**2025年第38周**

**境外学者发表的结核病英文文章摘要**

**（104篇）**

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

**1. Infect Dis Poverty. 2025 Sep 19;14(1):94. doi: 10.1186/s40249-025-01354-0.**

Area-level socioeconomic variables associated with territorial disparities in

tuberculosis notification rates in metropolitan France: a Bayesian ecological

analysis.

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**BACKGROUND:** Although France is considered a low tuberculosis (TB) incidence

country, TB remains a significant public health issue in certain high-risk

groups and geographic areas, potentially linked to socioeconomic determinants.

This study aims to assess the associations between TB notification rates and

area-level socioeconomic variables in metropolitan France.

**METHODS:** We conducted an ecological spatial study using TB cases reported to the

French national surveillance system from 2008 to 2019. Using Bayesian Poisson

regression, we modeled TB case counts at the ZIP code level. Standardized

notification rates were estimated through indirect standardization by age, sex,

immigration status, and housing type. The model included ZIP code level

socioeconomic variables and a spatial random effect to account for spatial

autocorrelation and residual variations in notification rates, which may relate

to territorial disparities in reporting completeness.

**RESULTS:** The study included 55,330 reported TB cases across 4478 of 5534 ZIP

codes in metropolitan France. All tested socioeconomic variables showed varying

associations with TB. In the multivariable model, an increase in population

density from 'Low' to 'High' was associated with a 30% increase [95% credible

interval (CrI): 21%, 38%] in standardized TB notification rates. An increase

from the first to the ninth decile in the unemployment rate among those aged

15-64 was associated with a 28% increase (95% CrI: 19%, 37%). Similarly, an

increase in the proportion of overcrowded households was associated with a 19%

increase (95% CrI: 11%, 28%). Conversely, an increase in median household income

was associated with a 7% decrease (95% CrI: 1%, 11%).

**CONCLUSIONS:** Our findