformation. Adult male Wistar albino rats were weighed and

divided into four groups of ten rats each. The control group received the

vehicle (0.5 ml/day), the RIF-intoxicated group (100 mg/kg/day orally), the

MEL-treated group (10 mg/kg/day intraperitoneally), and the Co-administered RIF

and MEL group at the same regimen for 21 consecutive days. Blood and hepatic

tissue samples were obtained for biochemical, histological, and molecular

studies. High in vitro antioxidant scavenging potential of MEL with an IC50 of

94.66 µg/ml was attained using a 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay.

Fourier transform infrared spectroscopy (FTIR) and gas chromatography-mass

spectrometry (GC-MS) analyses of MEL indicated the presence of mainly cinnamic

acid, m-(trimethyl-silyl ester), in addition to several reactive antioxidant

moieties. The plasma levels of aspartate aminotransferase (AST), alanine

aminotransferase (ALT), alkaline phosphatase (ALP), and lipid profiles were

significantly reduced in the MEL + RIF co-administered group in contrast to the

RIF-treated group (P < 0.05). Moreover, MEL significantly decreased the hepatic

oxidative biomarkers malondialdehyde (MDA) and significantly increased the

estimated antioxidant enzyme levels (P < 0.05) of superoxide dismutase (SOD) and

glutathione peroxidase (GPX). Histological evaluations revealed mild hepatic

injuries and inflammatory cellular infiltration in MEL-treated animals.

Molecular docking explored the high-affinity interaction of MEL and cinnamic

acids with hepatic cytochrome P450 isoform 3A4 (CYP3A4) protein target,

confirming their hepatic restorative potential. This study endorses the

antioxidant potential role of MEL in RIF-hepatic injury.

© 2025. The Author(s).

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**4. J Infect Chemother. 2025 Aug 22:102795. doi: 10.1016/j.jiac.2025.102795. Online ahead of print.**

A case of endogenous and collateral reactivation caused by two Mycobacterium

tuberculosis subclones.

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Endogenous reactivation of tuberculosis (TB) has been considered a process in

which Mycobacterium tuberculosis subclones continuously accumulate genome

mutations from the initial isolate. However, we encountered a case of endogenous

reactivation that M. tuberculosis isolated from the primary disease and

recurrence collaterally diverging from an original clone. In a retrospective

cohort study, a recurrent TB case was thoroughly investigated in 2012 and 2020

in Yamagata, Japan. This included an evaluation of the clinical course,

including computed tomography (CT) findings, retrospective contact tracings,

molecular epidemiological investigations, and whole-genome sequencing of M.

tuberculosis. CT imaging revealed new lesions in different regions of the right

lung in 2012 and 2020. Retrospective contact tracings and a molecular

epidemiological surveillance using variable-number tandem repeat typing ruled

out exogenous reinfection. A genome comparison of two M. tuberculosis isolates

from 2012 and 2020 revealed 14 single nucleotide variants, with each

accumulating 7 single nucleotide variants from the original clone. These

findings provide evidence that M. tuberculosis subclones in different lung

lesions within the same host can accumulate genome mutations collaterally. Our

case report indicates that recognizing the potential for collateral reactivation

may enhance strategies for tracing transmission routes and deepen our

understanding of the evolution of drug resistance. Future research should focus

on identifying additional cases of collateral reactivation, supported by both

pathophysiological and genome microbiological evidence.

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Infectious Diseases, and Japanese Society for Infection Prevention and Control.

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**5. Int J Pharm. 2025 Aug 22:126103. doi: 10.1016/j.ijpharm.2025.126103. Online**

**ahead of print.**

Development of highly concentrated bedaquiline suspensions for usage as

long-acting injectable formulations.

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Tuberculosis (TB) remains a global health problem with an enormous treatment

burden and poor treatment adherence, contributing to the emergence of drug

resistance. This study investigated the potential of formulating a highly

concentrated long-acting injectable (LAI) formulation with bedaquiline fumarate,

which could potentially be used as a novel long-term treatment strategy against

TB and the prevention of drug resistance. Using wet media milling, micro- and

nanosuspensions of bedaquiline fumarate were prepared and evaluated to determine

a suitable stabilizer, drug loading capacity, short- and long-term particle size

stability, and pharmacokinetic behavior in rats. The stability study revealed a

relatively small, but continuous particle size growth over a six-month period

when stabilized with 4 % (w/v) polysorbate 20, most pronounced at 40 °C storage.

The bedaquiline fumarate salt exhibited superior drug loading capacity compared

to the free base form of the compound. When the free base was used in the

suspension a viscous paste was obtained at concentrations of 300 mg in 1 mL

milling media, whereas the suspensions containing the fumarate salt remained an

easy flowing liquid at concentrations as high as 969.5  mg in 1 mL milling media

(equivalent to 800  mg free base). Female Spraque-Dawley rats were injected

intramuscular with 0.1 mL of one of three formulations, which were identical in

composition but differed in particle size distribution. The formulations had

mean particle sizes (D50 value) of 0.391 µm, 3.15 µm, 7.80 µm. Particle size

displayed a central role in the initial drug release kinetics with smaller

particle size profiles yielding higher plasma concentrations. Prolonged plasma

concentrations were observed for all three formulations over the 3-months in

vivo study. A relatively high sustained plasma concentration of bedaquiline was

observed in the animals at the termination of the study suggesting that the

prolonged effect continued beyond the investigated three-month period. These

data supported the feasibility of LAI bedaquiline formulations as a treatment

option for three months with the potential for an even longer duration. However,

further studies are needed to optimize the formulations physical stability.

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PMID: 40850505

**6. Cytokine. 2025 Aug 23;195:157018. doi: 10.1016/j.cyto.2025.157018. Online ahead of print.**

Aspergillus fumigatus and Mycobacterium tuberculosis synergistically induce TNF

and IL-1β via different pathways in human peripheral blood mononuclear cells.

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Aspergillus fumigatus may cause infections in individuals with underlying lung

damage, such as those with pulmonary tuberculosis (TB). Simultaneous exposure to

A. fumigatus and Mycobacterium tuberculosis may worsen lung tissue damage, but

the combined immune response to these pathogens has not yet been fully

characterized. Peripheral blood mononuclear cells (PBMCs) from healthy

volunteers were stimulated with A. fumigatus conidia, M. tuberculosis H37Rv

lysate, or both combined. TNF and IL-1β were measured from culture supernatants.

The role of different pattern recognition receptors (PRRs) important for the

recognition of both pathogens were explored by using PRR inhibitors and PBMCs

from donors deficient in certain pathways. A. fumigatus and M. tuberculosis

synergistically induced TNF and IL-1β release by PBMCs, and this response was

independent of TLR2 and dectin-1. We found that the synergy is regulated through

distinct intracellular pathways. The activation of the intracellular receptor

NOD2 by M. tuberculosis and NADPH oxidase complex-dependent ROS production

triggered by A. fumigatus mediate TNF but not IL-1β synergy. Together, these

findings indicate that A. fumigatus and M. tuberculosis jointly exacerbate

proinflammatory responses. This may help to explain the persistent inflammation

and immunopathology observed in patients with concurrent TB and aspergillosis.

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PMID: 40850135

**7. BMC Microbiol. 2025 Aug 23;25(1):539. doi: 10.1186/s12866-025-04267-y.**

Prevalence of Mycobacterium Bovis infection and associated risk factors among

dairy farm cattle in Mekelle and Wukro towns, Northern Ethiopia.

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Bovine tuberculosis (BTB), caused by Mycobacterium bovis, contributes

significantly to human tuberculosis in developing countries, accounting for

10-15% of cases in Ethiopia. This study assessed the prevalence of BTB and

associated risk factors in dairy cattle in Mekelle city and Wukro town, North

Ethiopia, and evaluated farm workers' awareness of its zoonotic significance. A

cross-sectional study (2020-2021) tested 240 dairy cows using comparative

intradermal tuberculin skin testing and cultured 140 milk samples. BTB

prevalence was 7.1% by skin test (7.5% in Mekelle, 6.3% in Wukro) and 4.1% by

culture. Risk factors significantly associated with infection included large

herd size, poor management, adult age, exotic breeds, and poor body condition.

Only 20% of farm owners and 14% of workers were aware of BTB's zoonotic risk.

These findings underscore the need for targeted public education and the

implementation of control measures to reduce BTB transmission and protect public

health. Without intervention, both animal productivity and human health remain

at continued risk.

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DOI: 10.1186/s12866-025-04267-y

PMID: 40849446 [Indexed for MEDLINE]

**8. Ann Med. 2025 Dec;57(1):2550577. doi: 10.1080/07853890.2025.2550577. Epub 2025**

**Aug 23.**

Predominance of gram-negative multidrug-resistant pathogens causing lower

respiratory tract infections among gene X-pert negative presumptive tuberculosis

patients in Dar Es Salaam, Tanzania.

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**BACKGROUND:** Lower respiratory tract infections (LTRIs) represent a significant

global health burden. The clinical presentation of pulmonary tuberculosis (PTB)

and other LRTIs often overlap, making it difficult to differentiate based on

clinical features only. This study aims to investigate the role of other

bacteria pathogens in LRTIs among presumptive TB patients and antibiotic

susceptibility patterns for appropriate patient management.

**MATERIALS AND METHODS:** We conducted a cross-sectional study among patients with

symptoms and signs suggestive of PTB at Muhimbili National Hospital and

Infectious Diseases Centre in Dar es Salaam, Tanzania. Sputum samples collected

for TB diagnosis using the original GeneXpert system were investigated for other

causes of LRTIs. The sputum samples were assessed for quality based on the

Bartlett criteria before culture. We performed descriptive statistics to

summarize the data.

**RESULTS:** We assessed 470 sputum samples, of which 317(67.4%) were of good

quality. Of 317 samples, 21(6.6%) were Mycobacterium tuberculosis (MTB) positive

by GeneXpert, while 126(39.7%) had 138 significant bacterial isolates other than

MTB. Pseudomonas aeruginosa 44/99(44.4%) was the prominent Gram-negative

bacteria isolated, followed by Klebsiella pneumoniae 22/99(22.2%). High rates of

resistance was detected towards ampicillin (98%), penicillin (92%), and

amoxicillin-clavulanic acid (65%). A high proportion of isolates, 71/138(51.4%)

were multidrug resistant (MDR).

**CONCLUSION:** This study revealed a high prevalence of LRTIs caused by non-TB

pathogens, particularly MDR strains in presumptive TB. MTB was detected only in

high‑quality sputum samples. The high resistance rate to commonly prescribed

antibiotics for LRTIs called for further large-scale studies to guide and/or

refine treatment guidelines and optimize patient care.

DOI: 10.1080/07853890.2025.2550577

PMID: 40847889 [Indexed for MEDLINE]

**9. BMC Glob Public Health. 2025 Aug 22;3(1):74. doi: 10.1186/s44263-025-00198-y.**

Performance of chest X-ray with computer-aided detection powered by deep

learning-based artificial intelligence for tuberculosis presumptive

identification during case finding in the Philippines.

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**BACKGROUND:** The Philippines' high tuberculosis (TB) burden calls for effective

point-of-care screening. Systematic TB case finding using chest X-ray (CXR) with

computer-aided detection powered by deep learning-based artificial intelligence

(AI-CAD) provided this opportunity. We aimed to comprehensively review AI-CAD's

real-life performance in the local context to support refining its integration

into the country's programmatic TB elimination efforts.

**METHODS:** Retrospective cross-sectional data analysis was done on case-finding

activities conducted in four regions of the Philippines between May 2021 and

March 2024. Individuals 15 years and older with complete CXR and molecular World

Health Organization-recommended rapid diagnostic (mWRD) test results were

included. TB presumptive was detected either by CXR or TB signs and symptoms

and/or official radiologist readings. The overall diagnostic accuracy of CXR

with AI-CAD, stratified by different factors, was assessed using a fixed

abnormality threshold and mWRD as the standard reference. Given the imbalanced

dataset, we evaluated both precision-recall (PRC) and receiver operating

characteristic (ROC) plots. Due to limited verification of CAD-negative

individuals, we used "pseudo-sensitivity" and "pseudo-specificity" to reflect

estimates based on partial testing. We identified potential factors that may

affect performance metrics.

**RESULTS:** Using a 0.5 abnormality threshold in analyzing 5740 individuals, the

AI-CAD model showed high pseudo-sensitivity at 95.6% (95% CI, 95.1-96.1) but low

pseudo-specificity at 28.1% (26.9-29.2) and positive predictive value (PPV) at

18.4% (16.4-20.4). The area under the operating characteristic curve was 0.820,

whereas the area under the precision-recall curve was 0.489. Pseudo-sensitivity

was higher among males, younger individuals, and newly diagnosed TB. Threshold

analysis revealed trade-offs, as increasing the threshold score to 0.68 saved

more mWRD tests (42%) but led to an increase in missed cases (10%). Threshold

adjustments affected PPV, tests saved, and case detection differently across

settings.

**CONCLUSIONS:** Scaling up AI-CAD use in TB screening to improve TB elimination

efforts could be beneficial. There is a need to calibrate threshold scores based

on resource availability, prevalence, and program goals. ROC and PRC plots,

which specify PPV, could serve as valuable metrics for capturing the best

estimate of model performance and cost-benefit ratios within the

context-specific implementation of resource-limited settings.

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PMID: 40847378

**10. Eur Respir J. 2025 Aug 22;66(2):2500927. doi: 10.1183/13993003.00927-2025. Print 2025 Aug.**

Linezolid for the treatment of drug-resistant tuberculosis.

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Comment on

Eur Respir J. 2025 Aug 22;66(2):2500315. doi: 10.1183/13993003.00315-2025.

DOI: 10.1183/13993003.00927-2025

PMID: 40846488

**11. Travel Med Infect Dis. 2025 Aug 20;67:102891. doi: 10.1016/j.tmaid.2025.102891. Online ahead of print.**

Latent tuberculosis infection and sexually transmitted diseases in incoming

mobility students at the National Autonomous University of Mexico.

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**BACKGROUND:** Little is known about latent tuberculosis infection and sexually

transmitted diseases in international mobility students, due to the limited

number of educational institutions that provide care for these types of health

problems. The aim of this study was to determine the prevalence of latent

tuberculosis infection and the presence of some sexually transmitted diseases in

the population of incoming mobility students of the National Autonomous

University of Mexico (UNAM), as well as their socio-demographic, migratory and

health characteristics; in order to contribute to the design of strategies for

the detection of asymptomatic diseases that may have an impact on the health of

this population.

**METHODS:** Incoming mobility students of the UNAM were invited to participate in

the study, underwent a clinical history and physical examination, and informed

consent was requested for the collection of blood to determine the presence of

TB and some sexually transmitted diseases. Socio-demographic, migration and

health characteristics were recorded.

**RESULTS:** 149 incoming mobility students were recruited, with a prevalence of

7.3 % of latent TB. None of the students were positive for HIV and HCV, and only

one student was positive for syphilis.

**CONCLUSIONS:** The prevalence of latent TB was 7.3 %. LTB and sexually transmitted

diseases in high-risk populations, such as international mobility students, was

unknown in our country. It is important to continue with research projects aimed

at reducing the burden of disease in this population and to promote the

development of strategies that inform educational institutions about their

presence, control and prevention.

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**12. Vaccine. 2025 Aug 21;63:127642. doi: 10.1016/j.vaccine.2025.127642. Online ahead of print.**

Johannes Theodor Wilhelm Petruschky (1863-1945) and the population-level

tuberculin experiment for tuberculosis eradication in Hel.

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This article examines the experiment conducted by Johannes Theodor Wilhelm

Petruschky (1863-1945) on the eradication of tuberculosis using tuberculin. His

research was inspired by the work of Robert Koch, who discovered the etiological

agent of tuberculosis and conducted experiments using tuberculin as a

therapeutic agent. Despite initial hopes, tuberculin proved ineffective in

treating tuberculosis. Following Koch's ideas, Petruschky conducted studies in

Gdańsk and later in the isolated community of Hel, where he attempted to

eliminate tuberculosis through systematic diagnosis and prevention. He declared

the experiment a success, claiming that Hel had become tuberculosis-free.

However, his research faced criticism, particularly from Ernst Effler, who

questioned the reliability of the epidemiological data. Ultimately, Petruschky's

method did not stand the test of time, and his claims of successful eradication

were discredited. Nevertheless, his model of patient surveillance contributed to

the development of tuberculosis control systems.

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**13. Diagn Microbiol Infect Dis. 2025 Aug 18;113(4):117072. doi:**

**10.1016/j.diagmicrobio.2025.117072. Online ahead of print.**

Co-infection of lophomonas blattarum and mycobacterium tuberculosis: Insights

from a study in northeastern Iran.

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**BACKGROUND:** Pulmonary tuberculosis (TB) continues to pose a significant global

health challenge, especially in low- and middle-income countries. The immune

suppression caused by TB increases susceptibility to secondary infections such

as Lophomonas blattarum, a rare protozoan that infects the respiratory tract.

Co-infection with Lophomonas can complicate TB treatment due to overlapping

symptoms, leading to misdiagnosis or delayed care. This study aims to assess the

prevalence and clinical impact of L. blattarum co-infection in TB patients and

evaluate the need for routine screening in regions with high TB prevalence.

**METHODS:** This cross-sectional study was conducted in a tertiary care hospital in

Mashhad, Iran. Bronchoalveolar lavage (BAL) samples were obtained from 214

patients with respiratory symptoms. TB diagnosis was based on Ziehl-Neelsen

staining, culture as the gold standard, and polymerase chain reaction (PCR)

targeting the IS6110 and 16S rRNA genes. L. blattarum detection was initially

performed through direct light microscopy, and PCR was subsequently attempted

using species-specific primers targeting the 18S rRNA gene. Data were analyzed

using SPSS version 22, with p-values < 0.05 considered statistically

significant.

**RESULTS:** Of the TB-positive patients, 55.7 % were co-infected with Lophomonas,

compared to 29.9 % in the TB-negative group, demonstrating a significant

association between TB and Lophomonas infection (p < 0.001). The highest

prevalence of Lophomonas infection was observed in patients over 60 years old.

Despite molecular attempts to identify Lophomonas using PCR, the results were

inconclusive, and microscopy served as the primary diagnostic tool.

**CONCLUSION:** The high rate of Lophomonas co-infection in TB patients underscores

the need for routine screening, particularly in regions with high TB prevalence.

Early detection of co-infections can improve patient outcomes and prevent

complications from misdiagnosis or delayed treatment.

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PMID: 40845716

**14. Arch Microbiol. 2025 Aug 22;207(10):235. doi: 10.1007/s00203-025-04439-4.**

Strategic targeting of AckA in Mycobacterium tuberculosis using peptide

inhibitors.

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Tuberculosis (TB) continues to pose a significant global health challenge,

exacerbated by the rise of multidrug-resistant (MDR) and extensively

drug-resistant (XDR) strains, which undermine the efficacy of existing

therapies. Recent research focuses on anti-tubercular peptides as promising

therapeutics due to their direct antimicrobial action and ability to enhance

antibiotic efficacy by disrupting mycobacterial membranes. This study aims to

identify and characterize potent anti-tubercular peptides targeting Acetate

Kinase (AckA), a key enzyme in the metabolism of Mycobacterium tuberculosis.

Through peptide virtual screening (PVS), followed by evaluations of cell

penetration, toxicity, and MM/GBSA binding energy calculations, we identified

five potential lead peptides, namely, DBAASP4864, DBAASP17881, DBAASP7096,

DBAASP1043, and DBAASP5585, sourced from curated antimicrobial peptide databases

(APD3, DBAASP, DRAMP, AntiTb, SATPdb, and CAMPR3). These candidates were

selected based on favorable physicochemical properties, minimal toxicity, and

strong binding affinities. Molecular dynamics simulations (MDS) demonstrated the

structural stability of the peptide AckA complexes, with increased hydrogen bond

formation observed over the simulation trajectories. Further validation through

principal component analysis (PCA) and free energy landscape (FEL) mapping

revealed a dominant low-energy basin, supporting the conformational stability of

the complexes. MM/PBSA analysis confirmed strong binding interactions, and key

residues, namely, Asn195, Asp266, Phe267, Gly314, and Asn318, were identified as

critical contributors to peptide binding and complex stabilization. The study

reveals peptide dynamics, highlighting their therapeutic potential and clinical

applicability, while providing a strong foundation for experimental validation

and developing next-generation anti-tubercular agents targeting drug-sensitive

and drug-resistant M. tuberculosis strains.

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**15. Clin Infect Dis. 2025 Aug 22:ciaf467. doi: 10.1093/cid/ciaf467. Online ahead of print.**

Characterizing treatment adherence trajectories in the endTB multisite cohort of

drug-resistant tuberculosis patients: an application of group-based trajectory

modelling.

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Guerra D(8), Hewison C(9), Huerga H(10), Khan M(11), Khan P(12)(13), Khan

U(12)(14), Kliescikova J(15), Kumsa A(16), Lomtadze N(17)(18)(19), Putri FA(20),

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**BACKGROUND:** In tuberculosis (TB) care, adherence is often assessed using a

simple 80% threshold, which may overlook meaningful patterns. We analyzed

adherence trajectories among individuals treated for rifampicin- or

multidrug-resistant TB (RR/MDR-TB) in the endTB observational study to identify

more informative patterns.

**METHODS:** We applied a joint latent class mixed model to classify adherence

trajectories and assess their relationship with treatment outcomes. Model

performance was compared to common classification methods (e.g. 80% adherence

threshold) using Kendall's τb and area under the receiver operating curve

(AUROC) for predicting unsuccessful outcomes.

**RESULTS:** Among 1,787 individuals, we identified four adherence patterns:

"consistently high" (72.5%), "high to low" (14.3%), "low to high" (7.3%), and

"consistently low" (5.9%). Compared to the "consistently high" group, those in

"high to low" (HR=23.2; 95% CI: 15.7-24.3) and "consistently low" (HR=43.2; 95%

CI: 26.2-71.5) groups had significantly higher risk of unsuccessful outcomes,

while the "low to high" group did not (HR=0.7; 95% CI: 0.1-3.8). Our trajectory

model more accurately predicted outcomes than common classification methods

(p<0.01).

**CONCLUSIONS:** Group-based trajectory modelling provides more nuanced insights

into adherence patterns than conventional classification methods. Our findings

demonstrate that patients with RR/MDR-TB who exhibited initial poor adherence

followed by subsequent improvement achieved clinical outcomes comparable to

those with consistently high adherence throughout treatment. This finding

challenges the prevailing assumption that sustained high adherence is necessary

for treatment success, suggesting that adherence patterns, rather than overall

adherence rates, may be more predictive of clinical outcomes in the management

of RR/MDR-TB.

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**16. Nat Commun. 2025 Aug 21;16(1):7798. doi: 10.1038/s41467-025-63024-x.**

Visualizing acyl carrier protein interactions within a crosslinked type I

polyketide synthase.

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Using a combination of dual covalent crosslinking and cryo-EM analyses, we

elucidate the structure of mycocerosic acid synthase from Mycobacterium

tuberculosis trapped in two distinct catalytic states during its iterative

cycle. These structures reveal domain architecture of the acyl carrier protein

mediating condensation and dehydration through dual site-selective crosslinking

of the acyl carrier protein with the ketosynthase and dehydratase domains. Map

density was sufficient to visualize full domain architecture with active

site-bound probes and elucidate key interactions of four distinct crosslinked

species. Here, iterative vectorial polyketide biosynthesis arises through an

overall twisting and tilting architecture, enabling positioning and entry of the

cognate substrate at each enzymatic domain. These structures present valuable

details for future therapeutic design against mycocerosic acid biosynthesis in

M. tuberculosis.

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DOI: 10.1038/s41467-025-63024-x

PMID: 40841798 [Indexed for MEDLINE]

**17. Inflammation. 2025 Aug 22. doi: 10.1007/s10753-025-02343-z. Online ahead of**

**print.**

Chemerin Exacerbates Pulmonary Inflammation in Type 2 Diabetes and Mycobacterium

Tuberculosis Infection Comorbidity.

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The adipokine chemerin is increased in the serum of individuals with obesity and

type 2 diabetes. Patients with type 2 diabetes exhibit a threefold increased

risk of developing tuberculosis, are more refractory to tuberculosis treatment

and display more severe forms of the disease. Patients with type 2 diabetes and

tuberculosis exhibit a dysfunctional immunological response characterized by a

higher frequency of peripheral Th1 and Th17 cells, increased concentrations of

pro- and anti-inflammatory cytokines, and a reduced microbicidal capacity

compared to subjects affected exclusively by tuberculosis. In the present study,

we investigated whether chemerin exerts a pro- or anti-inflammatory effect on

macrophages in vitro and its role in the lungs of normoglycemic or hyperglycemic

(obese plus type 2 diabetes) mice infected with Mycobacterium tuberculosis. Bone

marrow-derived macrophages (BMDM) cultured with hyperglycemic medium and

infected with M. tuberculosis secreted increased IL-6 and reduced IL-10

concentrations following chemerin treatment. BMDM from obese (fed with high-fat

diet, HFD), non-diabetic mice were also pro-inflammatory, while BMDM from obese

and diabetic mice (db/db) showed no significant difference compared to BMDM from

normoglycemic mice (db/+). In vivo, db/db mice exhibited an increase of

bacterial load and an exacerbated pulmonary immunopathology. Treatment of

infected db/db mice with CCX832 chemerin receptor (ChemR23) antagonist

significantly reduced pulmonary inflammation with no effect on bacterial load.

Our findings show that blocking chemerin receptors may represent an adjuvant

therapeutic strategy to mitigate pulmonary immunological response-mediated

pathology accentuated by type 2 diabetes in active tuberculosis.

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DOI: 10.1007/s10753-025-02343-z

PMID: 40841701

**18. Ther Innov Regul Sci. 2025 Aug 21. doi: 10.1007/s43441-025-00866-z. Online ahead of print.**

Machine Learning in Tuberculosis Research: A Global Bibliometric Analysis of

Diagnostic, Prognostic, and Drug Discovery Trends.

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Alshahrani S(4), Farasani AM(2), Alamer AS(5), Moshi JM(2), Sahli KA(6), Jeraiby

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**BACKGROUND AND OBJECTIVES:** Tuberculosis (TB) remains a major global health

challenge, driving the need for innovative approaches in diagnosis and drug

development. The integration of artificial intelligence (AI), particularly

machine learning (ML), has enabled significant advancements in areas such as

drug resistance prediction, radiomics, prognostic modeling, and computational

drug discovery. This study presents a comprehensive bibliometric analysis of

global research on machine learning and tuberculosis (MLTB), highlighting trends

relevant to therapeutic innovation and regulatory science.

**METHODS:** A structured search of the Scopus database was conducted for

English-language, data-driven publications on MLTB through May 1, 2024.

Bibliometric indicators were analyzed using Biblioshiny and VOSviewer, focusing

on publication trends, citation metrics, collaboration networks, and thematic

clustering.

**RESULTS:** The MLTB research field has grown rapidly, with an average annual

growth rate of 22.12% between 2000 and 2024. Publications averaged 21.64

citations, and 40.11% involved international collaboration. Twelve major

clusters were identified, including deep learning, drug discovery,

bioinformatics, docking, random forest, and latent TB infection-highlighting the

field's expanding scope in drug development and diagnostic applications.

**CONCLUSION:** MLTB research is evolving rapidly, driven by interdisciplinary

collaboration and AI innovation. These findings offer insights for guiding

future AI-enabled TB therapeutic strategies and aligning research efforts with

regulatory and translational priorities.

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PMID: 40841498

**19. BMJ Glob Health. 2025 Aug 21;10(8):e018131. doi: 10.1136/bmjgh-2024-018131.**

Using sputum and tongue swab specimens for in-home point-of-care targeted

universal testing for tuberculosis of household contacts: an acceptability and

feasibility analysis.

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**INTRODUCTION:** Effective strategies are essential for early tuberculosis (TB)

detection. Reliance on passive case detection, symptom screening and collection

of sputum results in delayed or undiagnosed TB, contributing to on-going TB

transmission. This study assessed the acceptability of in-home targeted

universal TB testing (TUTT) using GeneXpert MTB/RIF Ultra at point-of-care (POC)

during household contact investigations (HCIs) and the feasibility of using

sputum and tongue swab specimens.

**METHODS:** The TB Home Study sought to evaluate the predictive value of different

specimen types for use as a household-level triage test for TB. Household

contacts of people with TB residing in the Buffalo City Metro Health District

(Eastern Cape Province, South Africa) who received in-home POC TUTT through the

TB Home Study were asked to complete a post-test acceptability survey. The

survey assessed the level of comfort, confidence in the test results and

perceived appropriateness of in-home POC TUTT. A feasibility framework was used

to assess the feasibility of using sputum and tongue swab specimens for testing.

**RESULTS:** Of the 325 eligible household contacts, 281/325 (86.5%) provided

consent. Of those contacts, 278/281 (98.9%) provided a tongue swab, and 50/281

(17.8%) could expectorate sputum. All specimens were successfully prepared for

immediate in-home testing. Of the 172 tongue swab-based tests performed, 169

(98.3%) produced a valid result, whereas 47 of 49 (95.9%) sputum-based tests had

a valid result. An immediate tongue swab-based test result was available for

274/278 (98.6%) clients compared with 47/49 (95.9%) sputum-based test results.

The mean in-home POC TUTT acceptability score (5=highly acceptable) was 4.2/5

(SD=0.4).

**CONCLUSION:** In-homePOC TUTT using sputum and tongue swab specimens was highly

acceptable and feasible. Tongue swabs greatly increased the testing rates owing

to the high sample collection yield. Combining sputum and tongue swabs for

in-home POC testing offers a promising strategy to improve TB case detection and

reduce diagnostic delays.

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commercial re-use. See rights and permissions. Published by BMJ Group.

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**20. Gastroenterology. 2025 Aug 19:S0016-5085(25)05883-4. doi:**

**10.1053/j.gastro.2025.08.007. Online ahead of print.**

Navigating the Differential Diagnosis of Intestinal Tuberculosis and Crohn's

Disease.

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DOI: 10.1053/j.gastro.2025.08.007

PMID: 40840713

**21. Lancet Infect Dis. 2025 Aug 18:S1473-3099(25)00364-0. doi:**

**10.1016/S1473-3099(25)00364-0. Online ahead of print.**

A clinical practice guideline for tuberculous meningitis.

Donovan J(1), Cresswell FV(2), Tucker EW(3), Davis AG(4), Rohlwink UK(5), Huynh

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ST(11), Jain SK(12), Chow FC(13), Pattison S(14), Scriven JE(15), Singh G(5),

Aarnoutse RE(16), Alffenaar JC(17), Dian S(18), Manesh A(19), Basu Roy R(20),

Singh V(21), van Toorn R(7), Upton CM(22), van Crevel R(23), Dooley KE(24), Gibb

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Tuberculous meningitis is the most severe form of tuberculosis, causing death or

disability in around half of those affected. There are no up-to-date

international guidelines defining its optimal management. Therefore, the

Tuberculous Meningitis International Research Consortium conducted a systematic

review of available evidence to address key management questions and to develop

practice guidance. The consortium includes representatives from India,

Indonesia, South Africa, Uganda, Viet Nam, Australia, the Netherlands, the UK,

and the USA. Questions were developed using the Population, Intervention,

Comparator, Outcome (PICO) format for tuberculous meningitis diagnosis,

anti-tuberculosis chemotherapy, adjunctive anti-inflammatory therapy, and

neurocritical and neurosurgical care. A Grading of Recommendations, Assessment,

Development and Evaluations approach was used to assess the certainty (or

quality) of evidence and establish the direction and strength of recommendations

for each PICO-based question. We provide evidence-based recommendations for the

optimal treatment and diagnosis of tuberculous meningitis, alongside expert

opinion. We expose substantial knowledge and evidence gaps, thereby highlighting

current research priorities.

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data mining, AI training, and similar technologies.

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**22. PLoS One. 2025 Aug 21;20(8):e0330538. doi: 10.1371/journal.pone.0330538.**

**eCollection 2025.**

Modeling the formation of a worldwide health network fighting TBC: Key drivers

in policy, management and governance in developing countries and global health

institutions.

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We present an original study on the usage of a model of network formation to

analyze the X (formerly Twitter) friendship network relative to the health

organizations that are fighting a specific infectious disease such as

Tuberculosis (TBC) as well as how the network evolves over time. Using this

model, that mixes information from social media and the underlying reconstructed

economic network of their actors, together with disease incidence information,

we can then study how the TBC global health network (GHNs) works. Specifically,

we investigate the key drivers of this global network partnerships as well as

the interplay between economic, social media, and disease incidence. The network

diversity (a measure of node size dispersion), has been identified as the

leading feature for the network growth, while improving its resilience. We use

these insights to suggest better health strategies especially targeted to weak

GHNs operating in low and middle income countries that often lack funding,

coordination and the capability to attract new donors.

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**23. J Clin Microbiol. 2025 Aug 21:e0054625. doi: 10.1128/jcm.00546-25. Online ahead of print.**

AveloMask, a novel breath aerosol collection kit for airborne Mycobacterium

tuberculosis: a proof-of-principle assessment.

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Tuberculosis (TB) remains the world's deadliest infectious disease, with many

active cases missed due to challenges in sputum collection. Exhaled breath

aerosols (XBA), a major route of Mycobacterium tuberculosis (MTB) transmission,

offer a promising non-invasive alternative. This study evaluated the diagnostic

accuracy and feasibility of the AveloMask-a novel point-of-care breath aerosol

collection kit-for detecting active pulmonary TB using quantitative PCR (qPCR).

In a pilot diagnostic accuracy study, 61 symptomatic, adult outpatients in Cape

Town, South Africa, wore the mask for 45 min, coughing deeply at the start and

end. XBAs were collected on integrated fiber filters transferred into

stabilizing buffer via a simple push step and biobanked. XBA's were

batch-analyzed by qPCR targeting the MTB-specific IS6110 sequence. Diagnostic

accuracy was assessed against sputum Xpert MTB/RIF Ultra (SXRS) and a composite

microbiological reference standard (MRS), including culture. Of the 58 evaluable

participants, 59% (34/58) had confirmed TB. Compared with SXRS, mask qPCR showed

71.0% (95% confidence interval [CI]: 53.4%-83.9%) sensitivity and 92.3% (95%

CI:75.9%-97.9%) specificity. Against MRS, sensitivity was 64.7% (95% CI:

47.9%-78.5%) and specificity 91.7% (95% CI: 74.2%-97.7%). Sensitivity increased

with bacterial load, reaching 100% in sputum with high MTB concentrations. MTB

IS6110 copy numbers in XBAs were low overall (175 copies [4-2,147]), likely due

to insufficient DNA recovery or low aerosol bacilli. The mask sampling was

well-tolerated by users. The AveloMask Kit shows promising diagnostic accuracy

for TB and is feasible for point-of-care use. Further optimization and larger

validation studies are warranted.IMPORTANCETuberculosis (TB) remains the world's

deadliest infectious disease, yet diagnosis still relies heavily on sputum,

which many patients struggle to produce. This study introduces the AveloMask

Kit, a user-friendly, non-invasive face mask that captures exhaled aerosols and

transfers them into a buffer tube for molecular detection of respiratory tract

infections. In a clinical proof-of-principle study, AveloMask detected TB with

promising accuracy and demonstrated feasibility in outpatient settings. By

offering a non-invasive alternative to sputum, the AveloMask Kit addresses a

critical diagnostic gap and could expand access to TB testing, particularly in

resource-limited or primary care settings. Its simplicity enables use by

minimally trained staff, and its stabilizing buffer allows ambient-temperature

transport and biobanking, supporting broader case finding, safer sample

collection, and future aerobiology research.

DOI: 10.1128/jcm.00546-25

PMID: 40839691

**24. Int J Epidemiol. 2025 Aug 18;54(5):dyaf146. doi: 10.1093/ije/dyaf146.**

Quantifying disruptions to tuberculosis case detection in Brazilian states

during the COVID-19 pandemic.

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**BACKGROUND:** Globally, tuberculosis (TB) surveillance and care were severely

impacted by the COVID-19 pandemic. In Brazil, TB notification rates decreased in

the first 2 years of the pandemic. There is a need for rigorous model-based

methods to quantify the impact of health system disruptions on TB control. In

this study, we aimed to assess how the COVID-19 pandemic affected both incidence

and case detection in Brazilian states.

**METHODS:** We used a Bayesian evidence synthesis model to estimate TB incidence

and case detection rates over the period 2016-21 by using routinely collected

case notification and mortality data. We then used a meta-regression framework

to estimate factors associated with state-level rates of undiagnosed symptomatic

TB.

**RESULTS:** We found that the probability that an individual with symptomatic TB

was diagnosed decreased in the majority of states in April 2020

(median = -10.4%age points, interquartile range = -6.6, -16.2). Incident TB

decreased slightly in April 2020 and rebounded beginning in 2021. Together, this

led to an increase in missed TB cases in nearly every state during the pandemic.

Nationally, we estimate that there were 20 671 (95% credible interval: 19 249,

22 501) missed TB cases between April 2020 and December 2021.

**CONCLUSION:** Disruptions to the Brazilian healthcare system during the COVID-19

pandemic prevented tens of thousands of individuals with symptomatic disease

from receiving a TB diagnosis. While some Brazilian states recovered rapidly to

pre-pandemic levels of TB case detection, many did not and the rates of missed

TB cases remained high through 2021.

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**25. Eur Clin Respir J. 2025 Aug 18;12(1):2547515. doi:**

**10.1080/20018525.2025.2547515. eCollection 2025.**

Imaging of post-tuberculosis lung disease cases in children and adolescent

survivors: a systematic review.

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**INTRODUCTION:** Post-tuberculosis lung disease (PTLD) causes health problems among

pulmonary TB (PTB) survivors. Post-TB patients may suffer from chronic

respiratory symptoms, declining lung function, and persistent radiological

abnormalities. However, studies regarding PTLD in children and adolescents are

still scarce. Patterns of radiological abnormalities, including chest X-ray

(CXR) imaging, high-resolution computed tomography (HRCT), and magnetic

resonance imaging (MRI) in post-TB children, and adolescents are not fully

understood.

**AIM:** In this study, we aim to review and analyse radiological features in

children and adolescent TB survivors of the literature on the differences in

imaging findings in drug-resistant (DR) and drug-sensitive tuberculosis (DS TB)

children and adolescent TB survivors.

**METHOD:** We performed a systematic review to determine imaging patterns of DR and

DS TB in children and adolescent survivors. Data collected include study design,

number of subjects, age, TB category, treatment duration, time of evaluation,

and imaging patterns. We searched MEDLINE/Pubmed, Google Scholar, Science

Direct, Wiley Online Library, Cochrane Library, and Proquest and included four

studies for data analysis. Study quality was assessed using a modified

Newcastle-Ottawa score.

**RESULT:** Studies included 151 children and adolescents aged 0-17 years. Three out

of four studies were conducted on DS-TB patients and one study compared DS- and

DR-TB. Radiological abnormalities observed by CXR at TB treatment completion

include calcification in the presence or absence of fibrosis, bronchiectasis,

and destroyed lung, or lymphoid interstitial pneumonitis. Micronodules are most

often seen in HRCT in the acute early stages of TB and were not seen in standard

chest radiography. Cavities persisted in almost 50% of patients after TB

treatment and fibrotic changes increased after treatment.

**CONCLUSION:** Imaging abnormalities after TB treatment are often seen in children

and adolescents. Imaging evaluation should be performed in PTB survivors,

especially in those with moderate or advanced lesions during active disease and

those with severe clinical manifestations.

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PMID: 40837550

**26. Trop Doct. 2025 Aug 21:494755251370784. doi: 10.1177/00494755251370784. Online ahead of print.**

Tuberculosis and suicide: An overlooked association.

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DOI: 10.1177/00494755251370784

PMID: 40836875

**27. J Antimicrob Chemother. 2025 Aug 21:dkaf300. doi: 10.1093/jac/dkaf300. Online**

**ahead of print.**

Rifampicin concentrations throughout the entire treatment duration of active

tuberculosis; impact of sex and body mass index.

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**OBJECTIVES:** Rifampicin is a crucial part of an effective tuberculosis (TB)

treatment. It has complicated pharmacokinetics (PK) with auto-induction and

nonlinearity. Our objectives were to examine rifampicin concentrations

throughout the entire treatment duration in individuals with active TB and to

determine correlations between rifampicin concentrations, sex at birth, and body

mass index (BMI).

**METHODS:** We measured concentrations at 2-3 h post-dose (C2h) in an attempt to

capture peak concentrations of rifampicin at treatment weeks 2, 4, 8, and

subsequently every fourth week throughout the treatment period in patients with

active TB. Linear mixed modelling was performed to analyse correlations between

rifampicin concentration, week of treatment, sex at birth, and BMI.

**RESULTS:** Forty-two participants were included, resulting in a total of 230

rifampicin concentration measurements. The intra-individual concentrations

varied substantially throughout treatment but there was no correlation between

week of treatment and rifampicin concentration. The concentration levels were

significantly lower in men than in women, median difference -4.3 µg/mL

(P < 0.001), median dose 13 mg/kg. Over time, women had a trend of decreasing

concentrations and men an increasing trend. Underweight patients had

significantly lower concentrations than normal weight individuals, median

difference -4.1 µg/mL (P = 0.002). Rifampicin concentrations were below the

recommended level of 8 µg/mL in 35/206 measurements (17%). No relapses occurred

during 6 months of follow-up.

**CONCLUSIONS:** We found no significant changes in rifampicin concentrations during

TB treatment. Both sex and BMI were associated with rifampicin concentrations.

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PMID: 40836859

**28. Int J STD AIDS. 2025 Aug 21:9564624251369565. doi: 10.1177/09564624251369565.**

**Online ahead of print.**

Retrospective cohort analysis of antiretroviral therapy initiation timelines and

clinical outcomes in adults with HIV and TB disease in KwaZulu-Natal, South

Africa.

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**Background** We aimed to determine antiretroviral therapy (ART) initiation timing

and outcomes in people living with HIV (PLHIV) receiving tuberculosis treatment

in KwaZulu-Natal, South Africa.**Methods** We performed a retrospective cohort

analysis of routinely collected de-identified data from 62 clinics including

PLHIV not already receiving ART aged ≥16 years, starting tuberculosis treatment

between October 2016-November 2019. Multivariable Poisson regression models with

robust standard errors evaluated associations between timing of ART initiation

(after starting tuberculosis treatment) and successful tuberculosis treatment,

and 6-month HIV viral load (VL) < 50 copies/mL.**Results** Among 5,548 PLHIV with

tuberculosis, 29.8% initiated ART within 15 days ("early"), 36.2% in 16-56 days,

8.7% in 57-210 days, with 25.3% not initiating ART by 7 months. Proportions with successful tuberculosis treatment were similar comparing 16-56 and 57-210 days to early initiation, with a lower likelihood of successful tuberculosis outcome with no ART within 7 months (adjusted risk ratio [aRR] 0.81 [0.77-0.86], p < 0.001). In those with a known VL 6 months post-ART initiation (n = 2,658),

initiation within 57-210 days had a lower likelihood of viral suppression (aRR

0.90 [0.82-0.99], p < 0.03).**Conclusion** Although <30% of PLHIV with tuberculosis

initiated ART early, this was associated with better tuberculosis outcomes and

VL suppression.

DOI: 10.1177/09564624251369565

PMID: 40836855

**29. Clin Infect Dis. 2025 Aug 21:ciaf445. doi: 10.1093/cid/ciaf445. Online ahead of print.**

The three-gene Xpert Host Response signature for pediatric tuberculosis

screening: A prospective diagnostic accuracy study.

Poore H(1)(2), Wambi P(3), Nkereuwem E(4), Nakafeero J(3), Gomez MP(2), Nsereko

M(3), Sweetser B(1)(2), Andama A(3), Wobudeya E(3), Ernst JD(2)(5), Cattamanchi

A(1)(2), Jaganath D(2)(6), Kampmann B(4)(7); COMBO Study.

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**BACKGROUND:** Blood-based gene signatures offer potential as a near point-of-care

tuberculosis (TB) screening tool. We examined the accuracy of the GeneXpert MTB

Host Response (Xpert-HR) cartridge to screen for TB in children.

**METHODS:** We enrolled children under 15 years from The Gambia and Uganda being

evaluated for pulmonary TB. Each child provided a blood sample for Xpert-HR and

underwent standard TB assessments, including chest x-ray (CXR) and sputum Xpert

Ultra testing, followed by NIH case classification of Confirmed, Unconfirmed or

Unlikely TB. We measured cycle threshold (Ct) values for GBP5, DUSP3, and TBP,

calculated an HR TB score, and generated ROC curves. Specificity was assessed at

90% sensitivity according to strict (SRS, Confirmed versus Unlikely TB),

microbiological (MRS, Confirmed versus Unlikely or Unconfirmed TB), and

composite (CRS, Confirmed or Unconfirmed TB versus Unlikely TB) reference

standards compared to other TB evaluations.

**RESULTS:** Among 181 children (median age 4 years; 53% female; 16% with HIV; 14.4%

confirmed TB), the HR TB score cut-point of -0.65 showed 88.5% sensitivity with

specificity at 33.3% (SRS) and 30.3% (MRS). Sensitivity was lower for the CRS at

75.7%, with similar specificity (33.3%). Sensitivity was higher in children aged

5-9 and 10-14 years compared to those under 5, but specificity remained low

(22.7-28.6%). Combining Xpert-HR with CXR, Xpert Ultra, or TB treatment decision

algorithms did not significantly enhance accuracy.

**CONCLUSION:** Xpert-HR showed high sensitivity for detecting confirmed TB but had

low specificity, risking overdiagnosis. Improved pediatric-specific gene

signatures are necessary for better accuracy in children.

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Infectious Diseases Society of America.

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**30. Braz J Biol. 2025 Aug 18;85:e296615. doi: 10.1590/1519-6984.296615. eCollection 2025.**

Spatial and social determinants of tuberculosis in the Brazilian Amazon: a

five-year multilevel and cluster-based analysis in Pará state, 2018-2022.

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MP(2), Galvão-Fonseca AP(3), Cardoso-Mello AGN(4), Abreu-Alberio CA(5),

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Tuberculosis remains a major public health concern in Brazil, particularly in

the Amazon region, where its distribution is shaped by persistent social

inequalities and environmental pressures. This study analyzed the spatial and

sociodemographic dynamics of tuberculosis in the state of Pará, Northern Brazil,

between 2018 and 2022. A total of 26,127 confirmed cases were identified through

the Notifiable Diseases Information System and the National Registry of Health

Establishments. We applied empirical Bayes smoothing and Kulldorff's spatial

scan statistic to detect high-risk territorial clusters and used multilevel

logistic regression to assess individual and contextual predictors of

unfavorable treatment outcomes. The disease primarily affected men, young adults

aged 15-49 years, individuals with low educational attainment, and those

self-identified as of mixed race. Spatial analysis revealed persistent high-risk

clusters in the Metropolitan Region of Belém and a progressive expansion into

Southeastern and South-Central municipalities. Lower education and Black or

mixed-race identity were independently associated with a higher likelihood of

unfavorable outcomes. The findings underscore the importance of integrating

spatial epidemiology with multilevel modeling to uncover both individual and

territorial determinants of tuberculosis. They highlight the need for

geographically targeted interventions, the expansion of primary care services,

and intersectoral public policies aimed at mitigating structural vulnerabilities

in the Brazilian Amazon. Our results provide evidence to support precision

public health strategies and enhance local planning in regions of high social

and environmental risk.

DOI: 10.1590/1519-6984.296615

PMID: 40834184 [Indexed for MEDLINE]

**31. Rev Inst Med Trop Sao Paulo. 2025 Aug 18;67:e52. doi:**

**10.1590/S1678-9946202567052. eCollection 2025.**

Behçet's disease and tuberculosis: unmasking infection behind a suspected flare.

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Behçet's disease (BD) is a chronic and multisystem disorder characterized by

recurrent oral and genital ulcers, along with ocular, cutaneous, vascular,

gastrointestinal, and neurologic manifestations. The etiology is thought to

involve an autoimmune response triggered by infectious or environmental factors

in genetically predisposed individuals. Mycobacterium tuberculosis has been

proposed as a potential trigger for BD, although this association remains rarely

reported. We show a compelling case of a patient with BD diagnostic criteria who

subsequently developed mediastinal tuberculous lymphadenitis, which was

initially suspected as disease activity. This case underscores the importance of

considering tuberculosis in BD patients with new or worsening symptoms despite

appropriate therapy.

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PMCID: PMC12364497

PMID: 40834145 [Indexed for MEDLINE]

**32. Rev Lat Am Enfermagem. 2025 Aug 18;33:e4575. doi: 10.1590/1518-8345.0000.4575.**

Towards the elimination of tuberculosis in Latin America: opportunities through

network cooperation.

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DOI: 10.1590/1518-8345.0000.4575

PMCID: PMC12364453

PMID: 40834126

**33. Mol Divers. 2025 Aug 20. doi: 10.1007/s11030-025-11293-5. Online ahead of print.**

Design, synthesis, and biological evaluation of coumarin derivatives against

tuberculosis: a pharmacophore-based approach.

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Rising cases of drug resistance tuberculosis including multidrug-resistant and

extensively drug-resistant emphasize the need for development of drugs with

novel mechanism of action. The study aimed to explore novel inhibitors targeting

Mycobacterium thymidine monophosphate kinase (Mtb TMPK), a promising but

unexplored drug target for tuberculosis treatment. A library of 200 coumarin

derivatives was rationally designed and screened against Mtb TMPK, an essential

enzyme in nucleotide biosynthesis of mycobacterium tuberculosis. Common feature

pharmacophore modeling was performed to identify crucial structural features

required for Mtb TMPK inhibition. Molecular docking and ADMET analysis were

conducted to prioritize 14 coumarin-piperazine-acetamide derivatives for

synthesis. In order to assess the in vitro antitubercular potential of

synthesized compounds, the REMA assay was performed. Compound S135, S144, and

S146 have shown MIC of 0.06 µg/mL, comparable to the MIC of isoniazid

0.05 µg/mL. All synthesized compounds exhibited promising activity with MIC not

exceeding 1 µg/mL, demonstrated the antitubercular potential of designed

coumarin analogs. As the design strategy aimed to surpass the issue of

whole-cell activity associated with previous Mtb TMPK inhibitors, these results

could serve as foundation for this field, supported with green signal from in

vitro cytotoxicity study. The findings truly emphasize on Mtb TMPK inhibition

assays to fix the mode of action, which could ultimately pave the way for

preclinical studies on these derivatives as future perspective.

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AG.

DOI: 10.1007/s11030-025-11293-5

PMID: 40833436

**34. Clin Infect Dis. 2025 Aug 20:ciaf400. doi: 10.1093/cid/ciaf400. Online ahead of print.**

In-kind Nutritional Supplementation for Persons With Drug-susceptible

Tuberculosis and Their Household Contacts Would be Cost-effective for Reducing

Tuberculosis Incidence and Mortality in Jharkhand, India: A Modeling Study.

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**BACKGROUND:** Undernutrition is the leading cause of tuberculosis (TB) globally,

but nutritional interventions are often considered cost-prohibitive. The RATIONS

study demonstrated that nutritional supplementation to household contacts of

persons with TB can reduce TB incidence, yet economic evaluations of such

strategies remain limited.

**METHODS:** Using a Markov model, we assessed the cost-effectiveness of a

RATIONS-style intervention (monthly food basket providing 750 kcal, 23 g of

protein, and a multi-micronutrient tablet daily) for household contacts of

persons with TB, as compared to no nutritional support. We calculated health

outcomes (TB episodes, TB deaths, and disability-adjusted life years [DALYs])

over the lifetime of intervention recipients and assessed costs from healthcare

and societal perspectives. We tested the robustness of results to parameter

changes via deterministic and probabilistic sensitivity analysis.

**FINDINGS:** Over 2 years, household contacts receiving the RATIONS intervention

experienced 38% (95% uncertainty interval [UI]: 23-52) fewer TB episodes and 58%

(95% UI: 44-70) fewer TB deaths. Over the lifetime of a cohort of 100 000

household contacts, the intervention was projected to avert 11 524 DALYs (95%

UI: 7446-17 393) and was cost-effective from both the healthcare (incremental

cost-effectiveness ratio [ICER]: $289 per DALY averted [95% UI: 156-537]) and

societal perspectives ($229 per DALY averted [95% UI: 102-468]).

Cost-effectiveness was most sensitive to the cost of the nutritional supplement.

**CONCLUSIONS:** Prompt nutritional support for household contacts of persons with

TB disease would be cost-effective in reducing TB incidence and mortality in

India.

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DOI: 10.1093/cid/ciaf400

PMID: 40833109

**35. J Med Chem. 2025 Aug 20. doi: 10.1021/acs.jmedchem.5c01026. Online ahead of**

**print.**

Exploring Indole-Linked Triazole Sulfonamide Derivatives as Potent Mycobacterial

Carbonic Anhydrase Inhibitors: Leveraging a Tail Approach for the Design,

Synthesis, and In Silico Studies─An In-Depth Multidisciplinary Study.

Singampalli A(1), Bandela R(1), Bakchi B(1), Maddipatla S(1), Kumar P(1),

Bellapukonda SM(1), Agnivesh PK(2), Parida KK(2), Giovannuzzi S(3), Biernacki

K(3)(4), Bonardi A(3)(5), Gratteri P(5), Bhalerao HA(6), Sonti R(6), Nanduri

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The alarming rise of multidrug-resistant tuberculosis (MDR-TB) underscores the

urgent need for new classes of antitubercular agents targeting novel pathways.

To address this, a series of indole triazole sulfonamides were rationally

designed, incorporating an indole pharmacophore hybridized with a triazole

linker containing a sulfonamide group. Compound 5f had the highest anti-TB

efficacy against Mtb with a MIC of 0.25 μg/mL. Additionally, compounds 5g and 5i

elicited activity of 2 μg/mL. All potent compounds exhibited better safety

profiles and selectivity. Compounds 5f and 5g are additive, while 5i is

synergistic with rifampicin. Compound 5f had promising activity against

drug-resistant strains of Mtb, highlighting its potential to address MDR-TB. The

compounds were evaluated for MtCA inhibitory activity. The meta- and

para-substituted derivatives demonstrated varying degrees of inhibition, with

stronger inhibition observed for MtCA2. The potential of compound 5f as a

promising antitubercular agent was further strengthened by in silico

ligand-target interaction.

DOI: 10.1021/acs.jmedchem.5c01026

PMID: 40833028

**36. ACG Case Rep J. 2025 Aug 18;12(8):e01808. doi: 10.14309/crj.0000000000001808.**

**eCollection 2025 Aug.**

Gastrointestinal Tuberculosis Presenting as a Massive Lower Gastrointestinal

Bleed in a Patient With Newly Diagnosed HIV/AIDS.

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Gastrointestinal tuberculosis (GI TB) is an uncommon sequela of extrapulmonary

TB, occurring in 1%-3% of TB cases worldwide. In the United States, many cases

are seen in migrant populations or in immunocompromised individuals. The classic

presentation of GI TB is nonspecific abdominal pain, and is not typically

associated with significant, life-threatening bleeding. We present a case of GI

TB complicated by severe lower GI bleed requiring vasopressor support in a newly

emigrated patient with previously undiagnosed HIV/AIDS.

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American College of Gastroenterology.

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**37. JAC Antimicrob Resist. 2025 Aug 18;7(4):dlaf127. doi: 10.1093/jacamr/dlaf127.**

**eCollection 2025 Aug.**

First-in-human study of the benzothiazinone and DprE1 inhibitor BTZ-043, a novel

drug candidate for the treatment of Tuberculosis.

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Environmental Health (HMGU), Neuherberg, Germany.

**OBJECTIVES:** This first-in-human, single ascending dose study evaluated the

safety, tolerability and pharmacokinetics (PK) of the

decaprenylphosphoryl-β-D-ribose-2'-epimerase (DprE1) inhibitor BTZ-043.

**METHODS:** BTZ-043 was administered as an oral suspension at doses of 125, 250 and

500 mg along with placebo to healthy participants. Safety assessments included

evaluation of laboratory parameters, vital signs, physical and neurological

examination, and 12-lead ECG. Blood samples for PK assessment in plasma were

collected over a 36 h post-dose period. PK parameters were calculated using

non-compartmental analysis for parent BTZ-043, metabolites M1 and M2, and

BTZ-043total (sum of BTZ-043 and M2) in plasma.

**RESULTS:** Thirty participants completed the study. All administered BTZ-043 doses

were safe and well tolerated. Nervous system disorders (dizziness and headache)

and vascular disorders (hypertension and hot flush) were the most frequently

reported adverse events (AEs). All AEs were mild or moderate. The parent

compound BTZ-043 was rapidly metabolized to metabolite M2 (unknown activity),

with median time to maximum concentration in plasma (t max) of 1.5 h (1-2 h).

BTZ-043 and M2 had a short half-life. The second main inactive metabolite M1

showed a median t max of 7-8.5 h and a geometric mean half-life of 8.4-9.0 h.

The increases in AUC and maximum concentration of drug in plasma (C max) of

BTZ-043 were more than dose-proportional, and those of BTZ-043total were almost

dose-proportional. No relevant differences in systemic exposures between males

and females were observed.

**CONCLUSIONS:** BTZ-043 was safe, well tolerated and underwent rapid absorption,

metabolism and elimination, supporting further clinical development.

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Society for Antimicrobial Chemotherapy.

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PMID: 40831749

**38. BMC Public Health. 2025 Aug 19;25(1):2832. doi: 10.1186/s12889-025-23854-2.**

Exploring the quality of life and its determinants among caregivers of patients

with tuberculosis: a cross-sectional study.

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**BACKGROUND:** Assessing quality of life (QoL) of caregivers of patients with

tuberculosis (TB) highlights their unseen sacrifices. This study aimed to

address the domains of QoL of TB caregivers and to estimate their possible

determinants in Alexandria, Egypt.

**METHODS:** This cross-sectional survey was conducted in the chest clinics and the

main chest hospital in Alexandria, Egypt. From May to September 2023, data were

collected through structured, face-to-face interviews using the World Health

Organization Quality of Life- BREF (WHOQOL-BREF) questionnaire. The findings

were compared to those of published results from tuberculosis patients and the

general population. Multivariate regression analysis was conducted to identify

the key predictors influencing the QoL of TB caregivers.

**RESULTS:** In total, 149 caregivers participated in the study; 83.9% of them were

females, and 76.5% were married. Caregivers showed QoL scores similar to TB

patients in most domains (p > 0.05), except for the social domain, where they

scored significantly lower (39.7 ± 20.2 vs. 50.3 ± 20.6; p < 0.001). Compared to the general population, caregivers had significantly lower QoL across all

domains. In the physical domain, older age (≥ 65 years) predicted lower QoL (β = -16.45, p = 0.022), while male gender and the absence of chronic disease were

associated with higher scores (β = 10.48, p = 0.022 and β = 15.51, p < 0.001,

respectively). The psychological domain was positively affected by the absence

of chronic disease (β = 8.23, p = 0.015). For social relations, single and

widowed/divorced individuals reported markedly lower QoL than married

participants (β = -20.96, p = 0.003 and β = -20.18, p < 0.001, respectively).

Lastly, in the environmental domain, receiving additional caregiving support

predicted improved QoL (β = 5.42, p = 0.039).

**CONCLUSION:** TB significantly impaired the QoL of the caregivers. These findings

highlight the need for the targeted interventions to improve their well-being.

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PMCID: PMC12362928

PMID: 40830859 [Indexed for MEDLINE]

**39. BMC Med. 2025 Aug 20;23(1):485. doi: 10.1186/s12916-025-04321-6.**

Mental, physical, and respiratory health in people with tuberculosis in Southern

Africa: a multi-country cohort analysis.

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**BACKGROUND:** Tuberculosis (TB) affects people's quality of life (QoL). We

prospectively monitored physical and mental health-related QoL over time in

people with TB in the Southern African region with a high HIV and TB burden.

**METHODS:** Adults aged ≥ 15 years with pulmonary TB were enrolled in five cohorts

in Malawi, Mozambique, South Africa, Zambia, and Zimbabwe from October 2022 to

September 2024. We assessed six QoL outcomes using validated instruments at the

start (baseline), end of treatment, and 6 months post-treatment: symptoms of

depression (PHQ-9), mental and physical health (SF-12 mental, SF12-MC, SF-12

physical component, SF12-PC), physical fitness (6-Minute Walk Test, 6MWT; 1-min

Sit-To-Stand Test, STST), and respiratory health

(Saint-George-Respiratory-Questionnaire, SGRQ). Missing QoL scores were imputed

with multivariate imputation by chained equations. We compared the proportion of

participants with impaired QoL, defining impairment based on outcome-specific

cut-off values. We also estimated changes in QoL scores and examined their

associations with baseline characteristics using Bayesian multivariable

regression models.

**RESULTS:** We included 1438 participants with a median follow-up of 344 days

(interquartile range [IQR] 183-373). The median age was 39 years (IQR 30-50);

67% were male, and 39% living with HIV. At baseline, 49% had symptoms of

depression, 73% had impaired mental health and 92% impaired physical

health-related QoL, 68-74% had reduced physical fitness (68%: 6MWT, 74%: STST),

and 78% impaired respiratory health. All QoL outcomes improved by the end of

treatment, notably depressive symptoms (48% to 5%), mental health-related QoL

(73% to 28%), and respiratory health (78% to 11%). Most QoL impairments

continued to decrease post-treatment, especially physical and respiratory

health; depressive symptoms remained below 5%. Across QoL domains and study

visits, better outcomes were associated with age < 30 (83% probability), and

worse outcomes with female gender (86%) and a prior TB history (89%). Living

with HIV and alcohol drinking were associated with worse QoL only at baseline

(88% and 87%).

**CONCLUSIONS:** TB negatively impacts QoL across physical, mental, and social

domains, including post-treatment. The study highlights the need for integrated

mental and physical healthcare and rehabilitation during TB treatment and

beyond, especially for high-risk populations, to address the long-term impact of

TB on QoL.

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DOI: 10.1186/s12916-025-04321-6

PMCID: PMC12366195

PMID: 40830471 [Indexed for MEDLINE]

**40. Sci Rep. 2025 Aug 19;15(1):30474. doi: 10.1038/s41598-025-16385-8.**

Metabolic dysfunction impairs Mycobacterium tuberculosis-specific cytokine and

chemokine responses in latent tuberculosis and type 2 diabetes mellitus.

Ssekamatte P(1)(2), Sitenda D(3), Nabatanzi R(3), Nkurunungi G(4)(5), Nakibuule

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Type 2 diabetes mellitus (DM) is associated with impaired host immune responses,

increasing the risk for latent tuberculosis (TB) infection (LTBI). This study

investigated how DM and associated metabolic dysfunction alter Mycobacterium

tuberculosis (Mtb)-specific cytokine and chemokine responses. We analysed a

cohort of 164 participants with and without DM and/or LTBI. Mtb-specific

cytokine/chemokine responses were measured in QuantiFERON-TB Gold-Plus

supernatants using a 17-plex Luminex assay to quantify Th1, Th2, Th17,

inflammatory and regulatory responses. DM was associated with decreased

Mtb-specific IFN-γ, TNF, IL-12, IP-10 and MIP-1α, with increased IFN-α compared

to non-DM, suggesting impairment of Th1 and inflammatory pathways. Additionally,

pre-DM was not associated with altered cytokine/chemokine responses, but subtle

changes in IL-10, GM-CSF, MIP-1β, and IL-1β may suggest early indicators of

immune dysregulation. Poorly controlled DM was associated with increased IL-4

and IFN-α, indicating a shift toward Th2 and inflammatory responses. Compared to

borderline high, high total cholesterol levels, indicating dyslipidaemia, were

associated with decreased IFN-γ, TNF and IL-2, suggesting impaired Th1 immunity.

These findings imply that metabolic disturbances may compromise Mtb-specific

immune responses, potentially increasing TB infection susceptibility. Optimising

glycaemic and lipid control may be crucial for restoring immune balance and

improving TB outcomes in patients with DM-associated metabolic dysfunction.

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PMCID: PMC12365027

PMID: 40830413 [Indexed for MEDLINE]

**41. Sci Rep. 2025 Aug 19;15(1):30349. doi: 10.1038/s41598-025-15532-5.**

DNA methylation patterns associated with prior tuberculosis infection in people

with HIV.

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Najjingo I(3), Geoffrey W(8), Niyonzima N(8), Bogere N(8), Nuwagira E(9), Rhein

J(10), Jones N(10), Kraef C(11), Shaughnessy M(12), Chauhan A(13), Nankya I(14),

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Mechanisms by which prior tuberculosis (TB) increases long-term risk for cancer,

cardiovascular, and neurological disorders remain unclear, particularly in

people with HIV (PWH). This study investigated DNA methylation (DNAm) patterns

and associated pathways in PWH with and without prior TB infection. DNAm was

analyzed in blood samples from 30 PWH (10 with prior latent TB infection [LTBI],

10 with previous successfully treated active TB, and 10 with no TB) using the

Illumina MethylationEPIC BeadChip covering over 850,000 CpG sites. Epigenetic

age was estimated, and age acceleration was calculated. Differentially

methylated CpGs (dmCpGs) and regions (DMRs) were identified, and functional

enrichment analyses for Gene Ontology, KEGG pathways, PANTHER database, and gene

set enrichment analysis (DisGeNET, dbGaP) were performed. Statistical

significance was set at a false discovery rate (FDR) of < 0.05. PWH exhibited

significant epigenetic age acceleration, with a mean of 19.32 ± 10.82 years

greater than chronological age. This accelerated aging was more pronounced in

individuals with any prior TB infection (21.60 ± 12.03 years) compared to those

without TB (17.42 ± 9.38 years). In the prior active TB vs. no TB comparison,

7461 dmCpGs were identified, corresponding to 150 DMRs (p < 0.05), with top

associated genes including GRAMD1C (hypomethylation), DPP6 (hypermethylation),

and HDAC4 (hypomethylation). In the LTBI vs. no TB comparison, 8598 dmCpGs were

observed, corresponding to 39 DMRs (p < 0.05), associated with genes such as

PLEKHG5 (hypermethylation), STK32C (hypermethylation), and SPATC1L. When

comparing any prior TB (active or latent) to no TB, 71,774 dmCpGs and 14 DMRs

were identified, including genes like PLEKHG5, KCNN3, and BRSK2. Pathway

analyses of prior TB (active or latent) vs. no TB revealed enrichment in

neurogenesis, neuron differentiation, axon guidance, and neuroactive ligand

signaling. Additional enriched pathways included those related to platelet

activation, vascular muscle contraction, and chemokine signaling. Cancer-related

pathways such as proteoglycans in cancer, small cell lung cancer, prostate

cancer, breast cancer, hepatocellular carcinoma, and thyroid cancer were also

enriched. PANTHER analysis showed consistent enrichment in the Wnt signaling

pathway and inflammation-mediated pathways across compared groups. DisGeNET

analysis linked prior TB DNAm patterns to lymphoid leukemia, while dbGaP

analysis identified associations with phenotypes like asthma, body mass index,

tunica media, and lymphocyte count. Prior TB infection in PWH is associated with

distinct DNAm changes in pathways related to neural function, cardiovascular

health, and cancer risk, and is linked to more pronounced epigenetic age

acceleration, suggesting epigenetic mechanisms for TB-related long-term

complications.

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PMID: 40830169 [Indexed for MEDLINE]

**42. Sci Rep. 2025 Aug 19;15(1):30286. doi: 10.1038/s41598-025-13121-0.**

BLV coinfection impairs immunity and diagnostics in bovine tuberculosis.

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Coinfections can alter the adaptive immune responses to bovine tuberculosis

(bTB) and hinder accurate diagnosis; however, their effect on host immunity to

Mycobacterium bovis and disease progression is not well understood. In this

study, we assessed the impact of natural coinfection with bovine leukemia virus

(BLV) on immune responses to M. bovis. Among 108 cattle examined, those

coinfected with BLV showed a significantly higher intragranulomatous

mycobacterial burden and more severe pathological lesions compared to animals

infected with M. bovis alone. Additionally, coinfected animals demonstrated a

granulomatous response characterized by reduced lymphocyte populations,

increased neutrophil infiltration, and diminished granuloma encapsulation,

suggesting a compromised antimycobacterial immune response. Supporting this

hypothesis, BLV-infected cattle exposed to mycobacterial antigens displayed

impaired delayed-type hypersensitivity (type IV hypersensitivity) to a purified

protein derivative of M. bovis as well as reduced antibody response. These

findings indicate that BLV coinfection influences the immunopathogenesis of bTB,

exacerbates disease progression in cattle naturally infected with M. bovis, and

may reduce the predictive reliability of diagnostic methods used in bTB control

programs.

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PMID: 40830147 [Indexed for MEDLINE]

**43. BMJ Open. 2025 Aug 19;15(8):e103199. doi: 10.1136/bmjopen-2025-103199.**

Understanding tuberculosis among people with tuberculosis through an educational

film: a qualitative study.

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**INTRODUCTION:** Treatment of the two billion people with tuberculosis (TB)

infection worldwide is crucial to prevent progression to TB disease and thereby

prevent further transmission. However, TB is associated with fear and stigma,

and knowledge gaps about TB disease are widespread, complicating adherence to

treatment. As increasing knowledge about TB can reduce stigma and increase

adherence to treatment, we developed an educational film about TB infection and

disease. After showing the film to people with TB, our qualitative study aimed

to evaluate the film and to explore perceptions, fears and possible knowledge

gaps.

**METHOD:** We conducted a qualitative study, with in-depth interviews (n=13), at

two Infectious Disease Outpatient Departments in Sweden. Included research

participants were adults with TB infection or TB disease. After informed

consent, the participants watched the film, available in Swedish, English,

Somali and Tigrinya. Subsequently, in-depth interviews, using a topic guide,

were conducted, transcribed, and a reflexive thematic analysis was performed.

**RESULTS:** All participants considered the film to be a valuable addition to the

written and oral information they had previously received. Identified themes

included the perception of TB infection being a deadly, non-curable disease, and

many feared being contagious. However, the film challenged these fears and

increased the understanding of TB infection being treatable and non-infectious.

Another theme revealed that TB-related stigma was experienced in encounters with

healthcare professionals in Sweden.

**CONCLUSION:** Our educational film was perceived to increase understanding about

TB symptoms, transmission and treatment. Implementing the film in Infectious

Disease Departments across Sweden may contribute to decreasing stigma and

enhancing awareness of the importance of treatment adherence, an outcome that

warrants further investigation post-implementation.

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**44. PLoS One. 2025 Aug 19;20(8):e0329562. doi: 10.1371/journal.pone.0329562.**

**eCollection 2025.**

Epidemiological factors associated with immunological resistance in household

contacts exposed to active tuberculosis in South Africa: A logistic regression

analysis.

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Wallis R(1)(3), Charalambous S(1)(3)(7), Churchyard G(1)(7), Edward V(1)(3),

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**INTRODUCTION:** Studying individuals who do not get infected with tuberculosis

(TB) despite being persistently exposed to infectious TB may enable us to

identify TB protective mechanisms.

**METHODS:** Between Apr 2015 and Apr 2017, we recruited adult household contacts

(HHCs) of index TB cases (GeneXpert and sputum smear-positive) in Rustenburg,

South Africa. HIV-uninfected HHCs who tested positive on both Tuberculin Skin

Test (TST) and QuantiFERON-TB Gold In-tube (QFT) were defined as having latent

TB infection (QFT + TST+), and those who tested double negative (QFT-TST-) were

defined as uninfected with TB. The level of risk for TB infection was evaluated

using an epidemiologic risk score. We compared epidemiological and clinical

characteristics between the groups and used logic regression to identify factors

associated with being QFT-TST-.

**RESULTS:** Of the 235 household contacts screened, 109 (46.3%) were QFT + TST + ,

46 (19.5%) were TST-QFT-, 73 (30.1%) had discordant results, and 7 (2.9%) were

excluded based on being HIV positive, already having active TB disease or had

missing QFT/TST results. After 3 months, 27 (58.6%) of HHCs remained

persistently negative. Younger age, higher number of household windows and

habitable rooms, and relations with the index case were independently associated

with being QFT-TST-. In the multivariable analysis, younger age (OR: 2.81, 95%

CI, 1.23-6.47) and living in homes with more rooms (OR: 4.62, 95% CI,

1.81-11.79) remained associated with being QFT-TST-. We found no association

between QFT-TST- and factors such as time spent with the index case, type of

house, number of household occupants, or the risk score.

**CONCLUSION:** Our findings that both younger age and larger living quarters were

associated with QFT-TST- status may suggest reduced exposure to TB. We found no

association between the epidemiological TB risk score consisting of multiple TB

infection risk factors and QFT-TST- status, suggesting other factors may play a

role in remaining TB uninfected despite exposure.

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**45. ACS Infect Dis. 2025 Aug 19. doi: 10.1021/acsinfecdis.5c00394. Online ahead of print.**

Common Biological Properties of Mycobacterium tuberculosis MmpL3 Inhibitors.

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MmpL3 is a promising new target for antitubercular drugs, but the

microbiological properties of MmpL3 inhibitors are not fully understood. We

compared the activity and mode of action of 11 structurally diverse compound

series that target MmpL3. We confirmed the activity was via MmpL3 using strains

with differential expression of MmpL3. MmpL3 inhibitors had potent activity

against replicating M. tuberculosis, with increased activity against

intramacrophage bacilli and were rapidly bactericidal. MmpL3 inhibition induced

cell wall stress concomitantly with a boost in the ATP levels in M.

tuberculosis. Mutation in MmpL3 conferred resistance to all series at different

levels. The molecules did not negatively impact membrane potential, pH

homeostasis, or induce reactive oxygen species and were inactive against starved

bacilli. Our study revealed common features related to the chemical inhibition

of MmpL3, enabling the identification of off-target effects and highlighting the

potential of such compounds as future drug candidates.

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**46. Tuberc Respir Dis (Seoul). 2025 Aug 19. doi: 10.4046/trd.2024.0197. Online ahead of print.**

Incidence, risk factors and mortality associated with tuberculosis in solid

organ transplant recipients in Taiwan.

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**BACKGROUND:** Solid organ transplantation (SOT) recipients are at an increased

risk of posttransplant tuberculosis (TB). However, the effect of this risk on

mortality remains unclear. We examined the incidence and risk factors of

posttransplant TB and its effect on mortality in SOT recipients in Taiwan.

**METHODS:** We collected data on 8205 patients who received their first transplants

from 2009 to 2018 from the National Health Insurance Research Database and

identified 201 new TB cases. Transplants were identified and verified by the

medical procedure codes. A Cox proportional hazards model was used to identify

the determinants of TB infection.

**RESULTS:** For the 7685 recipients, with 34 412 person-years (PYs), 1630 deaths

(393.41/1000 PYs) were reported. Male sex was associated with a 44% increase in

the risk of TB (hazard ratio [HR] = 1.44, 95% confidence interval [CI] =

1.05-1.98). In addition, age older than 65 years was associated with a 4-fold

increase in the risk of TB (HR = 4.04, 95% CI = 2.04-8.00). The mortality rates

in the population varied by transplantation organ type (lungs: 187.75/1000 PYs,

heart: 81.11/1000 PYs, liver: 58.47/1000 PYs, pancreas: 42.36/1000 PYs, and

kidneys: 23.76/1000 PYs). Recipients with posttransplant TB had a 2.53-fold

increased risk of mortality (HR = 2.53, 95% confidence interval: 1.94-3.29).

**CONCLUSION:** Posttransplant TB is associated with an increased risk of mortality

in SOT recipients. Preventing TB can mitigate this risk, which underscores the

importance of monitoring and managing TB in this population.

DOI: 10.4046/trd.2024.0197

PMID: 40827104

**47. BMC Public Health. 2025 Aug 18;25(1):2821. doi: 10.1186/s12889-025-23859-x.**

Parents' perspectives of the new neonatal BCG vaccination pathway in England: a

qualitative study.

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**BACKGROUND:** The neonatal Bacillus Calmette-Guérin (BCG) selective vaccination

pathway in England was revised in September 2021 due to the introduction of a

national evaluation of newborn screening for Severe Combined Immunodeficiency

(SCID). BCG is a live attenuated vaccine that is contraindicated in infants with

SCID, hence BCG vaccination was moved from soon after birth to after SCID

results were available, typically at 14-17 days. The transition also shifted

vaccination delivery from maternity units to community clinics, raising concerns

about potential barriers to access and lower vaccine uptake. This study explored

parents' experiences of navigating the new neonatal BCG vaccination pathway and

identified access barriers and enablers.

**METHODS:** A qualitative study was conducted involving semi-structured interviews

with 30 parents of infants eligible (or invited) for BCG vaccination in two

urban areas where SCID screening was implemented. Participants were recruited

through vaccine providers and community centres. Thematic analysis of interview

transcripts was conducted using the 'Framework Method', incorporating an

inductive approach.

**RESULTS:** Parents were unaware of SCID screening and the changes to the neonatal

BCG vaccination schedule and encountered diverse challenges in accessing the

vaccine. Assessment errors led to eligibility confusion, with some ineligible

infants receiving vaccine invitations. Many parents first learned about BCG

vaccination on the postnatal ward, describing it as a "surprise vaccine," with

limited antenatal discussion diminishing informed decision-making. Appointment

notification systems were inconsistent, with some parents receiving short-notice

invitations or no notification at all. Physical access barriers included

unfamiliar and distant clinic locations, transport, and the physical challenges

of traveling soon after birth with a newborn. Parents with limited social

support or financial constraints faced additional difficulties.

**CONCLUSION:** Parents were generally accepting of the need to amend the BCG

timeline on account of SCID screening; however, we identified distinct

accessibility concerns that varied from those associated with the routine

immunisation programme. These barriers, and the separateness of the BCG

programme from routine services, impacted parental experiences and vaccine

uptake. Addressing these challenges is important to meet neonatal BCG uptake

targets and support tuberculosis prevention efforts in England.

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**48. BMC Public Health. 2025 Aug 18;25(1):2828. doi: 10.1186/s12889-025-23727-8.**

Structural model of determinants of medication adherence in elderly individuals

with tuberculosis in Iran.

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**BACKGROUND AND OBJECTIVE:** "Medication adherence" is essential for the successful

treatment of tuberculosis. Numerous studies have indicated a higher probability

of non-adherence to medication among elderly individuals with tuberculosis. As

the elderly population continued to grow, non-adherence to medication in this

group could lead to the failure of achieving the goal of tuberculosis

eradication and make them a significant source of tuberculosis infection

transmission in the community. Recognizing the significance of medication

adherence in elderly individuals with tuberculosis, this study aims to

developing and testing a structural model of determinants of medication

adherence in elderly individuals with tuberculosis in Iran.

**METHODS:** The present study is part of a PhD dissertation that utilized a mixed

methods approach and a sequential exploratory method. The qualitative portion of

the study focused on factors influencing medication adherence in elderly

individuals with tuberculosis. Subsequently, experts in the fields of

tuberculosis and elderly health identified influential variables using the

Delphi method. Valid and reliable questionnaires were then administered to 305

elderly individuals with tuberculosis and their family caregivers to measure

these selected variables. A structural model was employed to examine the

relationship between concepts and predict medication adherence variance.

**RESULTS:** 44.92% of elderly individuals with tuberculosis had low medication

adherence, 27.54% had moderate medication adherence, and 27.54% had complete

medication adherence. According to the results of the sequential logistic

regression test (simultaneous type), the variables studied predicted medication

adherence behavior to a very acceptable level. The coefficient of determination

values ​​obtained from the three statistics McFadden (0.603), Nagel kerke

(0.888), and Cox and Snell (0.849) indicated the high explanatory power of the

model by the predictor variables. The findings from the structural equation

model showed that the category of personal factors (such as reminders to take

medication on time, patient addiction, extroverted personality, depression,

motivation to adhere to tuberculosis medication, presence of concomitant

disease, importance of medication adherence from the patient's perspective, and

side effects of tuberculosis medications) directly and significantly predict

medication adherence. Additionally, the categories of interpersonal factors

(including indicators of caregiver general health, caregiver care pressure,

caregiver income adequacy, patient marital status, patient education, patient

trust in the physician, and appropriate behavior of the treatment team from the

perspective of patients) and extra-organizational factors (including indicators

of social support, quality of life, rejection by others, and the patient's

willingness to disclose the disease) also significantly and indirectly (through

the category of personal factors) predict medication adherence in elderly

individuals with tuberculosis. The total effect of personal factors in

predicting medication adherence was estimated to be 62%, which was higher than

other categories.

**CONCLUSION:** The findings of the current study demonstrate that medication

adherence in elderly individuals with tuberculosis is a complex and

multidimensional phenomenon. The relationship between the components of the

model suggests that a comprehensive understanding of all concepts within the

model is necessary to effectively plan and implement interventions aimed at

improving medication adherence in this population. Additionally, the structural

equation model revealed that the personal factor category had the greatest

impact on predicting medication adherence compared to other categories. This

suggests that elderly individuals with tuberculosis play a crucial role in

medication adherence. The structural model presented in this study can serve as

a valuable tool for researchers, policymakers, and healthcare providers to

inform future studies, interventions, and policy decisions related to

tuberculosis control.

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PMID: 40826394

**49. Amino Acids. 2025 Aug 18;57(1):41. doi: 10.1007/s00726-025-03473-2.**

Insight into the structure of antitubercular Callyaerins: conformational studies

and synthesis of a unique dehydroamino acid, β-aminodehydroalanine.

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β-Aminodehydroalanine, ΔAla(β-NH), (2,3-diaminoprop-2-enoic acid), is a unique

dehydroamino acid and a central component of Callyaerins A-M and Callynormine A.

The presence of this unusual structural element containing an enamine functional

group may be related to the antitubercular activity of Callyaerins. According to

The WHO Global Tuberculosis Report tuberculosis is the second leading cause of

death worldwide caused by a single infectious agent. Therefore, it is essential

to understand the molecular structure of these peptides in more detail. To

investigate the conformational properties of the ΔAla(β-NH) residue, a series of model compounds: Ac-(Z/E)-ΔAla(β-NHMe)-NHMe, Ac-(Z/E)-ΔAla(β-NHMe)-NMe2,

Boc-Gly-(Z)-ΔAla(β-NHMe)-OMe, and Boc-Gly-(Z)-ΔAla(β-Leu-OMe)-OMe, were selected for quantum chemical calculations and/or synthesized. Two conformations, β2 (φ,ψ ~ - 120°, 20°) and α (φ,ψ ~ - 70°, - 15°) are predicted as the most preferable, regardless of the geometry of isomer (Z/E), polarity of environment, and order (2°/3°) of C-terminal amide group. The N-H⋯O hydrogen bond involving the N-H group in the β position of the side chain as a donor is a significant stabilizing factor. The Z isomer is predicted to be the most stable and has been synthesized. The following synthesis method is proposed:

Ser → ΔAla → ΔAla(β-Br) → ΔAla(β-NH). The advantages of the proposed method are: (i) serine as the starting substrate, (ii) mild alkaline conditions, (iii) avoidance of the reactive intermediate α-formylglycine.

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**50. J Racial Ethn Health Disparities. 2025 Aug 18. doi: 10.1007/s40615-025-02606-3. Online ahead of print.**

Tuberculosis in Saharia Tribe (a Particularly Vulnerable Tribal Group) of India:

a Systematic Review and Meta-analysis.

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**BACKGROUND:** Tuberculosis (TB) remains a significant public health challenge in

India, particularly among vulnerable populations. The Saharia tribe, a

Particularly Vulnerable Tribal Group (PVTG), faces a disproportionately high TB

burden. This study aimed to systematically review and quantify the TB burden

among the Saharia tribe through meta-analysis.

**METHODS:** A comprehensive search was conducted in PubMed, Embase, Scopus, and Web

of Science databases. Studies reporting TB prevalence in the Saharia tribe were

included. The quality of included studies was assessed using the JBI Critical

Appraisal Checklist. A random-effects model was used to estimate the pooled TB

prevalence. Heterogeneity was assessed using I2 statistics, and publication bias

was evaluated using funnel plots.

**RESULTS:** Eight studies encompassing 163,562 Saharia individuals were included.

The pooled TB prevalence was 2,416 per 100,000 population (95% CI: 1,827-3,004

per 100,000). Significant heterogeneity was observed (I2 = 98.67%, p < 0.05).

Sensitivity analysis revealed no significant influence of individual studies on

the overall prevalence estimate.

**CONCLUSION:** This meta-analysis reveals an alarmingly high TB prevalence among

the Saharia tribe, far exceeding the national average. These findings underscore

the urgent need for targeted interventions, improved healthcare access, and

culturally sensitive TB control programs for this vulnerable population.

© 2025. W. Montague Cobb-NMA Health Institute.

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PMID: 40825907

**51. PLOS Glob Public Health. 2025 Aug 18;5(8):e0004734. doi:**

**10.1371/journal.pgph.0004734. eCollection 2025.**

Gaps in TB-related knowledge and practices: An assessment of health care seeking

behavior among adults with HIV and caregivers of paediatric patients with

presumptive TB symptoms in Manhiça district, southern Mozambique.

Lima AV(1), Cossa H(1), Djive H(1), Cossa O(1), Cumbe M(1), Acácio S(1), Nkala

B(2), Nsubuga Kikoyo J(3), Carratala-Castro L(1)(4), Ehrlich J(4), Hermans

S(5)(6), Kay A(7), Ssengooba W(3), Mandalakas A(7)(8)(9), Lange C(7)(8)(9)(10),

Enguita-Fernàndez C(4), Munguambe K(1)(11), Garcia-Basteiro AL(1)(4); Stool4TB

Global Partnership.

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Although tuberculosis is a preventable and treatable disease, its management has

been challenging for tuberculosis control and prevention programs in low- and

middle- income countries such as Mozambique. We assessed the TB knowledge and

healthcare-seeking behaviors among adults with HIV and caregivers of paediatric

patients with symptoms of TB. The study was conducted between February and

October 2023 at Manhiça District Hospital. A total of 60 interviews were

conducted with people with HIV and caregivers of paediatric patients showing

symptoms of TB. The interviews were transcribed, coded using an excel matrix,

and analyzed using a content analysis approach. Half of the participants

recognized airborne transmission through coughing as the main mode of TB

transmission, while others were unsure or linked TB to sociocultural beliefs.

Coughing was identified by most as the main symptom, with some also mentioning

chest pain, bleeding, fatigue or weakness, weight loss, fever and night sweats.

Many respondents believed that avoiding sharing utensils was the main way of

preventing TB. Respecting the respondents' reasons and time taken to seek health

care, our findings revealed that most participants had experienced the

persistent coughing for more than 3 weeks. Some sought medical care, but did not

see any improvement, while others chose to wait for their next scheduled doctor

visit, hoping to address their symptoms. Our results showed that delays in

seeking care were common among participants with TB symptoms, reflecting limited

awareness of the disease. Factors such as waiting for the next scheduled

doctor's visit, misinterpreting symptoms, and misconceptions about TB may have

contributed to these delays. To address this, raising awareness about TB

transmission, symptoms and prevention, dispelling myths through health

education, and improving TB symptom follow-up through a coordinated approach

across various patient entry points are essential.

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original author and source are credited.

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PMCID: PMC12360651

PMID: 40825052

**52. Ann Med. 2025 Dec;57(1):2545555. doi: 10.1080/07853890.2025.2545555. Epub 2025 Aug 18.**

Organ involvement and laboratory abnormalities associated with tuberculosis

disease in systemic lupus erythematosus patients: a systematic review and

meta-analysis.

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**BACKGROUND:** Tuberculosis (TB) is one of the most common infectious diseases in

patients with systemic lupus erythematosus (SLE) and often has severe and

devastating manifestations. This study aimed to systematically investigate the

association between organ involvement and laboratory abnormalities in patients

with systemic lupus erythematosus (SLE) associated with tuberculosis disease

(TB).

**METHODS:** Relevant studies were obtained from electronic databases, including

PubMed, Scopus, Science Direct, and EBSCO from inception to November 2024. The

primary outcome was the odds ratio (OR) of TB incidence associated with organ

involvement and laboratory abnormalities. Quality of studies was assessed using

the Newcastle-Ottawa Scale (NOS). A meta-analysis was performed using R.

**RESULTS:** Fourteen studies with a total of 5,626 adult SLE patients were

included, of whom 514 (9.14%) were male. Renal involvement was the only organ

involvement that was significantly associated with TB (OR = 1.53;

95%CI:1.01-2.32; I2=76%). Among laboratory parameters, lymphopenia (OR = 2.21;

95%CI:1.42-3.42; I2=26%) and anemia (OR = 1.73; 95%CI:1.16-2.58; I2=21%) showed

a significant association with TB. No significant associations were found for

other organs or laboratory abnormalities.

**CONCLUSION:** Renal involvement, lymphopenia, and anemia could be notable risk

factors for TB in patients with SLE, suggesting enhanced awareness of these

indicators to minimize the risk of TB in patients with SLE.

DOI: 10.1080/07853890.2025.2545555

PMCID: PMC12364090

PMID: 40824917

**53. ACS Infect Dis. 2025 Aug 18. doi: 10.1021/acsinfecdis.5c00233. Online ahead of print.**

Comprehensive Identification of β-Lactam Antibiotic Polypharmacology in

Mycobacterium tuberculosis.

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Infections with Mycobacterium tuberculosis (Mtb) cause tuberculosis (TB), which

requires at least 6 months of treatment with multiple antibiotics. There is

emergent interest in using β-lactam antibiotics to improve treatment outcomes

for patients. These drugs target cell wall biosynthesis, but a comprehensive

list of enzymes inhibited by β-lactams in Mtb is lacking. In the current study,

we sought to identify and characterize Mtb enzymes inhibited by β-lactam

antibiotics using physiological conditions representative of both acute and

chronic TB disease. We used new activity-based probes based on the β-lactam

antibiotic meropenem due to its approval by the World Health Organization for TB

treatment. Activity-based probes label enzymes based on both substrate

specificity and catalytic mechanism, enabling precise identification of drug

targets. We identified previously undiscovered targets of meropenem in addition

to known cell wall biosynthetic enzymes. We validated β-lactam binding and

hydrolysis for six newly identified targets: Rv1723, Rv2257c, Rv0309, DapE

(Rv1202), MurI (Rv1338), and LipD (Rv1923). Our results demonstrate that there

are at least 30 enzymes in Mtb vulnerable to inhibition by meropenem. This is

many more β-lactam targets than historically described, suggesting that efficacy

in Mtb is a direct result of polypharmacology.

DOI: 10.1021/acsinfecdis.5c00233

PMID: 40824748

**54. Am J Health Syst Pharm. 2025 Aug 18:zxaf218. doi: 10.1093/ajhp/zxaf218. Online ahead of print.**

Rifampin-induced bullous pemphigoid in tuberculosis treatment: A strategic

rechallenge approach.

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**PURPOSE:** The purpose of this case report is to highlight an unusual presentation

of rifampin-induced bullous pemphigoid in a 37-year-old female undergoing

tuberculosis treatment. The report aims to explore the challenges of managing

drug-induced bullous pemphigoid while maintaining effective treatment for

tuberculosis, emphasizing the necessity of a strategic approach to drug

management and disease control.

**SUMMARY:** A 37-year-old female with tuberculosis developed an atypical form of

bullous pemphigoid during rifampin therapy. The patient presented with painful,

pruritic vesicular lesions that directly manifested as bullous lesions without

the typical prodromal phase and without mucosal involvement. Histopathological

examination confirmed the diagnosis with subepidermal blisters and eosinophilic

infiltration. Management of this case involved carefully balancing tuberculosis

treatment with bullous pemphigoid control, which required a modified rechallenge

protocol, dose titration of rifampin, and a combination of systemic

corticosteroids, immunomodulators, and supportive care.

**CONCLUSION:** This case underscores the complexity of managing drug-induced

bullous pemphigoid in patients undergoing treatment for tuberculosis. The

successful outcome was achieved through a cautious approach, including a

rechallenge protocol and careful drug dose adjustments. The case offers valuable

insights for clinicians managing similar complex presentations of drug-induced

bullous pemphigoid, demonstrating that, with a tailored treatment strategy, both

conditions can be effectively controlled.

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**55. Curr Mol Med. 2025 Aug 15. doi: 10.2174/0115665240392305250802095145. Online**

**ahead of print.**

Integrating Traditional Medicine with Conventional Therapies to Combat

Tuberculosis: A Comprehensive Review.

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Tuberculosis (TB) poses a serious public health risk and is a hot topic in the

international health forums. Global health organizations emphasize the

importance of effectively managing and eradicating TB. The emergence of

drug-resistant TB and the elevated risk of hepatotoxicity associated with

anti-TB medications have highlighted the need for reevaluation of existing TB

drugs. These challenges have led to prolonged dosing schedules and increased

dosages to combat resistance and effectively eliminate the disease. In India,

the government revised the National Tuberculosis Control Program to address this

growing concern. India is home to six well-established traditional medical

systems: Ayurveda, Siddha, Unani, Yoga, Naturopathy, and Homoeopathy

(collectively known as AYUSH). This review compares the effectiveness of

traditional medicinal regimens with conventional TB treatment. Herbal extracts

used in Ayurveda, Siddha, and Unani offer promising alternatives for TB

treatment, potentially reducing hepatotoxicity and liver damage while combating

antibiotic resistance. These natural remedies are generally safe for consumption

in larger quantities, cost-effective to produce, and free from harmful toxins.

The findings in this article provide scientific support for the anti-TB

potential of the diverse medical systems recognized by India's Ministry of

AYUSH.

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epub@benthamscience.net.

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PMID: 40849745

**56. Healthc Inform Res. 2025 Jul;31(3):263-273. doi: 10.4258/hir.2025.31.3.263. Epub 2025 Jul 31.**

Public Perceptions and Barriers to Tuberculosis Treatment in Korea: A Large

Language Model-Based Analysis of Naver Knowledge-iN Data from 2002 to 2024.

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**OBJECTIVES:** This study was conducted to investigate public perceptions and

concerns surrounding tuberculosis (TB) treatment in Korea through an analysis of

online queries about antitubercular medications. Additionally, it evaluated the

effectiveness of large language models (LLMs) as analytical tools for processing

unstructured healthcare data.

**METHODS:** Using LLMs, this study analyzed 44,174 questions that mentioned TB from

Naver Knowledge-iN (2002-2024). Questions referencing antitubercular medications

were extracted and thematically categorized. Side effects were analyzed through

parallel approaches examining general and medication-specific effects. Questions

about infectivity and social implications were further analyzed using text

embedding, dimensionality reduction, and clustering. The performance of LLMs was

evaluated against human researchers and traditional methods.

**RESULTS:** Among questions mentioning specific medications (n = 919), rifampin

(31.8%) and isoniazid (31.6%) were most frequently referenced. Of the 10,044

questions regarding antitubercular medication, management challenges represented

the largest category (44.8%). Analysis of infectivity and social implications (n

= 583) revealed previously unidentified concerns about blood donation and

immigration eligibility. Employment-related concerns constituted the largest

distinct subgroup (20.6%). Hepatotoxicity, dermatosis, and vomiting were the

most frequently reported side effects. LLMs outperformed keyword matching in

data processing and offered cost advantages over human analysis, with finetuning

further reducing processing costs.

**CONCLUSIONS:** This study produced novel insights into public concerns regarding

TB treatment and demonstrated the effectiveness of combining social media

platform data with LLM-based analysis, providing a systematic framework for

future healthcare research using unstructured public data and LLMs.

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PMCID: PMC12370417

PMID: 40840934

**57. Indian J Med Res. 2025 May;161(5):482-490. doi: 10.25259/IJMR\_824\_2025.**

Multicentric validation of the PathoDetect™ MTB RIF & INH assay for simultaneous

detection of Mycobacterium tuberculosis, & drug resistance to rifampicin &

isoniazid in presumptive pulmonary tuberculosis & drug-resistant TB patients.

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Desikan P(6), Giri S(7), Kumar S(8), Jayaprakasam M(1), Singh AV(3), Sethi P(4),

Reza MS(4), Mythily V(5), Thiyagarajan V(5), Panwalkar N(6), Tripathy J(7), Mani

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**Background & objectives** Tuberculosis (TB) remains a major global health concern,

with India accounting for 26 per cent of the global burden. Despite advances,

access to rapid molecular diagnostics is limited, and the assays currently used

in National TB Elimination Programme (NTEP) do not detect isoniazid (INH)

resistance upfront. PathoDetect™ MTB RIF & INH is an indigenous closed-system

assay that simultaneously detects Mycobacterium tuberculosis (MTB) and

resistance to rifampicin (RIF) and INH. This study evaluated its diagnostic

characteristics. **Methods** In this cross-sectional multicenter study conducted at

six TB reference laboratories in India, 1039 participants were enrolled (718

presumptive pulmonary TB, 321 presumptive multidrug resistant TB; MDR-TB).

PathoDetect™'s discriminatory ability was assessed using the measures

sensitivity and specificity, and its diagnostic performance using positive

predictive value (PPV) and negative predictive value (NPV). Liquid culture

served as the reference standard for MTB detection, while phenotypic drug

susceptibility testing (pDST) and line probe assay (LPA) as reference standards

for RIF and INH resistance detection. **Results** For MTB detection in presumptive

pulmonary TB (PTB), PathoDetect™ showed a sensitivity of 98.1 per cent [95%

confidence interval (CI): 96.1-99.2], specificity of 94.2 per cent (95% CI:

91-96.5), PPV of 94.9 per cent (95% CI: 92.2-96.9), and NPV of 97.8 per cent

(95% CI: 95.5-99.1) with near-perfect agreement with Truenat® (k=0.89). Among

514 confirmed TB cases, PathoDetect™ detected RIF resistance with a sensitivity

of 86.5 per cent (95% CI: 80.2-91.5), specificity of 91.6 per cent (95% CI:

88.2-94.3), PPV of 82.3 per cent (95% CI: 75.6-87.8), and NPV of 93.8 per cent

(95% CI: 90.7-96.1). For INH resistance, sensitivity was 88.9 per cent (95% CI:

84.1-92.6), specificity 87 per cent (95% CI: 82.4-90.8), PPV 85.6 per cent (95%

CI: 80.5-89.8), and NPV 90 per cent (95% CI: 85.7-93.4) using pDST as reference.

Truenat® MTB-RIF showed comparable performance for RIF resistance detection

(k=0.75). Compared to line probe assay (LPA), PathoDetect™ demonstrated higher

sensitivity (93.4 vs. 88.8%), specificity (98.2 vs. 93.9%), PPV (96.1 vs. 86.8%)

and NPV (97 vs. 94.9%) for RIF resistance detection over Truenat®.

**Interpretation & conclusions** PathoDetect™ is a reliable molecular diagnostic

tool for detection of MTB and resistance to RIF & INH. The assay showed better

RIF resistance detection compared to INH. Its high sensitivity and specificity

indicate strong discriminatory ability, while PPV and NPV demonstrate reasonably

good diagnostic performance in the study population. These findings support

PathoDetect™ as a promising alternative for rapid TB diagnosis, particularly in

high-burden settings.

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PMID: 40844110 [Indexed for MEDLINE]

**58. Indian J Med Res. 2025 May;161(5):540-551. doi: 10.25259/IJMR\_1643\_2024.**

Effectiveness of pulmonary rehabilitation on functional exercise capacity &

health related quality of life (HRQOL) among individuals with post tuberculosis

lung disease: A multicentric pre & post-interventional study.

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**Background & objectives** Pulmonary rehabilitation (PR) has been extensively

studied and proven beneficial in various respiratory conditions such as chronic

obstructive pulmonary disease (COPD) and interstitial lung disease (ILD).

Individuals with post-tuberculosis lung disease (P-TBLD) have limited exercise

tolerance and a significant disability affecting daily living, much like those

with COPD. Hence, they appear to be good candidates for PR. This study aimed to

determine the effectiveness of an outpatient PR protocol on functional exercise

capacity and health-related quality of life (HRQOL) in individuals with P-TBLD.

Furthermore, the effectiveness of adherence to the PR protocol among the

participants as well as identifying the gaps and barriers in accessing PR were

also determined. **Methods** This is a multicentric pre- and post-interventional

study conducted across five centres in India. 260 individuals with P-TBLD were

included if they could complete more than 80 per cent of the physiotherapist's

training sessions at the time of enrollment had previously received treatment

for pulmonary tuberculosis and were negative for acid fast bacilli (AFB) on

sputum examination. Individuals were excluded if they had preexisting lung

disease other than P-TBLD or suffered from any mental, neurological,

musculoskeletal, or unstable cardiovascular disease that could impair their

performance during the exercise training sessions. Pre- and post-intervention

assessments included clinical symptoms, exercise intolerance, pulmonary function

test (PFT), 6-minute walk test (6MWT), muscle strength testing, and St. George

Respiratory Questionnaire (SGRQ) score for HRQOL. Participants received PR

training at first visit in OPD and were advised to follow it at home and

telephonic follow up was done for a duration of 12 wk. **Results** Out of the 260

participants who were enrolled, 246 patients completed the post-intervention

evaluation following 12 wk of the PR protocol. Clinical parameters, the 6MWT,

the functional balance test, and the muscle strength test all showed significant

improvement after PR. Significant improvement was observed across all domains of

the SGRQ score. Pulmonary function measures showed significant improvement in

FEV1 and FVC parameters post intervention. **Interpretation & conclusions** This

study provides compelling evidence that PR is beneficial for post-TB patient,

leading to notable improvements in the exercise capacity, symptom management as

well as the overall quality of life. The findings support the implementation of

PR protocol on a larger scale within national health frameworks, particularly in

countries with high TB prevalence. By integrating PR into the National

Tuberculosis Elimination Programme, it is possible to offer a comprehensive care

approach that sets standard indicators for the surveillance of P-TBLD and

addresses the long-term health needs of TB survivors.

DOI: 10.25259/IJMR\_1643\_2024

PMID: 40844105 [Indexed for MEDLINE]

**59. Indian J Med Res. 2025 May;161(5):449-460. doi: 10.25259/IJMR\_1673\_2024.**

Efficacy & safety of high-dose rifampicin in pulmonary tuberculosis: A

systematic review & meta-analysis.

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Tuberculosis, Chennai, Tamil Nadu, India.

**Background & objectives** Evidence suggests that higher doses of rifampicin aid in

faster culture conversion, but its effects on unfavourable outcomes are unclear.

We aimed to synthesise evidence on the efficacy and safety of high-dose

rifampicin (>15 mg/kg) containing anti-tuberculosis regimen compared to a

regimen with standard dose of rifampicin in adults with pulmonary tuberculosis.

**Methods** We searched for studies from MEDLINE, Embase, Web of Science, Google

Scholar, and the Cochrane Library without geographical restriction. We included

randomised controlled trials that evaluated high-dose rifampicin (>15 mg/kg for

8 wk) with a six-month duration. Our outcomes of interest were sputum conversion

at eight wk, mortality, treatment failure at six months, Grade 3 and Grade 4

hepatotoxicity, and adverse events leading to treatment discontinuation. Two

authors independently screened titles, abstracts, and full texts and extracted

data. We performed a meta-analysis using the RevMan web software as per the

Cochrane Handbook for Systematic Reviews of Interventions. **Results** Out of 3950

articles screened, we included nine for meta-analysis. High-dose rifampicin (≥15 mg/kg) showed little benefit compared to the standard dose for sputum conversion

at eight wk [(83% vs. 78%, Relative risk (RR) 1.05 (95% confidence interval

(CI): 1.0-1.09), Number needed to treat (NNT)-24)] and this benefit was higher

as the rifampicin dose increased [20-30 mg RR: 1.07 (95% CI 1.02-1.14), NNT-17];

>30 mg RR: 1.12 (95% CI 1.04 -1.20) NNT-9]. However, treatment failure and

mortality showed no benefit with high-dose rifampicin. Grade 3 and 4

hepatotoxicity and treatment discontinuation due to toxicity had a dose-response

relationship and were significantly higher in the more than 30 mg/kg group [RR:

4.01 (95%CI 1.75-9.19), Number needed to harm -20]. **Interpretation & conclusions**

High doses of rifampicin (≥15 mg/kg) increased the rate of sputum culture

conversion after two months of the intensive phase. There was no difference in

mortality and treatment failure between high-dose rifampicin and standard arms.

In the subgroup analysis, the 20-30 mg/kg dose exhibited a beneficial effect in

sputum conversion with no significant risk of hepatotoxicity and adverse drug

reactions (ADR) leading to treatment discontinuation. This dose could be

administered with close monitoring of adverse events and hepatotoxicity. There

is an urgent need for adequately powered trials that assess long-term treatment

outcomes, including recurrence.

DOI: 10.25259/IJMR\_1673\_2024

PMID: 40844096 [Indexed for MEDLINE]

**60. Euro Surveill. 2025 Aug;30(33). doi: 10.2807/1560-7917.ES.2025.30.33.2500565.**

Cross-border investigation of a tuberculosis outbreak in Vienna linked to a

multi-country cluster among foreign-born individuals, Europe, 2021 to 2025.

Költringer F(1), Koreny M(2), Werber D(1), Heger F(3), Chalupka A(1), Schweiger

S(1), Brunner G(2), Tuch U(2), Karnthaler U(2), Klintz SR(4), Ködmön C(4),

Hoefer A(4), Anthony R(5), Kroeger S(6), Domaszewska T(6), Boes L(6), Niemann

S(7), Walz T(7), Kuhns M(7), Jackson S(8), Fitzgibbon M(9), Mathys V(10),

Sizaire V(11), Cirillo DM(12), Sane Schepisi M(13), Rønning JO(14), Herrera-Leon

L(15), Cardona PJ(16), Groenheit R(17), Mansjö M(17), Szél V(18), Alm E(4),

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(5)Centre for Infectious Disease Control, National Institute for Public Health

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Raffaele Scientific Institute, Milan, Italy.

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(14)Norwegian Institute of Public Health, Department of Bacteriology, National

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(15)National Reference Laboratory for Mycobacteriology, National Microbiology

Centre - Carlos III Institute of Health, Madrid, Spain.

(16)Servei de Microbiologia, Laboratori Clínic Metropolitana Nord. Hospital

Germans Trias i Pujol, Badalona, Catalonia, Spain.

(17)Public Health Agency of Sweden, Stockholm, Sweden.

(18)National Reference Laboratory for Mycobacteriology, Korányi National

Institute for Tuberculosis and Respiratory Medicine, Budapest, Hungary.

Collaborative genomic and epidemiological investigations identified a

tuberculosis outbreak in Vienna as part of a multi-country cluster comprising 57

foreign-born cases of Mycobacterium tuberculosis ST215/Beijing 2.2.1 notified

2021-2025. While 14 of 16 cases in Vienna were considered autochthonous, the

diverse geographic origin of clustered cases across nine European countries

suggests a common transmission source, possibly linked to migratory routes.

Cross-border data exchange and integrated genomic analysis are essential for

identifying transmission dynamics in tuberculosis clusters affecting mobile

populations.

DOI: 10.2807/1560-7917.ES.2025.30.33.2500565

PMID: 40843522 [Indexed for MEDLINE]

**61. Radiol Case Rep. 2025 Aug 5;20(10):5332-5337. doi: 10.1016/j.radcr.2025.07.003. eCollection 2025 Oct.**

Intramedullary tuberculoma of conus medullaris: A case report.

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Kathmandu, Nepal.

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Dharan, Sunsari, Nepal.

(6)Department of Medicine, Gandaki Medical College Teaching Hospital and

Research Centre, Pokhara, Nepal.

Spinal Intramedullary tuberculoma is a rare occurrence constituting about 0.2%

to 0.5% of all central nervous system tuberculomas. It is considered rare even

in tuberculosis endemic areas. Mostly affecting young individuals, it is mostly

found in thoracic cord. The occurrence of intramedullary tuberculoma in the

conus medullaris is even rare. We present a case of a 41-year-old female who

presented with symptoms of sudden loss of bowel and bladder function along with

saddle anesthesia which later on imaging and biopsy findings was diagnosed to be

case of intramedullary tuberculoma of conus medullaris, and was managed with

anti-tubercular regimen and corticosteroids.

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Washington.

DOI: 10.1016/j.radcr.2025.07.003

PMCID: PMC12365811

PMID: 40843308

**62. Case Rep Infect Dis. 2025 Aug 13;2025:4888774. doi: 10.1155/crdi/4888774.**

**eCollection 2025.**

Beyond the Lungs: A Rare Case of Extrapulmonary Tuberculosis Presenting With

Neck Vein Thrombosis and Seizure.

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Author information:

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(2)Department of Laboratory Medicine and Pathology, Hamad Medical Corporation,

Doha, Qatar.

**Introduction:** Tuberculosis (TB), caused by Mycobacterium tuberculosis, primarily

affects the lungs but can involve virtually any organ system, manifesting as

extrapulmonary TB. While TB-related hypercoagulability and venous

thromboembolism are recognized, such presentations remain uncommon and

diagnostically challenging, especially in the absence of classical symptoms.

**Case Presentation:** We report the case of a 24-year-old immunocompetent female

who initially presented with painless right-sided neck swelling. Imaging

revealed an acute thrombus in the right internal jugular vein (IJV), with no

clear underlying cause. Further evaluation showed enlarged necrotic mediastinal

lymph nodes, raising suspicion for lymphoma. However, the patient later

developed a seizure episode, and subsequent neuroimaging revealed multiple

intracranial ring-enhancing lesions. Ultimately, mediastinoscopic lymph node

biopsy confirmed necrotizing granulomatous inflammation, with a positive TB

polymerase chain reaction (PCR), consistent with disseminated TB involving both

vascular and central nervous systems. The patient was started on antitubercular

therapy, anticoagulation, and adjunctive corticosteroids, with multidisciplinary

follow-up arranged. **Discussion:** This case highlights TB-induced

hypercoagulability as a potential cause of isolated venous thrombosis and

underscores the diagnostic challenges when TB mimics malignancy. It also

emphasizes the importance of considering TB in the differential diagnosis of

unexplained thrombosis and intracranial lesions, even in the absence of

pulmonary symptoms. Conclusion: Clinicians should maintain a high index of

suspicion for extrapulmonary TB in atypical thrombotic events. Early tissue

diagnosis and a multidisciplinary approach are key to effective management and

favorable outcomes.

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PMID: 40843026

**63. Front Immunol. 2025 Aug 6;16:1624072. doi: 10.3389/fimmu.2025.1624072.**

**eCollection 2025.**

Single-cell transcriptomic profiling reveals a novel signature of necrotizing

granulomatous lesions in the lungs of Mycobacterium tuberculosis-infected

C3HeB/FeJ mice.

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Tokyo, Japan.

Tuberculosis (TB) pathology involves complex immune responses within

granulomatous lesions. Using single-cell RNA sequencing, we characterized the

cellular compositions of necrotizing granulomatous lesions that developed in the

lungs of Mycobacterium tuberculosis-infected C3HeB/FeJ mice. We identified 11

distinct major cell types, including phagocytes such as neutrophils and

macrophages, and T cells, natural killer cells, B cells, dendritic cells, and

plasmacytoid dendritic cells. Among T cells, particularly, Pdcd1+ γδ T cells

were detected in necrotizing granulomatous lesions, suggesting their potential

role in the pathogenicity of M. tuberculosis. Within the macrophage populations,

we identified a cluster with significantly higher Plin2 expression compared to

other clusters, whose transcriptomic profile was consistent with that of foamy

macrophages. A subset of the Plin2-expressing macrophages was identified as a

major source of Ifnb1 and Cxcl1, suggesting their involvement in type I

interferon signaling and neutrophil recruitment. Furthermore, we identified

Flrt2, Hyal1, and Mmp13 as novel molecular markers of Plin2-expressing

macrophages, which were localized to the peripheral rim regions of necrotizing

granulomas. In conclusion, our results provide the immune landscape of

necrotizing granulomas and reveal novel functional states of macrophages

contributing to TB pathogenesis.

Copyright © 2025 Seto, Omori, Nakamura, Hijikata and Keicho.

DOI: 10.3389/fimmu.2025.1624072

PMCID: PMC12364640

PMID: 40843005 [Indexed for MEDLINE]

**64. North Clin Istanb. 2025 Jan 6;12(1):29-35. doi: 10.14744/nci.2023.88886.**

**eCollection 2025.**

Analysis of QuantiFERON(®)-TB Gold Plus test results among patients with chronic

inflammatory diseases and HIV patients.

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Author information:

(1)Department of Medical Microbiology, Marmara University Pendik Training and

Research Hospital, Istanbul, Turkiye.

**OBJECTIVE:** Screening for latent tuberculosis (LTB) is necessary, especially for

people living with human immunodeficiency virus (HIV) and people receiving

anti-TNF therapy. Although there is no microbiological test accepted as the gold

standard, interferon-gamma release assays (IGRAs) are suggested to be used by

World Health Organization. We aimed to analyze QuantiFERON®-TB Gold Plus test

results in different patient groups with high reactivation risk.

**METHODS:** Patients admitted to Marmara University Pendik Training and Research

Hospital Microbiology Laboratory between August 2016 - March 2020 have been

analyzed retrospectively. Patient demographic data was obtained from the records

of the laboratory information management system. Blood samples have been studied

as recommended by the manufacturer (QuantiFERON®-TB Gold Plus, QIAGEN, Germany).

**RESULTS:** We evaluated samples from 1506 patients, of whom with a chronic

inflammatory disease (CID) in 1223 patients and HIV positivity among 283

patients. Mean age was 38.29±12.66 for HIV patients and 41.57±14.45 for chronic

inflammatory disease patients. QFT test was positive in 319 (21.2%) of 1506

patients in total and in 43 (15.2%) of HIV patients and in 276 (22.6%) of CID

patients. Indeterminate results were obtained in 1.7% (n=26) of the samples.

Among patients with CID highest rate of QFT test positivity was detected among

patients with psoriasis (27.8%), followed by patients with rheumatoid arthritis

(21.8%) and ankylosing spondylitis (19.8%). Active tuberculosis was not

developed in any of QFT-GIT-positive CID patients followed up in our hospital

for the 4 years period.

**CONCLUSION:** QuantiFERON®-TB Gold Plus test requires a short-term and one-time

contact with the patient and it seems to be a suitable option for screening of

patients who have a high risk of tuberculosis.

DOI: 10.14744/nci.2023.88886

PMCID: PMC12364469

PMID: 40838244

**65. Afr Health Sci. 2025 Jun;25(2):1-9. doi: 10.4314/ahs.v25i2.2.**

Effect of physiological characteristics, smoking, and alcohol use on isoniazid

hair drug levels among pulmonary TB patients: a cross-sectional study at one

month of intensive TB treatment.

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Sciences, Uganda.

**BACKGROUND:** Tuberculosis(TB) is still among the leading causes of death from a

single infectious pathogen worldwide. TB treatment is long, requires multiple

drug combinations, and therefore adherence monitoring. TB hair drug levels have

been suggested as a technique of treatment adherence monitoring; however, the

drug levels might be affected by physiological factors, alcohol use, and

cigarette smoking. This can affect the pharmacokinetics and pharmacodynamics of

TB drugs.

**OBJECTIVE:** To assess the effect of physiological factors, smoking, and alcohol

on isoniazid hair drug levels during TB treatment.

METHODS: Patients were assessed for diabetes Mellitus, smoking, alcohol

consumption, age, weight, and gender. Hair drug levels were measured by Liquid

Chromatography Mass Spectrometry(LC-MS).

**RESULTS:** We screened a total of 102 TB patients and enrolled 56 participants out

of which 50 completed the study. We excluded 15 participants who were not

sampled exactly at 1-month appointment dates and of the remaining 35; the mean

hair drug level was 0.0706ng/mg, 95% CI: 0.0303-0.1109. Tests of interaction

across the different subgroups yielded no statistically significant interaction

coefficients(IC) except for age and gender (IC=-0.36.95%, CI: -0.55-0.17,

P=0.001).

**CONCLUSION:** Physiological factors, alcohol, and smoking do not affect isoniazid

hair drug levels.

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DOI: 10.4314/ahs.v25i2.2

PMCID: PMC12361969

PMID: 40837662 [Indexed for MEDLINE]

**66. IDCases. 2025 Aug 12;41:e02343. doi: 10.1016/j.idcr.2025.e02343. eCollection**

**2025.**

Abundant signet ring cells in bronchoalveolar lavage of an adolescent with

severe pulmonary tuberculosis.

Hernández-Rosa E(1), Planas S(2), Noguera-Julian A(1)(3)(4).

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DOI: 10.1016/j.idcr.2025.e02343

PMCID: PMC12362380

PMID: 40837612

**67. Indian J Community Med. 2025 Jul-Aug;50(4):679-683. doi:**

**10.4103/ijcm.ijcm\_199\_23. Epub 2025 Feb 6.**

Knowledge and Practice of TB Notification among the Private Health Care

Providers in Eastern India.

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(2)Department of Community Medicine and Family Medicine, All India Institute of

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Tuberculosis (TB) has been a notifiable disease since 2012. The study aimed to

assess the knowledge and practice of private health care providers (PHCPs)

regarding TB notification and to identify the physician-level and health

system-level factors determining knowledge and practice of TB notification. A

cross-sectional study was done in the field practice area of AIIMS Bhubaneswar.

The study was conducted from February 2020 to May 2021 in Odisha. PHCPs from all

systems of medicine were included in the study. The sample size was calculated

to be 138. A self-administered semistructured questionnaire was used to collect

the data. Multivariable logistic regression was done to identify the association

between the independent and dependent variables. A total of 89 PHCPs were

recruited into the study. Among them, 57 (64%) of the PHCPs were aware of TB

notification, whereas 24 (42%) had ever notified a case of TB. All PHCPs who had

ever diagnosed or treated a TB case were aware of TB notification. The factors

associated with TB notification were the clinical setting of practice, diagnosed

more than one TB case in the past 1 year, and those who worked in the government

setting in the past 2 years. The knowledge and practice of TB notification were

low among PHCPs. More frequent and mandatory sensitization training should be

conducted for all PHCPs to increase awareness about TB notification.

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PMCID: PMC12364267

PMID: 40837176

**68. Indian J Community Med. 2025 Jul-Aug;50(4):592-598. doi:**

**10.4103/ijcm.ijcm\_690\_23. Epub 2025 Feb 1.**

Impact of Sociodemographic Factors on the Efficacy of Multidrug-resistant

Tuberculosis Therapy in Russia: Retrospective Epidemiological Study.

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Institute of Continuing Professional Education and Accreditation, Far Eastern

State Medical University, Khabarovsk, Russian Federation.

**BACKGROUND:** Russia has the highest prevalence of

multidrug-resistant/rifampicin-resistant tuberculosis (MDR/RR-TB) in the world.

This study aims to evaluate the impact of sociodemographic determinants on the

effectiveness of therapy in patients with MDR/RR-TB in the Khabarovsk krai

region of Russia.

**METHODS:** We conducted a retrospective cross-sectional epidemiological study.

Using the centralized national database of TB patients, data was collected on

2661 patients diagnosed with TB from 2018 to 2019 in all medical facilities of

the region. After applying exclusion criteria, the final sample consisted of 531

patients with determined MDR/RR and with a known chemotherapy outcome. The

influence on the therapy outcome of the 13 variables was analyzed using a binary

logistic regression.

**RESULTS:** 10 out 13 analyzed variables had no influence on a given therapy's

effectiveness. These variables were sex, age, residence, occupation, substance

abuse, presence of disability, circumstance of TB diagnosis, TB localization,

HIV coinfection, and history of imprisonment. Previous treatment with Isoniazid

and Rifampicin (P = 0.036, AOR 1.987, CI 95% 1.097 to 3.601), cavities absence

in the lungs (P = 0.009, AOR 1.720, CI 95% 1.142 to 2.590), and living in a

separate apartment (P = 0.023, AOD -1.150, 95% CI -2.223 to -1.027)

significantly influenced treatment efficacy.

**CONCLUSION:** Our findings point to demographic restructuring of the core of

MDR/RR-TB carriers in Russia. As a way to resolve this situation, we wish to

emphasize shifting the focus from risk groups and facility-based therapy to

home-based therapy, as well as focusing on combating the social stigma and

further improving HIV care.

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DOI: 10.4103/ijcm.ijcm\_690\_23

PMCID: PMC12364273

PMID: 40837168

**69. Indian J Community Med. 2025 Jul-Aug;50(4):689-693. doi:**

**10.4103/ijcm.ijcm\_191\_24. Epub 2025 Feb 21.**

Relationship between Household Tuberculosis and Socioeconomic and

Bioenvironmental Factors: A Statistical Model Approach Using NFHS-5 Data.

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Tuberculosis (TB) remains a pressing global health concern, particularly in low-

and middle-income countries like India, where it poses significant challenges to

public health. This study investigates the socioeconomic and bioenvironmental

determinants of TB at a household's level using data from the fifth round of the

National Family Health Survey conducted in India between 2019 and 2021. The

study utilizes a comprehensive approach, including univariate, bivariate, and

regression analyses, to explore the relationship between TB prevalence and

various independent factors. Regression models, including binomial, Poisson, and

negative binomial, are employed to elucidate the predictors of TB. The data

reveal higher TB prevalence in rural areas compared to urban areas, with

households headed by males exhibiting a greater prevalence. Socioeconomic

factors such as possession of a Below Poverty Line card and access to

electricity are significantly associated with household TB status. Additionally,

bioenvironmental factors such as type of cooking fuel and water sanitation

measures play crucial roles in shaping TB dynamics within households. The

findings underscore the complex interplay between socioeconomic status, living

conditions, and bioenvironmental factors in influencing household TB risk. This

study provides valuable insights into the socioeconomic and bioenvironmental

determinants of TB prevalence at a household's level, informing evidence-based

policy and intervention strategies aimed at reducing TB burden and advancing

progress toward global TB elimination goals. Moreover, housing infrastructure,

promoting clean energy access, and gender-sensitive approaches can enhance TB

control efforts and promote community health.

Copyright: © 2025 Indian Journal of Community Medicine.

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PMID: 40837164

**70. Indian J Community Med. 2025 Jul-Aug;50(4):636-640. doi:**

**10.4103/ijcm.ijcm\_498\_23. Epub 2025 Feb 6.**

Opportunistic Screening for Enhanced TB Case Detection among Inpatients in a

Tertiary Care Hospital, Bengaluru.

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Manukrishnan R(1), Nandhini R(1), Katakdhond SS(1), Nair AS(1), Indu M(1),

Spuriti SM(1), Mudhol R(1).

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(1)Department of Community Medicine, ESIC Medical College, and PGIMSR,

Rajajinagar, Bangalore, Karnataka, India.

**BACKGROUND:** Tuberculosis (TB) remains a global health challenge, causing

substantial illness and death. In India, the National Tuberculosis Elimination

Programme (NTEP) has been working to combat TB, but eliminating the disease

remains difficult. To improve TB case detection, a feasibility study took place

at a tertiary care hospital in Bengaluru, India. The study's objective was to

assess the occurrence of four TB symptom complexes among admitted patients in

medicine, emergency medicine, and pediatrics wards and estimate the screening

needed to identify one TB patient among these admissions.

**MATERIALS AND METHODS:** From April to June 2023, a cross-sectional study was

conducted at a 750-bed tertiary care hospital in Bengaluru, which had an

established NTEP cell. The study encompassed all patients admitted to the

medicine, emergency medicine, and pediatrics wards, with a calculated sample

size of 1473 patients. Data collection was done using a validated questionnaire,

and inpatients were screened for four TB symptom complexes: cough lasting over

14 days, fever or evening rise of temperature, night sweats, and significant

weight loss. Positive cases were referred to a designated microscopy center

(DMC) for sputum examination and further diagnosis and treatment.

**RESULTS:** Among the 1497 patients screened, 272 (18%) showed symptoms related to

tuberculosis (TB). Out of these, 31 (11.3%) were confirmed to have TB through

sputum examination and chest X-ray. The calculated number needed to screen (NNS)

to identify one TB case among inpatients was 48. PTB cases were most prevalent

in the 56-65 age group, whereas diagnosed TB patients were mainly in the 36-45

age group.

**CONCLUSIONS:** In conclusion, the daily screening of admitted patients in the

Departments of Medicine, Emergency Medicine, and Pediatrics has yielded positive

results and is deemed feasible for implementation within the medical college

setting.

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PMCID: PMC12364258

PMID: 40837160

**71. Indian J Community Med. 2025 Jul-Aug;50(4):556-559. doi:**

**10.4103/ijcm.ijcm\_795\_23. Epub 2025 Feb 6.**

Bridging the Gap: Navigating the Nexus of Tuberculosis and Mental Well-being.

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Chettinad Academy of Research and Education, Chengalpattu, Tamil Nadu, India.

The article explores the intricate relationship between tuberculosis (TB) and

mental health, emphasizing the bidirectional impact and implications for

healthcare strategies. The global burden of TB, coupled with psychosocial

challenges, necessitates integrated care. Challenges like stigma and fragmented

healthcare demand innovative solutions. The review highlights the interconnected

nature of mental health and TB treatment outcomes, showcasing promising

interventions from psychosocial support to evidence-based approaches. Persistent

challenges require ongoing advocacy. Future research should delve into specific

mental health conditions and TB outcomes. Recent reviews stress

interdisciplinary collaboration, policy changes, and technology for accessible

and patient-centric care. This review contributes insights to address TB and

mental health globally, promoting a unified, patient-centered approach for

sustainable healthcare.

Copyright: © 2025 Indian Journal of Community Medicine.

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PMID: 40837158

**72. Can Commun Dis Rep. 2025 May 1;51(5):167-178. doi: 10.14745/ccdr.v51i05a03.**

**eCollection 2025 May.**

Enhanced screening for tuberculosis infection among immigrants in southern New

Brunswick: A cross-sectional pilot study.

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Hospital, Saint John, NB.

**BACKGROUND:** In 2021, approximately 77% of active tuberculosis (TB) disease (TBD)

cases in Canada were among foreign-born individuals. Less than 3% of TBD cases

in Canada are detected through pre-arrival Canadian immigration medical

examinations (i.e., chest X-rays), and the remaining 97% are likely due to

reactivation of undiagnosed latent TB infection (TBI) post-arrival. In New

Brunswick, the proportion of TBD cases among foreign-born individuals gradually

increased from about 33% (1/3 individuals) in 2013 to 100% (14/14 individuals)

in 2023. The objective of this study was to estimate the prevalence of TBI among

immigrants in southern New Brunswick, identify potential predictors for positive

TBI screening and assess participant experiences with the pilot TBI screening

procedure.

**METHODS:** A cross-sectional study was conducted from November 2021 to November

2023 among immigrants ≥19 years old who had no history of TBD and were born in a country with a TB incidence rate of ≥40/100,000 population or were referred by healthcare professionals. Participants were recruited through various channels

and underwent TBI screening using the interferon-gamma release assay, followed

by a survey on their screening experience.

**RESULTS:** Of the 264 participants, 49 (18.6%) screened positive for TBI. Factors

associated with higher odds of screening TBI-positive included birthplace in a

"highly to severely endemic" (≥300/100,000 population) TB-incidence country

(OR=3.24; 95% CI: 1.07-9.81) and increased age (OR=1.05; 95% CI: 1.01-1.08).

Participants rated the pilot TBI screening procedure positively (mean scores

ranged from 4.03-4.55 on a five-point Likert scale).

**CONCLUSION:** Results suggest that immigrants born in countries with TB incidences

of ≥300/100,000 population should be considered for screening and treatment of

TBI. The pilot TBI screening procedure yielded positive feedback. Further

research with a larger sample is recommended.

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PMCID: PMC12363640

PMID: 40837092

**73. J Assoc Physicians India. 2025 Jul;73(7S):20-23. doi: 10.59556/japi.73.0981.**

Beyond Lungs: Hematuria as the Primary Presentation of Immune Thrombocytopenic

Purpura in Case of Extrapulmonary Tuberculosis Complicated with

Rifampicin-induced Thrombocytopenia Posing Diagnostic and Therapeutic Challenge.

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Tuberculosis (TB) is a significant cause of mortality globally and can affect

various organ systems, leading to diverse clinical presentations. The

hematological presentation of TB as symptomatic thrombocytopenia, leukopenia,

and pancytopenia is exceedingly rare. Antitubercular therapy (ATT) is an

effective treatment, but it can have hematological side effects such as anemia

and thrombocytopenia, apart from systemic toxicities. Noncompliance and

treatment failure are common with long-term use of ATT. We report a case of a

55-year-old man who presented in hypovolemic shock caused by sudden-onset

hematuria as a consequence of thrombocytopenia (platelet count of 2,000

cells/mm3), mainly attributed to immune thrombocytopenic purpura (ITP), which

was secondary to extrapulmonary tuberculosis (EPTB) pleural effusion. The

patient responded moderately to treatment with steroids, platelet transfusions,

and romiplostim. The rise in platelet counts and subsequent resolution of

symptoms augmented after the institution of ATT. Upon normalization of platelet

counts, regular ATT was started, but after a week, his platelets decreased again

due to rifampicin-induced thrombocytopenia, requiring treatment modification. We

also encountered hyperuricemia, which led to bilateral lower limb cellulitis

caused by pyrazinamide, necessitating its withdrawal. This case highlights the

importance of monitoring hematological parameters during ATT to prevent

drug-induced adverse effects, especially in cases where ITP masquerades as TB.

In summary, TB and antitubercular drugs can have hematological manifestations,

which makes it very challenging to diagnose and treat and requires frequent

monitoring of hematological parameters. This adverse event leads to eventual

nonadherence to drugs and treatment failure and can be fatal.

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PMID: 40836743 [Indexed for MEDLINE]

**74. J Assoc Physicians India. 2025 Jul;73(7):88-90. doi: 10.59556/japi.73.1049.**

Tuberculosis and Mental Health: A Poorly Addressed Syndemic in India.

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**INTRODUCTION:** India bears a dual burden of tuberculosis (TB) and mental health

(MH) disorders, both of which are underdiagnosed due to stigma and diagnostic

challenges. These conditions frequently coexist, forming a syndemic that has

significant implications for public health.

**OBJECTIVE:** To explore the bidirectional relationship between TB and MH

disorders, highlighting the impact on TB treatment outcomes, including higher

risks of nonadherence, loss to follow-up, and mortality. This review emphasizes

the need for integrating MH screening and support into TB programs to improve

patient outcomes and ensure holistic care.

**CONCLUSION:** Despite the profound interplay between TB and MH disorders, MH

remains inadequately addressed in TB care. Simple screening tools and

community-based interventions can facilitate early detection and treatment.

Integrating MH support, reducing stigma, and promoting collaboration between

healthcare workers and MH professionals are vital to achieving World Health

Organization (WHO)'s patient-centered care goals. Addressing this syndemic

holistically is essential to improve outcomes for those affected and advance TB

care standards in India.

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**75. ACS Med Chem Lett. 2025 Jul 3;16(8):1610-1618. doi:**

**10.1021/acsmedchemlett.5c00252. eCollection 2025 Aug 14.**

Structure-Activity Relationship Study of Benzamides as Mycobacterium

tuberculosis QcrB Inhibitors.

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We previously identified a morpholinobenzamide series with potent activity

against Mycobacterium tuberculosis. We conducted structure-activity relationship

studies focusing on removing the metabolically labile morpholine group while

retaining antibacterial activity. We identified potent benzamides 16 (IC90 =

0.13 μM) and 22f (IC90 = 0.09 μM) with a thiophene and methyl substituents

replacing the morpholine at the C-5 position. These analogs had high selectivity

(selectivity index = 300 and 278, respectively) and low cytotoxicity (HepG2 CC50

of 39 and 25 μM, respectively). Compound 16 demonstrated a good metabolic

stability in human liver microsomes.

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PMID: 40832552

**76. Can J Infect Dis Med Microbiol. 2025 Aug 11;2025:4170420. doi:**

**10.1155/cjid/4170420. eCollection 2025.**

Undiagnosed Pulmonary Tuberculosis Among Incarcerated Individuals and Its

Overlooked Transmission Risk for the Community in Central Ethiopia.

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**Background:** Tuberculosis (TB) remains a major public health problem globally,

particularly in resource-limited settings where deprived ventilation,

overcrowding, and limited healthcare services. Incarcerated individuals are

among vulnerable populations disproportionately affected by TB due to confined

living conditions and delayed diagnosis. In Ethiopia, the prison setting

provides an environment favorable to the rapid spread of TB and a threat to the

outside community. Thus, this study aims to determine the prevalence of

undiagnosed pulmonary tuberculosis (PTB) and its predictors among incarcerated

individuals in Central Ethiopia. **Methods**: A facility-based cross-sectional study

was conducted from September to December 2023 among 363 selected incarcerated

individuals in Central Ethiopia. Sociodemographic, clinical, and other

risk-related data were collected using a structured questionnaire. Sputum

samples were collected from incarcerated individuals with clinical symptoms of

cough for two or more weeks and processed using GeneXpert MTB/RIF. The study was

not formally powered to detect specific odds ratios for risk factor analysis;

therefore, the associated predictors were explored through multivariable

analysis and interpreted cautiously. **Results:** In 3802 total incarcerated

individuals in the region's prisons, 363 (9.5%) with clinical symptoms and 13

(0.34%) already on anti-TB treatment were identified. Among these 363 (9.5%)

with clinical symptoms, 35 (9.64%) previously undiagnosed PTB cases were

detected. Hence, the point prevalence of undiagnosed PTB among incarcerated

individuals was 0.92% or 920 per 100,000 population (95% CI: 830-998/100,000),

which is about 7.7 times higher than Ethiopia's general population

(119/100,000). This previously undiagnosed PTB was associated with incarcerated

individuals who had smoking, increased age, contact with coughing/TB patients,

chronic illness comorbidity, overcrowding, and low BMI. **Conclusion:** This study

revealed a high point prevalence of undiagnosed PTB among incarcerated

individuals. This mightily highlights that prisons are explicitly taken as a

risky place for the transmission of PTB. Routine TB screening during prison

entrance and periodical active case finding are highly recommended to identify

missing people with TB who have a high spreading. After diagnosis, early

treatment must be implemented to limit further transmission to incarcerated

individuals and the surrounding community.

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**77. bioRxiv [Preprint]. 2025 Aug 17:2025.08.16.670319. doi:**

**10.1101/2025.08.16.670319.**

NRF2 inhibition of alveolar macrophage MHC II expression during Mycobacterium

tuberculosis infection.

Pham LK, Cervantes MM, Lim PN, Dubey D, Tufts A, Shinkawa T, Behar SM, Rothchild

AC.

During Mycobacterium tuberculosis (Mtb) infection, infected alveolar macrophages

(AMs) initially up-regulate a NRF2 regulated cell-protective program, which is

detrimental to host control and impedes AM activation, including MHC II

expression. MHC II is critical for CD4+ T cell activation and host immunity

during Mtb infection. We hypothesized that NRF2 regulates the MHC II pathway and

AM antigen presentation to T cells. We found that NRF2 inhibits MHC II, but not

MHC I, specifically in AMs, following Mtb infection in vitro and in vivo . NRF2

dampens Ciita and H2-Ab1 gene expression in uninfected AMs, and MHC II

inhibition by NRF2 is retained following innate stimuli and IFNγ exposure. NRF2

expression in Mtb-infected AMs impedes their ability to activate ESAT6-specific

CD4+ T cells. Thus, although NRF2 expression enhances cell-protective functions,

it has the unexpected consequence of limiting innate-adaptive crosstalk, which

can impair CD4+ T cell activation and host immunity during Mtb infection.

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PMCID: PMC12363945

PMID: 40832292

**78. Respirol Case Rep. 2025 Aug 17;13(8):e70314. doi: 10.1002/rcr2.70314.**

**eCollection 2025 Aug.**

Tracheobronchial Tuberculosis During Treatment for Bronchial Asthma.

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Tracheobronchial tuberculosis is a disease that requires careful attention when

treating patients with chronic cough, such as those with bronchial asthma.

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Australia, Ltd on behalf of The Asian Pacific Society of Respirology.

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**79. Adv Virol. 2025 Aug 11;2025:4514560. doi: 10.1155/av/4514560. eCollection 2025.**

Clinical Determinants Associated With Viral Load Count Among Adult TB/HIV

Co-Infected Patients: A Linear Mixed-Effects Model Analysis.

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HIV is a major cause of tuberculosis. The objective of current study was to

isolate clinical determinants associated with viral load count among adult

TB/HIV co-infected patients. This study was done at the University of Gondar

Comprehensive Specialized Hospital from March 2017 to March 2022. In this study,

linear mixed-effects models were used for repeated measure viral load count.

Results from the analysis show that baseline viral load count (β = 465.1,  p

value = 0.0026), hemoglobin levels (β = -493.5,  p value = 0.0107), CD4 cell

count (β = -38.2,  p value = 0.0027), CPT (β = -326.8,  p value = 0.0363),

functional status (β = 416.0,  p value = 0.0059), OCC (β = 123.0,  p

value = 0.0028), tuberculosis type (β = 430.3,  p value = 0.0336), platelet cell

count (β = -2.5,  p - value = 0.0005), lymphocyte count (β = -7.9,  p

value = 0.0219), and visit time (β = -2.2,  p value = 0.001) were clinical

determinants that affected repeated measure viral load count at a 5% level of

significance. The study examined clinical determinants of repeated measure viral

load count among TB/HIV co-infected patients. The clinical determinants like

hemoglobin levels ≥ 11 g/dL, CD4 cell count ≥ 200 cell/mm3, CPT drug users, and

platelet cell count, lymphocyte count, and visit time were decreased viral load

count. Inversely, baseline viral load count (≥ 10,000 copies/mL), bedridden

patients, patients with OCC, and those with extrapulmonary tuberculosis had a

higher viral load count. Extensive monitoring and counseling can be beneficial

for patients with hemoglobin, CD4 cell count, CPT, platelet cell count,

lymphocyte count, visit time, baseline viral load count, and functional status,

OCC, and TB type. Finally, further studies should be done in order to address

major clinical determinants and enhance continuous follow-ups, monitor TB/HIV

progression, and improve the life expectancy of patients living with TB/HIV.

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**80. Mitochondrion. 2025 Aug 17:102078. doi: 10.1016/j.mito.2025.102078. Online ahead of print.**

Outlier maternal haplogroups N5 and X2 and their potential role in elevated

tuberculosis prevalence among the Sahariya tribe.

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India bears the largest burden of tuberculosis (TB) cases in the world. Prior

studies have highlighted significantly higher pulmonary TB among the Sahariya

tribal population in Central India. The disease susceptibility of a population

to disease may be influenced by genetic ancestry. In this context, we

investigated the maternal genetic ancestry of the Sahariya in relation to their

neighbouring tribal populations. For this study, we used the largest available

dataset (n = 729), comprising 140 Sahariya individuals and 589 individuals from

adjacent caste and tribal groups (including 50 newly sequenced samples). Our

detailed mtDNA analysis revealed the exclusive presence of two rare haplogroups

N5 and X2 which are completely absent in neighbouring tribal and caste

populations. Further examination of the phylogeographic origins of the branches

of haplogroups N5 and X2 suggests that these unique founder haplogroup branches

(N5a and X2a) were likely introduced into the Sahariya from the western regions

of the Indian subcontinent. The temporal expansion of these haplogroups

indicates a gene flow from this western area to the Sahariya population during

the early Iron Age. In addition to that, we have also analysed 33 SNPs for six

TB-associated genes. We observed a single SNP (rs 4958847-IRGM1) where the minor

allele frequency was significantly different in Sahariya with their neighbouring

populations. Consequently, our analysis of maternal genetic ancestry and known

associated autosomal genes provides insights that may help explain the higher

prevalence of TB among the Sahariya compared to their neighbouring populations.

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**81. J Infect Public Health. 2025 Aug 14;18(11):102932. doi:**

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Screening of tuberculosis suspected subjects using real-time PCR, TaqMan method;

Northeastern Iran.

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**PURPOSE:** Effective and timely tuberculosis (TB) treatment depends on rapid

reliable diagnostic techniques and is crucial for controlling global TB. The

present study aimed to determine how many TB presumptive patients may have been

missed by conventional sputum smear microscopy and culture methods.

**METHODS:** This cross-sectional study was conducted from 2020 to 2021 in northeast

Iran. A total of 307 TB presumptive subjects with negative Ziehl-Neelsen (ZN)

staining microscopy, and culture tests were evaluated using a lab made real-time

PCR (qPCR), TaqMan method. The control group was 21 M. tuberculosis (M.tb)

positive subjects from a referral TB center; Northeastern Iran.

**RESULTS:** All cases in TB-positive control group tested positive by qPCR. Out of

the 307 negative culture and smear tests individuals, 50 (13.55 %) tested

positive using qPCR. Failure rates for microscopy and culture were higher in

urine samples; none were positive in smear and culture tests, but six out of 20

(30 %) were qPCR positive. Lower failure rates for conventional tests were

observed in sputum samples, with 18 out of 53, and qPCR detected nine more

cases. Furthermore, among 61 unculturable samples, one case was positive using

qPCR technique. Overall, qPCR demonstrated a 100 % and 83.7 % sensitivity and

specificity, respectively.

**CONCLUSIONS:** In-house qPCR assays using standard reagents, which are generally

available can confirm that this method more practical, time-saving, and feasible

for TB-suspected individuals, particularly in extrapulmonary forms such as

urine, CSF, and paraffin-embedded samples, compared to direct microscopy and

culture.

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**82. Pediatr Infect Dis J. 2025 Aug 6. doi: 10.1097/INF.0000000000004933. Online**

**ahead of print.**

Epidemiology and Outcomes of Pediatric Multidrug-resistant Tuberculosis in

Namibia: A Retrospective Review of National Registry Data From 2013 to 2023.

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Bern University Hospital, University of Bern, Bern, Switzerland.

**BACKGROUND:** Multidrug-resistant (MDR) and rifampin-resistant (RR) tuberculosis

(TB) is challenging the national response to tuberculosis in Namibia. The recent

introduction of Xpert MTB/RIF (Cepheid, Sunnyvale, CA) and the use of new and

repurposed drugs have the potential to improve both management and outcomes.

**METHODS:** Retrospective review of Namibian national registry data from 2013 to

2023 of children 0-14 years with MDR/RR-TB. National census data were used to

estimate annual case notification rates (aCNRs).

**RESULTS:** Totally 205 episodes were available for analysis. The median age was 4

years [interquartile range (IQR) 1-10]. Ninety (43.9%) were female and 20 (9.8%)

were living with HIV. The aCNR increased by two-thirds from 1.2 in 2013 to 2.0

per 100,000 population in 2023. One region, Ojotzondjupa, notified 58 (28.3%) of

all cases with a median aCNR of 7.1 per 100,000 population while the national

median aCNR was 1.8 per 100,000 population. Ninety individuals (58.1%) received

a treatment regimen containing injectables, whereas 65 (41.9.6%) received an

all-oral treatment regimen containing two or more World Health Organization

class A drugs and/or delamanid. Outcome was unfavorable in 46 (24.1%)

individuals, and 18 (9.4%) died. No decrease in the proportion of children with

unfavorable outcomes was observed over the study period.

**CONCLUSION:** The epidemiology and outcome of children with MDR/RR-TB in Namibia

are in keeping with the limited international data available; however, the

geographical distribution of children with MDR/RR-TB poses a major challenge to

the national TB response.

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DOI: 10.1097/INF.0000000000004933

PMID: 40829018

**83. Urol Res Pract. 2025 Jul 29;51(4):161-162. doi: 10.5152/tud.2025.25017.**

Genitourinary Tuberculosis and the Potential Impact of Delayed Diagnosis in

Europe.

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DOI: 10.5152/tud.2025.25017

PMCID: PMC12362482

PMID: 40827637

**84. Cureus. 2025 Jul 17;17(7):e88179. doi: 10.7759/cureus.88179. eCollection 2025**

**Jul.**

Spontaneous Resolution of Miliary Pulmonary Nodules Following Intravesical

Bacillus Calmette-Guérin (BCG) Therapy: A Case Report and Literature Review.

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Intravesical Bacillus Calmette-Guérin (BCG) immunotherapy is a well-established

treatment for non-muscle-invasive bladder cancer. Although it is typically

associated with local irritative symptoms, rare systemic and pulmonary

complications can occur, including hypersensitivity pneumonitis and miliary

tuberculosis. We report the case of a 70-year-old man who developed diffuse

miliary pulmonary micronodules and ground-glass opacities after his 12th BCG

instillation. Despite imaging findings suggestive of disseminated infection, the

patient remained clinically stable, without fever, hypoxia, or systemic

deterioration. Bronchoalveolar lavage cultures were negative for Mycobacterium

bovis. A shared decision was made to withhold antimycobacterial therapy and

monitor closely. Follow-up imaging revealed spontaneous improvement without

treatment. This case underscores that observation may be appropriate in selected

stable patients without systemic signs of infection. Careful clinical assessment

and individualized management are essential to avoid unnecessary therapy and

ensure patient safety.

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PMCID: PMC12358092

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**85. Cureus. 2025 Jul 17;17(7):e88204. doi: 10.7759/cureus.88204. eCollection 2025**

**Jul.**

Prevalence of Multidrug-Resistant Tuberculosis and Its Association With Previous

Treatment History in Adults.

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**Background** Multidrug-resistant tuberculosis (MDR-TB) poses a growing threat to

global tuberculosis (TB) control efforts, particularly in high-burden countries

like Pakistan. This study aimed to determine the prevalence of MDR-TB among

adult pulmonary TB patients and evaluate its association with previous treatment

history and other potential risk factors. **Methods** A cross-sectional analytical

study was conducted at a tertiary care hospital in Lahore, Pakistan, from

January to June 2024. A total of 250 adult patients with microbiologically

confirmed pulmonary TB were enrolled using a non-probability consecutive

sampling technique. Sociodemographic and clinical data were collected using a

structured questionnaire. Sputum samples were tested using the GeneXpert MTB/RIF

assay, and rifampicin-resistant samples were further analyzed by culture-based

drug susceptibility testing to confirm MDR-TB. Data were analyzed using SPSS

Version 26. Logistic regression was used to identify independent predictors of

MDR-TB. **Results** The overall prevalence of MDR-TB was 18.8% (47/250). MDR-TB was

significantly more prevalent in previously treated patients (40.0%) compared to

newly diagnosed cases (6.9%) (p < 0.001). On multivariate analysis, previous TB

treatment (adjusted odds ratio [AOR] = 7.85; 95% CI: 3.85-16.00), smoking

history (AOR = 2.13; 95% CI: 1.02-4.45), and diabetes mellitus (AOR = 2.75; 95%

CI: 1.33-5.68) were independently associated with MDR-TB. Age and gender were

not significantly associated with MDR-TB. **Conclusion** The study revealed a high

prevalence of MDR-TB, especially among previously treated patients. Previous TB

treatment, smoking, and diabetes mellitus were key risk factors. These findings

emphasize the importance of comprehensive drug resistance screening and the

integration of non-communicable disease management and tobacco control into TB

care strategies.

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**86. Natl Med J India. 2025 May-Jun;38(3):138-143. doi: 10.25259/NMJI\_183\_2022.**

Use of smokeless tobacco by patients with drug-sensitive pulmonary tuberculosis:

The need for strengthening tuberculosis-tobacco collaborative in India.

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**Background** A joint tuberculosis-tobacco collaborative was launched in India in

2017 to reduce the addictive habit of tobacco use among patients with

tuberculosis (TB). We aimed to estimate the prevalence and predictors of

smokeless tobacco use and its awareness among patients with pulmonary TB in

Bhavnagar city, Gujarat, India. **Methods** We did a cross-sectional study among 258

randomly selected drug-sensitive pulmonary TB patients registered at the

District TB Centre in Bhavnagar from April to October 2019. The Global Adult

Tobacco Survey questionnaire was used for data collection. Multivariable

logistic regression was used to determine the predictors of smokeless tobacco

use. **Results** Among the 258 patients, 73% were male, 66% were married, 40%

traveled for their occupation, 62% had a nuclear family, and 46% were

illiterate. More than half (52%) the patients used smokeless tobacco: 44% were

daily users and 8% were occasional users. On multivariable logistic regression,

male gender (adjusted odds ratio [aOR]: 5 [95% confidence interval (CI) 2-11]),

occupation requiring travel (aOR: 4 [95% CI: 2-7]), monthly income of ₹3001-6000

(aOR: 0.2 [95% CI: 0.1-0.6]), ₹9000-12 000 (aOR: 0.3 [95% CI: 0.1-0.9]) and

above ₹12 000 (aOR: 0.3 [95% CI: 0.1-0.8]) were significant predictors of

smokeless tobacco use. Almost all (98%) of the participants were aware of the

harmful effects of smokeless tobacco on health. **Conclusion** More than half the

patients with pulmonary TB used smokeless tobacco. The TB-tobacco collaborative

framework needs to be strengthened with brief counselling interventions for

patients with TB using smokeless tobacco for collateral benefits in the control

of TB in India.

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**ahead of print.**

A Pan-Indian survey on the interpretation of intestinal biopsies in inflammatory

bowel disease, and differentiating intestinal tuberculosis and Crohn's disease

from a pathologist's perspective.

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Pulimood A(4), Tiwari A(1), Kumari N(5), Amarapurkar AD(6), Banerjee M(7),

Paulose RR(8), Katti SV(9), Sekaran A(10), Yadav R(1), Dutta R(1), Singh A(11),

Hussain N(12), Nada R(3), Kedia S(13), Misra V(14), Gupta SD(15), Makharia

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**BACKGROUND:** The incidence of inflammatory bowel disease (IBD) is rising in

India, particularly that of Crohn's disease (CD). Histological examination is

essential for disease evaluation.

**MATERIALS AND METHODS:** This national survey invited registered members of the

Indian Association of Pathologists and Microbiologists who handle intestinal

biopsies for IBD diagnosis to respond to 41 questions divided into two segments.

The questions aimed to assess the sampling protocol, processing, and

histological interpretation for IBD diagnosis, disease classification, and

differentiation between CD and intestinal tuberculosis (iTB). The SurveyMonkey

platform was used. **Results:** Within the given period of 2 weeks, a total of 287

responses were received. There was considerable variability in the sampling

protocols, processing methods, and histological criteria used for IBD diagnosis,

disease classification, and differentiating between IBD and non-IBD-type

colitis. Also, there was nonuniformity of the histological grading system and

terminologies used. Image-based questions were also included to examine the

histological diagnoses and wide heterogeneity was observed. The histological

criteria used to differentiate between CD and iTB were heterogeneous in up to

20-50% of the responses received. Pathologists with over 10 years of experience

were more methodical in their approach, routinely performed histological grading

on biopsies, and correctly identified IBD changes in the provided images

compared to less experienced pathologists (P = 0.23 and P = 0.016,

respectively). **Conclusions:** This pan-India survey offers a snapshot of the

heterogeneous practices currently followed by pathologists and highlights the

need for uniformity in pathology practices to improve outcomes.

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**88. Monaldi Arch Chest Dis. 2025 Aug 6. doi: 10.4081/monaldi.2025.3450. Online ahead of print.**

Health-related quality of life based on the European Questionnaire 5D-5L utility

score in patients with multidrug-resistant tuberculosis.

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Patients' health-related quality of life (HRQOL) is negatively impacted by

multidrug-resistant tuberculosis (MDR-TB). The HRQOL of MDR-TB patients was

assessed in this study using the European Questionnaire 5D-5L (EQ-5D-5L) utility

score and HRQOL-related parameters. We conducted a case-control study at the

Haji Hospital from June to December 2024. MDR-TB patients and drug-sensitive

(DS-TB) patients were divided into case and control groups, respectively. The

HRQOL utility score and depression levels were measured using the Indonesian

EQ-5D-5L and Patient Health Questionnaire-9 (PHQ-9), respectively. This study

included 84 TB patients, 36 and 48 of whom had MDR-TB and DS-TB, respectively.

Patients with DR-TB had a significantly higher PHQ-9 score (7.55±5.97 vs.

4.69±4.21; p=0.047) than patients with DS-TB. When compared to the control

group, the case's EQ-5D-5L and EQ Visual Analog Scale utility scores were

considerably lower, at 0.86±0.11 and 69.30±16.65 (p=0.005) against 0.92±0.07 and 80.70±15.53 (p=0.002), respectively. The EQ-5D-5L utility score was considerably lower in DR-TB patients with depression and a history of TB treatment. In conclusion, the HRQOL of MDR-TB patients was low. Among MDR-TB patients,

depression and TB treatment history were associated with quality of life. This

study provides insight into the need for healthcare practitioners to evaluate

patients' HRQOL, particularly for those with risk factors.

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**ahead of print.**

Evaluating hematological and inflammatory biomarkers in tuberculosis management.

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Tuberculosis (TB) remains a significant public health concern, particularly in

resource-limited settings. Accurate and timely diagnosis and effective

monitoring of disease progression and treatment response remain a challenge.

This research aims to evaluate the function of hematological and inflammatory

biomarkers, including hemoglobin (HB), serum amyloid A (SAA), C-reactive protein

(CRP), erythrocyte sedimentation rate (ESR), and white blood cell (WBC) count,

in TB patients. Overall, 80 TB patients were analyzed to evaluate the

association of these biomarkers with disease status and demographic

characteristics. The findings revealed significant alterations in inflammatory

markers, with elevated WBC, SAA, CRP, and ESR levels, indicating an ongoing

inflammatory response. Additionally, decreased HB levels were observed,

suggesting the presence of anemia, which is commonly associated with chronic

infections such as TB. Pearson's correlation analysis revealed a significant

negative connection between HB and inflammatory markers, reinforcing the link

between anemia and TB-associated inflammation. However, no noteworthy

associations were found between biomarker levels and demographic parameters,

including age and gender, residence, or treatment duration. These findings

emphasize the potential utility of these biomarkers in TB diagnosis, prognosis,

and treatment monitoring, especially in regions where advanced diagnostic tools

are not readily available. The study suggests that routine hematological and

inflammatory markers can serve as cost-effective adjunctive tools in TB

administration. Additional investigation is needed to confirm these results and

determine their role in predicting treatment outcomes and disease severity.

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**90. Lancet Reg Health Eur. 2025 Aug 6;57:101416. doi: 10.1016/j.lanepe.2025.101416. eCollection 2025 Oct.**

Diagnostic accuracy and predictive value of the QuantiFERON-TB gold plus assay

for tuberculosis in immunocompromised individuals: a prospective TBnet study.

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K(6), Bakken Kran AM(7), Bothamley G(8)(9)(10), Nordholm Breschel AC(11)(12),

Brown J(13), Chesov D(14)(15)(16), Ciobanu N(17), Cirillo DM(18), Crudu V(17),

de Souza Galvao M(19), Dilektasli AG(20), Dominguez J(21)(22)(23), Duarte

R(24)(25), Dyrhol-Riise AM(26)(27), Goletti D(28), Hoffmann H(29)(30), Ibraim

E(31), Kalsdorf B(15)(16)(32), Krawczyk M(33)(34), Kunst H(35), Lange B(36)(37),

Lipman M(13), Matteelli A(38), Milkiewicz P(39)(40), Neyer D(41), Nitschke

M(42), Oral HB(43), Palacios-Gutiérrez JJ(44), Petruccioli E(25),

Raszeja-Wyszomirska J(39), Ravn P(45), Rupp J(46)(47), Spohn HE(1), Toader

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**BACKGROUND:** In low tuberculosis (TB)-endemic countries, tuberculosis preventive

therapy (TPT) is recommended for immunocompromised individuals with a positive

immunodiagnostic test. This study aimed to assess the performance of the

QuantiFERON-TB Gold Plus (QFT+) assay and predictive power for future

tuberculosis in immunocompromised individuals.

**METHODS:** In this prospective observational study, immunocompromised adults ≥18

years of age including people living with HIV (PLHIV), chronic renal failure,

rheumatoid arthritis, solid-organ transplantation or stem-cell transplantation,

and immunocompetent adults with and without TB-disease were recruited at 21

sites in 11 European countries and tested with the QFT+ assay. Individuals

without TB-disease were followed up for the development of tuberculosis. TB

incidence rates (IR) were calculated, stratified by QFT+ results and acceptance

of TPT. This study is registered with Clinicaltrials.gov, NCT02639936.

**FINDINGS:** A total of 2663 individuals (1115 female, 1548 male) were enrolled

from 03/11/2015 to 29/03/2019. Persons without tuberculosis were followed up for

at least two years. Among 1758 immunocompromised individuals without active

tuberculosis, 13.6% had positive QFT+ results. Sensitivity and specificity for

TB-disease were 70.0% (52.1-83.3%) and 91.4% (89.6-92.9%), respectively, in

immunocompromised, and 81.4% (76.6-85.3%) and 96.0% (92.5-97.9%), respectively,

in immunocompetent individuals. During 2457 cumulative years of follow-up among

932 individuals with chronic renal failure, rheumatoid arthritis, solid-organ

transplantation or stem-cell transplantation, including 83 persons with a

positive QFT+ test without TPT, no-one developed active tuberculosis. In

contrast, among 642 PLHIV without TPT, one with an indeterminate QFT+ and 3/30

individuals with a positive QFT+ developed active tuberculosis; all had

detectable HIV-replication and low CD4 T-cell counts (incidence 4.1 (95% CI

(1.3-12.4) per 100 person-years). No individuals receiving TPT developed active

tuberculosis during 269 years of follow-up.

**INTERPRETATION:** In immunocompromised individuals in low TB-endemic countries,

the 2-year-risk for active tuberculosis was highest among PLHIV with detectable

HIV-replication and low CD4-counts. In this study, the QFT+ assay did not

strongly predict progression to active tuberculosis, which emphasises the need

to incorporate additional risk factors.

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**eCollection 2025.**

Petri Net modeling of thiamine diphosphate biosynthesis in Mycobacterium

tuberculosis H37Rv.

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Thiamine diphosphate (TPP) is essential cofactor in Mycobacterium tuberculosis

H37Rv metabolism, making its biosynthesis pathway a key target for therapy.

Therefore, it is of interest to describe a Petri net-based model of the TPP

biosynthesis super-pathway, developed using curated MetaCyc data and simulated

with Snoopy software. The model integrates three biosynthetic branches and maps

key enzymes (ThiC, ThiD, ThiE, ThiF, ThiG, ThiS) along with their gene

identifiers. The simulation of token flow revealed the pathway's dynamics,

highlighting critical regulatory nodes. This computational approach provides

insights into TPP biosynthesis and serves as a basis for drug design targeting

tuberculosis.

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**eCollection 2025.**

BCG vaccination: historical role, modern applications, and future perspectives

in tuberculosis and beyond.

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Tuberculosis (TB) remains a fatal disease primarily transmitted through airborne

droplets, with children who are the most susceptible, particularly in the areas

with poor tuberculosis control. The BCG vaccine, developed by Albert Calmette

and Camille Guérin, has a history spanning a century. This vaccine has been

implemented in numerous countries, significantly reducing child mortality in

regions heavily affected by TB. In this review, we aim to revisit the vaccine's

development and rollout, while also highlighting its current attributes and the

successful application in the Russian Federation, where 90% of newborns receive

the anti-tuberculosis vaccination. Due to that practice, only a few isolated

cases of young children with generalized tuberculosis (about five to seven

annually) are observed in Russia. Research on the BCG vaccine is ongoing,

revealing significant genetic alterations in BCG strains that have evolved from

the original variant. These genetic differences may contribute to variations in

vaccine efficacy, making screening important to predict effectiveness. The BCG

vaccine can initiate a localized mucosal immune response, offering, besides the

anti-TB effect, some protection against infections involving mucous membranes,

including salmonellosis, HIV, and acute viral respiratory infections. It is

essential to investigate the role of BCG in various applications; however, this

exploration should not detract from its main protective benefits against

tuberculosis (TB). Future studies may provide evidence of the vaccine's safety

and efficacy to support its use beyond TB prevention. While BCG vaccination does

not lower the risk of infection with Mycobacterium tuberculosis, it does prevent

the progression to the most severe clinical manifestations (such as miliary TB

and tuberculous meningitis) caused by hematogenous spread of M.tuberculosis. The

challenge of protecting HIV-infected children from TB remains urgent, especially

in regions burdened with drug-resistant TB, highlighting the need for robust

protective measures.

© 2025 Starshinova, Kudryavtsev, Rubinstein, Dovgalyuk, Kulpina, Churilov and

Kudlay.

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**93. IJID Reg. 2025 Jul 18;16:100705. doi: 10.1016/j.ijregi.2025.100705. eCollection 2025 Sep.**

Tuberculosis as a significant cause of uveitis-related blindness: current

referral trends at a tertiary uveitis center in Indonesia.

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**OBJECTIVES:** Uveitis may lead to blindness if improperly treated, yet the data on

blindness due to uveitis, particularly, in low-resource countries, remain

limited. In high-tuberculosis (TB) burden countries such as Indonesia, active

systemic TB is among the leading causes of infectious uveitis. The combined

impact of blindness, uveitis, and TB presents a substantial health and

socioeconomic burden. This study aimed to assess the current situation of

uveitis referrals, particularly, on the proportion of uveitis with active

systemic TB and the proportion of blindness in TB-related uveitis.

**METHODS:** We retrospectively analyzed 1-year data from 164 newly referred

patients with uveitis at a single tertiary eye Hospital in Indonesia.

**RESULTS:** Active systemic TB was diagnosed in approximately one in 10 patients

with uveitis (16 of 164, 9.8%). At initial presentation, blindness in the

worse-seeing eye was noted in 56.1% (92 of 164) of patients. The proportion of

blindness was slightly higher in patients with uveitis with active systemic TB

and those with no identifiable cause but positive Quantiferon-TB Gold Plus,

compared with other uveitis cases, although not statistically significant

(56.3%, 61.1%, and 51.3%, respectively; P = 0.489). Most patients with uveitis

with active systemic TB (14 of 16, 87.5%) sought medical attention due to

ophthalmological symptoms.

**CONCLUSIONS:** Active TB case finding in patients with uveitis, especially in

high-TB burden settings, is obligatory to prevent severe morbidity.

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The Ability of Neonatal Mice to Develop Immunity to Mycobacterium tuberculosis

Shows Sex Differences, with Females Displaying Evidence of an Enhanced Immune

Response.

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Using four core genotypes (FCG) mice, we have previously shown a larger number

of CD4+ and CD8+ T cells in the spleens of female mice, a sex difference that

develops by postnatal day 7 and is retained through adulthood. This difference

in splenic T cell number is a consequence of reduced thymic egress and reduced

splenic seeding in male mice, caused in part by the male-specific perinatal

surge of testosterone, and in part by Sry, which is overexpressed in this model.

Here, we used the background strain for FCG mice (C57BL/6J) to ask whether sex

influenced actual immunity in the postnatal period. Pups were immunized on

postpartum days 1 or 3 with Mycobacterium tuberculosis (Mtb), challenged on day

7 with Mtb purified protein derivative (PPD), and sacrificed on day 8.

Subsequent ex vivo challenges of splenocytes showed PPD-stimulated CD8+

responses (increased CD8+, increased CD8+CD44hi, decreased CD8+CD44hiCD127-/lo)

but no differences between males and females. However, when CD8+ T cells were

analyzed for IFN-γ and IL-2 production, although there was no sex difference in

mono-functional IFN-γ+ (100%) or IL-2+ (67%), only females (0% of males and 42%

of females) produced bi-functional (IFN-γ+IL-2+) cells. Ex vivo PPD-stimulated

responses of other relevant cells from the spleen showed no sex differences in

dendritic cells (CD11c+CD86+IL-6+) but females had more (3-fold) IL-6-producing

macrophages (F4/80+CD86+IL-6+) and reduced T regulatory cells (CD4+CD25+Foxp3+).

We conclude that some sex differences in immunity are evident at one week of age

in Mtb immunized mouse pups, with females exhibiting qualitatively superior

Mtb-specific immune responses.

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**eCollection 2025 Aug.**

Standardized Infliximab Regimen to Treat Severe Central Nervous System

Tuberculosis: A Case Series of 18 Patients.

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**BACKGROUND:** Morbidity associated with central nervous system tuberculosis (CNS

TB) remains high due to persistent inflammation despite standard-of-care (SOC)

treatment, including antituberculosis therapy and corticosteroids. Tumor

necrosis factor alpha (TNF-α) is a key cytokine driving this inflammatory

response, and a limited number of case reports suggest that TNF-α inhibitors may

improve outcomes. We report the 1-year outcome of a cohort of consecutive

patients treated with infliximab for severe CNS TB.

**METHODS:** Following the guidance provided by the French Tuberculosis Consilium, a

standardized regimen of intravenous infliximab at 5 mg/kg per dose was used to

treat CNS TB unresponsive to SOC. We retrospectively included consecutive

patients who received at least 1 infliximab injection for CNS TB from 2017 to

September 2021.

**RESULTS:** Eighteen patients with CNS TB, 94% with tuberculous meningitis, were

included. Most had severe disease: 82% were classified as British Medical

Research Council grade II or III, and 44% required intensive care unit

admission. All demonstrated clinical and radiological worsening despite SOC; in

89% due to paradoxical reaction. At infliximab initiation, symptoms remained

disabling, with a median modified Rankin scale (mRS) score of 3.5 (interquartile

range, 3-4). One month after the first infusion, 38% showed improved mRS scores,

increasing to 78% at 1 year. One-year survival was 94%; 1 death occurred

12 months after a single infliximab dose and was unrelated to TB treatment.

**CONCLUSIONS:** Infliximab may represent a promising adjunctive treatment for CNS

TB unresponsive to SOC, including paradoxical reaction. Prospective studies are

needed to confirm these findings.

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**10.1016/j.lanwpc.2025.101666. eCollection 2025 Aug.**

Evaluating the cost-effectiveness of levofloxacin therapy for household contacts

of multidrug-resistant tuberculosis in Vietnam.

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**BACKGROUND:** Multidrug-resistant tuberculosis (TB) threatens global TB control,

on account of poor treatment outcomes, high treatment toxicity and costs. Recent

trials demonstrated the effectiveness of six-months of levofloxacin (6Lfx) to

prevent TB disease among high-risk contacts. However, the cost-effectiveness of

this strategy has not previously been evaluated.

**METHODS:** The VQUIN study was a double-blinded randomised control trial in

Vietnam assessing the effectiveness of 6Lfx in household contacts of multidrug

resistant/rifampicin resistant TB (MDR/RR-TB) to prevent progression to TB

disease. Incorporating in-trial costs and effectiveness outcomes from the VQUIN

trial, we developed a closed cohort, decision-analytic Markov model to assess

the cost effectiveness of 6Lfx versus placebo in a cohort exposed to MDR/RR-TB

in Vietnam.

**FINDINGS:** Over a 20-year time horizon, the provision of 6Lfx preventative

therapy to household contacts of people infected with MDR/RR-TB was found to

gain a total of 40.1 QALYs per 1000 population and save US$23,145 per 1000

population, indicating the strategy was cost saving. MDR/RR-TB cases averted

over 20 years was 19.9 per 1000 population treated with 6Lfx, and the number of

deaths averted was 3.2 per 1000 people treated.

**INTERPRETATION:** 6Lfx therapy is a cost-saving strategy to reduce the incidence

of active disease in household contacts of MDR/RR-TB in a resource-limited

setting.

**FUNDING:** National Health and Medical Research Council Project Grant (#1081443).

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**eCollection 2025.**

Previous COVID-19 infection significantly reduces elastase levels in newly

diagnosed pulmonary tuberculosis patients.

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**INTRODUCTION:** Tuberculosis (TB) is considered a risk factor for severe COVID-19

disease and the quality of life of patients co-infected with COVID-19 and TB is

significantly impacted due to the nature of these diseases. It is still unknown

how our immune system will respond to both these pathogens in sequel. As it has

been discovered that Neutrophil extracellular traps (NETs) result in caseating

granulomas in TB and pathology in COVID-19, we conducted this work to determine

the amounts of NET molecules in the bloodstream and to comprehend their function

during TB and subsequent SARS-CoV-2 infection.

**METHODS:** We recruited 43 healthy volunteers, 40 newly diagnosed pulmonary

tuberculosis patients who were negative for SARS-CoV-2 IgG antibody and 18 newly

diagnosed pulmonary tuberculosis patients who were positive for SARS-CoV-2 IgG.

**RESULTS:** Although Citrullinated Histone H3 and myeloperoxidase, did not show any

difference in their levels, the NET marker elastase had significantly reduced

circulatory levels in the tuberculosis group with SARS-CoV IgG positivity

compared to tuberculosis group without SARS-CoV-2 IgG positivity.

**DISCUSSION:** The substantial decrease in elastase levels observed in the diabetic

cohort of TB patients with SARS-CoV-2 IgG positivity is intriguing and needs

large cohort studies in the future to understand the influence of diabetes in TB

patients exposed to SARS-CoV-2.

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Ayyamperumal, P. M. and Hanna.

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**98. Front Immunol. 2025 Jul 31;16:1646526. doi: 10.3389/fimmu.2025.1646526.**

**eCollection 2025.**

MDSC depletion during immunization with heat-killed Mycobacterium tuberculosis

increases protection against BCG infection.

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Tuberculosis (TB) remains one of the deadliest infectious diseases globally.

Although the approved human Bacille-Calmette-Guérin (BCG) vaccines provide

limited protection, a vaccine based on Mycobacterium tuberculosis (Mtb) has yet

to be approved. Our previous findings demonstrated that s.c. immunization with

heat-killed Mtb significantly increased the number of monocytic myeloid-derived

suppressor cells (M-MDSC) in mice. Thus, we hypothesized that the defense

against a subsequent BCG infection would be compromised in Mtb-immunized mice.

Surprisingly, mice vaccinated with Mtb were protected against BCG infection and

exhibited elevated frequencies and activation of dendritic cells (DC) and

mycobacteria-specific T cells, despite high frequencies and suppressor activity

of M-MDSC. Genetic ablation of CCR2+ monocytic cells or pharmacological

intervention with all-trans retinoic acid (ATRA) reduced the frequency of

Mtb-induced M-MDSC, enhanced the frequencies and activation of DC and CD4+ T

cells, and resulted in decreased bacterial loads in the lungs and spleen. These

findings provide new insights into TB vaccination using heat-killed Mtb despite

the concurrent unwanted effects of vaccine-induced M-MDSC. M-MDSC depletion via

ATRA further shifts the balance toward immunity and should be considered an

adjunct host-directed therapy alongside TB vaccines in humans.

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Schaible, Beilhack, Nieuwenhuizen and Lutz.

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**99. IJTLD Open. 2025 Aug 13;2(8):443-449. doi: 10.5588/ijtldopen.25.0293.**

**eCollection 2025 Aug.**

Caregiver perspectives on TB-related stigma experienced by young children.

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**BACKGROUND:** TB-related stigma often stems from a fear of TB infection, power

dynamics between social groups, and an association of TB with socially

undesirable traits.

**METHODS:** This study was conducted in South Africa within a prospective

observational TB diagnostic cohort study, 'Umoya.' StopTB stigma questionnaires

and activity-based interviews were administered to caregivers of children aged

0-9 years with presumptive pulmonary TB (PTB) 16 to 24 weeks after enrollment.

**RESULTS:** In total, 64 caregivers of 70 children (median age: 2y) with PTB

completed the questionnaire. Most children (56%) had a known TB contact in the

household. The questionnaire revealed that anticipated stigma was a common

concern, with worries about people gossiping or speaking badly about their

children (16.7%) or their child's feelings being hurt because of their TB

diagnosis (16.7%). Internalized stigma of the child, as perceived by their

caregiver, was the least affirmed stigma domain. Overall, caregiver perceptions

of internalized stigma did not delay treatment. Twelve of these caregivers were

also interviewed, which demonstrated themes of anticipated and internalized

stigma, and comparisons to HIV stigma.

**CONCLUSION:** Deepening our understanding of stigma is critical to improving

outcomes and experiences of young children and their families affected by TB.

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**100. IJTLD Open. 2025 Aug 13;2(8):471-477. doi: 10.5588/ijtldopen.25.0080.**

**eCollection 2025 Aug.**

Lung function trajectories in children with pulmonary TB and non-TB lower

respiratory tract infections.

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**BACKGROUND:** This longitudinal study compared lung function in children with

pulmonary TB (PTB), children with non-TB lower respiratory tract infections

(LRTIs) and healthy controls.

**METHODS:** Children aged 4-13 years presenting with presumed PTB and their healthy

siblings who could perform spirometry were included. Children were classified as

having TB, non-TB LRTIs after careful evaluation and during follow-up.

Spirometry measurements were completed at baseline and at subsequent study

visits during 52 weeks of follow-up. Measurements included forced expiratory

volume in 1 second (FEV1), forced vital capacity (FVC), and FEV1/FVC using 2022

race-neutral Global Lung Initiative reference ranges.

**RESULTS:** Of 143 children, 46 had TB, 64 had non-TB LRTIs, and 33 were healthy

controls. The median age was 6 years (IQR 5-9) and 10 (7%) were living with HIV.

Restrictive spirometry patterns were common in both symptomatic groups at the

end of follow-up, with a significantly lower FVC in children with TB compared to

controls. In multivariable analysis adjusted for time and study group, FEV1 and

FVC decreased for both the TB and non-TB LRTI groups, compared to healthy

controls.

**CONCLUSION:** Lung-function trajectories were similar between children with TB and

non-TB LRTI, with low FVC one-year after diagnosis.

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**101. IJTLD Open. 2025 Aug 13;2(8):486-492. doi: 10.5588/ijtldopen.25.0042.**

**eCollection 2025 Aug.**

Tuberculous endocarditis: a case-based proposal for new diagnostic criteria.

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**BACKGROUND:** Tuberculous endocarditis (TBE) is a rare but often fatal

manifestation of Mycobacterium tuberculosis. Although diagnosis is now possible

with advanced techniques, the lack of standardized diagnostic criteria

complicates timely recognition and management.

**METHODS:** A 79-year-old man with a history of the Bentall procedure for

annuloaortic ectasia, presented with fever and chest pain. Imaging revealed

infective endocarditis with an aortic root abscess and vegetations.

Histopathology identified granulation tissue with multinucleated giant cells,

and M. tuberculosis was confirmed via PCR and culture. A literature review of

TBE cases was performed to develop systematic diagnostic criteria.

**RESULTS:** The diagnosis of TBE was established through histopathology and

molecular methods. Based on this case and prior reports, diagnostic criteria for

TBE were developed and categorized as 'Definitive', 'Probable', and 'Possible'.

These criteria incorporate clinical, microbiological, histological, and imaging

findings to aid in diagnosis. The patient's treatment included surgical

intervention combined with antimicrobial therapy, aligning with strategies

designed to improve outcomes.

**CONCLUSION:** This case underscores the importance of considering TBE in infective

endocarditis cases, especially those with atypical features. The proposed

diagnostic criteria aim to improve the recognition and guide the management of

TBE, emphasizing a multidisciplinary approach for better patient outcomes.

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PMID: 40821687

**102. IJTLD Open. 2025 Aug 13;2(8):464-470. doi: 10.5588/ijtldopen.25.0199.**

**eCollection 2025 Aug.**

Hepatic safety of pretomanid- and pyrazinamide-containing regimens in TB

Alliance clinical trials.

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**BACKGROUND:** In STAND and SimpliciTB, clinical trials for drug-susceptible TB,

regimens containing pretomanid, pyrazinamide, and other agents (PaZX) had more

hepatotoxicity than the standard-of-care regimen of isoniazid, rifampicin,

pyrazinamide, and ethambutol (HRZE). In Nix-TB and ZeNix, clinical trials for

drug-resistant TB, the regimen of bedaquiline, pretomanid, and linezolid (BPaL)

demonstrated a favorable benefit-risk profile. We compare the hepatic safety of

HRZE, PaZX, and BPaL in their respective populations.

**METHODS: I**n this post-hoc analysis of data from six clinical trials, rates of

treatment-emergent elevations of alanine transaminase (ALT) during the first 8

weeks of treatment were estimated by Kaplan-Meier (KM) analysis and compared via

log-rank testing and Cox modeling.

**RESULTS:** The KM-estimated probabilities of treatment-emergent ALT elevations

greater than 3x the upper limit of normal (>3xULN) were 5.36%, 12.7%, and 11.4%

for HRZE, PaZX, and BPaL, respectively. The only significant (p < 0.05)

difference was HRZE versus PaZX. The probabilities of ALT elevations >8xULN were

2.68%, 4.58%, and 1.05%, with the only significant difference being PaZX versus

BPaL.

**CONCLUSIONS:** BPaL and HRZE have similar hepatic safety profiles in their

respective populations. Pretomanid and pyrazinamide should be co-administered

only when the benefit outweighs the risk.

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**103. IJTLD Open. 2025 Aug 13;2(8):497-499. doi: 10.5588/ijtldopen.25.0189.**

**eCollection 2025 Aug.**

Analysis of gene expression in patients prior to TB treatment to identify those

associated with pyrazinamide-hepatotoxicity.

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**104. IJTLD Open. 2025 Aug 13;2(8):450-458. doi: 10.5588/ijtldopen.25.0151.**

**eCollection 2025 Aug.**

Using linezolid as a substitute for the injectable in case of ototoxicity is

safer and as effective as all-oral treatment for rifampicin-resistant TB.

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Gagara-Issoufou A(5)(6), Moussa RH(7), Kabirou AA(8), Hamidou I(9)(10), Moussa

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**BACKGROUND:** WHO recommends all-oral bedaquiline (BDQ) and linezolid

(LZD)-containing regimens for rifampicin-resistant TB (RR-TB). In Niger, high

cure rates were achieved using an adaptive short treatment regimen (aSTR) with a

second-line injectable drug (SLID) and LZD, where LZD replaced the SLID in case

of any ototoxicity detected on monthly audiometry. In 2020, WHO recommended a

short oral BDQ/LZD regimen (oSTR). However, the success reported for oSTR was

lower than for aSTR in Niger. The 'SHOrt ORal Treatment' trial therefore

compared the safety and efficacy between aSTR and oSTR in Niger.

**METHODS:** In this pragmatic clinical trial, patients with

fluoroquinolone-susceptible RR-TB were assigned by alternate months to aSTR or

oSTR. Regression models estimated the association between regimen and safety

(grade 3-4 adverse events [AEs]) and efficacy (excluding loss to follow-up).

**RESULTS:** Between 2021-2022, 158 RR-TB patients were included, 80 on oSTR and 78

on aSTR. Overall, 34 patients experienced 43 grade 3-4 AEs (anaemia: 15,

neurotoxicity: 11, vomiting: 8, hepatitis: 7, arthralgia: 1, QTc prolongation:

1). Grade 3-4 AEs occurred in 26/80 (32.5 %) on oSTR versus 8/78 (10.3%) on

aSTR, with anaemia, neurotoxicity and arthralgia being significantly higher in

the oSTR group. Ototoxicity and nephrotoxicity appeared more frequently during

the aSTR, but none evolved to grade 3. Patients treated with oSTR had a 3-fold

increase in grade 3-4 AE (aHR 3.04;95% CI:1.36-6.80). End-of-treatment success

was similar for oSTR compared to aSTR.

**CONCLUSION:** aSTR was safer than oSTR and both approaches had a similar treatment

efficacy.

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**eCollection 2025 Aug.**

Acceptability of a clofazimine tablet in children with rifampicin-resistant TB

in three high-burden countries.

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Marthinus A(1), Cheong AMA(3), Ocampo JDD(4), Dhumal G(5), Bagchi S(5), Wademan

DT(1), Kinikar A(6), Paradkar M(5), Frias MVG 4th(3), Casalme DJO(3), Hesseling

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**BACKGROUND:** Rifampicin-resistant TB (RR-TB) in children is frequently treated

with clofazimine (CFZ), widely available as a 100mg gel capsule. This

formulation is challenging to administer and is poorly acceptable to children

and caregivers. Poor acceptability may negatively impact adherence and treatment

outcomes. We describe the acceptability of a novel 50mg CFZ tablet formulation

among children in South Africa, India, and the Philippines.

**METHODS:** Mixed methods assessments were completed in a moxifloxacin and CFZ

safety and pharmacokinetics trial in children with RR-TB. Quantitative data were

collected from 36 participants at 4 timepoints. A sub-sample of 26

child/caregiver dyads participated in ∼4 qualitative interviews. Descriptive

statistics and thematic analysis were employed.

**FINDINGS**: The median age of n=36 participants (South Africa n=20; India n=6; the

Philippines n=10) was 4.9 years. The majority (29/36) received a CFZ gel capsule

prior to switching to the tablet formulation. The 50mg tablet had better

acceptability scores for taste (p=0.035), smell (p=0.035), and ease of

swallowing (p=0.02) compared to gel capsules. Participants described the tablet

formulation as easier to administer/take without a lingering smell or taste.

Limited concerns were noted on staining.

**CONCLUSION:** The novel 50mg CFZ tablet has better acceptability and should be

prioritised for children wherever possible.

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**eCollection 2025 Aug.**

Risk of relapse: TB treatment outcome associates with differentially culturable

M. tuberculosis counts in sputum samples.

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**107. IJTLD Open. 2025 Aug 13;2(8):459-463. doi: 10.5588/ijtldopen.25.0201.**

**eCollection 2025 Aug.**

Community-based pulmonary rehabilitation for post-TB lung disease - a

programmatic intervention.

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**BACKGROUND:** Many survivors of pulmonary TB struggle with poor lung health and

poor quality of life.

**METHODS:** We designed and implemented a culturally appropriate, low-cost,

community-based pulmonary rehabilitation (PR) program, and measured its effect

on health and wellbeing. We identified former TB patients with pulmonary

complaints in 9 districts in Malawi. Those who met the inclusion criteria were

divided into groups and given a tailored training program with an educational

component and guided through sessions twice per week for 12 weeks. Data on 13

health variables was collected before and after the PR.

**RESULTS:** 467 former TB patients were enrolled. 285 (61%) were female. The mean

age was 45 years (16-81). After the 12-week PR, chest pain reduced from 66.4%

(310) to 8.8% (41) and cough from 47.5% (222) to 9.6% (45). Moderate and severe

dyspnea disappeared, and no one scored below 80 on the Karnofsky Index scale

after the PR ended. Endurance and functional capacity measured by 6-minute walk

test (6MWT) increased by 15.5%.

**CONCLUSION:** The 12-week course of PR had a positive effect on people's health

and well-being, and it is now integrated into the National TB strategy in

Malawi. The benefits of such programs are highly significant for the individual

and the broader community. We strongly encourage other countries to implement

similar PR programs.

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**108. Radiol Case Rep. 2025 Aug 7;20(11):5411-5415. doi: 10.1016/j.radcr.2025.06.073. eCollection 2025 Nov.**

Ischemic stroke due to tuberculosis in an uncommon arterial territory: A case

report and literature review.

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Tuberculous meningitis (TBM) is a severe form of tuberculosis that can lead to

complications such as stroke, occurring in 13%-57% of cases. This report

describes a 21-year-old man with no prior medical history who presented with

headache, fever, and vomiting, followed by visual hallucinations, impaired

alertness, and speech disturbances. Initial CT imaging revealed bilateral

hypodense frontal lesions with poor contrast enhancement, and cerebrospinal

fluid analysis indicated lymphocytic meningitis. MRI demonstrated bilateral

parasagittal frontal signal abnormalities extending to the knee of the corpus

callosum with leptomeningeal enhancement, while angiographic sequences showed

occlusion of the left anterior cerebral artery and thinning of the distal right

anterior cerebral artery, leading to a diagnosis of ischemic stroke secondary to

TBM. Stroke in TBM patients may be asymptomatic or present with focal

neurological deficits, and MRI with angiographic sequences is essential for

identifying ischemic changes and vascular involvement suggestive of vasculitis.

Although no targeted therapy exists for stroke in TBM, timely diagnosis and

initiation of standard anti-tuberculosis treatment with supportive care are

crucial. This case highlights the need for early neuroimaging in TBM to detect

stroke and mitigate long-term neurological complications.

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**109. Cureus. 2025 Jul 15;17(7):e88042. doi: 10.7759/cureus.88042. eCollection 2025 Jul.**

Indeterminate QuantiFERON Results in Pediatric Kawasaki Disease: Inflammatory

Predictors and Diagnostic Implications.

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Introduction Interferon-gamma release assays (IGRAs), such as the

QuantiFERON®-TB Gold Plus (QFT), are widely used for tuberculosis (TB) screening

in children. However, indeterminate QFT results remain a diagnostic challenge,

particularly in patients with Kawasaki disease (KD), in whom systemic

inflammation may transiently impair T-cell function. This study aimed to

identify clinical and laboratory factors associated with indeterminate QFT

results in pediatric patients, with a focus on KD. Methods We retrospectively

analyzed 147 pediatric QFT tests performed at a tertiary medical center in Japan

between September 2019 and May 2025. Clinical characteristics and laboratory

parameters were compared between patients with indeterminate and negative QFT

results. Subgroup analyses were conducted for children with KD. Results Among

the 147 pediatric cases, 30 (20.4%) yielded indeterminate QFT results, 24 (80%)

of which involved KD. In the KD subgroup, the indeterminate group had

significantly higher C-reactive protein levels (median 5.65 vs. 3.21 mg/dL;

p=0.016) and lower serum albumin levels (2.75 vs. 2.90 g/dL; p=0.013) compared

to the negative group. No significant differences were observed in other

laboratory parameters. Conclusion This study suggests that QFT may yield

indeterminate results in pediatric KD during the acute inflammatory phase,

potentially reflecting transient inflammation-induced T-cell suppression.

Clinicians should consider the timing of IGRA testing, alternative assays such

as T-SPOT.TB, and adjunctive diagnostic tools when screening for TB in this

population.

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**110. Cureus. 2025 Jul 17;17(7):e88132. doi: 10.7759/cureus.88132. eCollection 2025 Jul.**

Synchronous Intestinal Tuberculosis and Ulcerative Colitis: A Diagnostic

Challenge.

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Intestinal tuberculosis (ITB) is a rare manifestation of extrapulmonary

tuberculosis that often mimics inflammatory bowel diseases, particularly

ulcerative colitis (UC), complicating the diagnostic process. We report the case

of a 54-year-old woman with poorly controlled type 2 diabetes who presented with

a five-month history of abdominal pain, diarrhea, bloating, fatigue, and

low-grade fever. Initial imaging suggested features consistent with inflammatory

bowel disease (IBD), and colonoscopy revealed mucosal ulcerations.

Histopathological examination confirmed a diagnosis of ITB, and the patient was

started on standard anti-tuberculous therapy. However, clinical improvement

remained limited. A follow-up colonoscopy six months later demonstrated

persistent inflammatory changes, raising suspicion of a coexisting UC.

Initiation of mesalamine therapy resulted in significant symptom resolution.

This case underscores the diagnostic challenge posed by overlapping

gastrointestinal pathologies such as ITB and UC. Timely recognition of

coexisting conditions is critical for guiding appropriate treatment and

optimizing patient outcomes.

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**111. Cureus. 2025 Jul 15;17(7):e88009. doi: 10.7759/cureus.88009. eCollection 2025 Jul.**

Neutrophil-Predominant Peritoneal Tuberculosis With Salpingitis Mimicking

Ovarian Cancer: A Case Report.

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Tuberculosis (TB) is caused by Mycobacterium tuberculosis. It is a multisystem

infection, but the most common manifestation is pulmonary. TB is the leading

cause of death among infectious diseases. Abdominal TB is a form of

extrapulmonary TB (EPTB) that often presents nonspecifically and can result from

genitourinary or hematogenous spread. We present the case of a 20-year-old

Bangladeshi woman who presented with a two-month history of fever and night

sweats accompanied by vomiting, tachycardia, and tachypnea. Laboratory

investigations revealed elevated inflammatory markers, lactate dehydrogenase,

and cancer antigen 125. QuantiFERON-TB (QIAGEN N.V., Venlo, Netherlands) was

positive. An abdominal ultrasound showed free fluid throughout the abdomen. A CT

scan of the abdomen revealed thickening and enhancement of the peritoneum,

omental caking, and bilateral bulky ovaries measuring up to 8.5 x 5.4 cm on the

right side, raising suspicion of malignancy. However, an MRI showed that the

pelvic masses were, in fact, bilateral hydrosalpinx. Peritoneal analysis

indicated a serum ascites albumin gradient (SAAG) of less than 1.1, suggesting

peritonitis with neutrophil predominance. Acid-fast bacillus (AFB) culture of

the peritoneal fluid grew M. tuberculosis. Abdominal TB and ovarian cancers can

overlap in clinical presentation, especially in young female patients. Imaging

may be misleading, as seen in this case. Imaging modalities may assist in the

diagnosis; further exploration, particularly diagnostic laparoscopy with biopsy,

is required for suspected ovarian cancer and EPTB.

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Primary Testicular Tuberculosis Presenting as a Scrotal Emergency: A Report of a

Rare Case.

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Tuberculosis (TB) continues to pose a major health challenge worldwide,

particularly in regions where the disease is endemic, such as India. Although

the lungs are the most commonly affected, TB can also involve other organs,

including the genitourinary system. Testicular involvement is extremely uncommon

and can clinically resemble more frequent scrotal conditions like pyocele or

epididymo-orchitis. We present the case of a 50-year-old male who developed

unilateral scrotal pain and swelling, initially suggestive of an acute

infection. Emergency scrotal exploration uncovered an abscess with necrotic

testicular tissue. Histopathological examination confirmed testicular

tuberculosis. The patient responded well to anti-tuberculous treatment,

emphasizing the need to include TB in the differential diagnosis of atypical

scrotal swellings, especially in endemic areas.

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**113. Cureus. 2025 Jul 17;17(7):e88178. doi: 10.7759/cureus.88178. eCollection 2025 Jul.**

Miliary Lung Lesions Mimicking Tuberculosis: A Case of Metastatic Lung

Adenocarcinoma.

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Miliary patterns on chest imaging frequently prompt urgent consideration of

disseminated infectious diseases such as tuberculosis (TB), particularly in

patients from endemic regions. However, non-infectious aetiologies like

metastatic malignancy must also be considered. We report the case of a

39-year-old previously healthy male with miliary pulmonary lesions initially

treated empirically for disseminated TB. Despite therapy, his condition

deteriorated until biopsy results confirmed metastatic lung adenocarcinoma. This

case highlights the diagnostic challenges in TB-endemic regions and underscores

the importance of early tissue diagnosis.

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Secondhand Smoke and Biomass Fuel Exposure as Risk Factors for Pulmonary

Tuberculosis: A Matched Case-Control Study From Southern Haryana.

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Introduction Secondhand smoke (SHS) exposure and biomass cooking fuel

utilization represent persistent and growing health threats in regions where

tuberculosis (TB) poses major public health risks. This comprehensive study

conducted in Nuh district, Haryana, India, investigated the association between

environmental exposures, including SHS and biomass cooking fuel use, with

pulmonary TB development. Methodology This matched case-control study included

218 newly diagnosed pulmonary TB cases matched with 218 non-TB controls

recruited from the same healthcare facility. Cases comprised nonsmoking adult

men and women presenting as incident pulmonary TB patients diagnosed at the

Tuberculosis Detection Center (TDC) through standard guidelines. Data were

collected as a structured questionnaire. Bivariate logistic regression assessed

associations between dependent and independent variables. Adjusted odds ratios

were calculated for significant associations. Results Kitchen facilities

analysis showed 192/436 (44%) homes without separate cooking areas and 215/436

(49.3%) lacking exhaust ventilation. Cooking fuel analysis revealed 73/218

(33.5%) cases used biomass fuels compared to 42/218 (19.3%) controls. Results

demonstrated significant associations between TB and environmental risk factors:

SHS exposure (adjusted odds ratio (OR) 2.83, 95% confidence interval (CI):

1.39-5.75), biomass fuel use (adjusted OR 1.85, 95% CI: 1.13-3.03), overcrowding

(adjusted OR 2.85, 95% CI: 1.69-4.78), and inadequate ventilation (adjusted OR

1.65, 95% CI: 1.08-2.52). Conclusions The findings provide compelling evidence

for the role of indoor air pollution and environmental tobacco smoke exposure in

TB pathogenesis among vulnerable populations in resource-limited settings. SHS

exposure and biomass cooking fuel use emerged as independent risk factors with

substantial effect sizes, supporting biological mechanisms linking indoor air

pollution to TB susceptibility. Additional environmental factors, including

overcrowding, dampness, and inadequate ventilation, demonstrated strong

associations with disease occurrence.

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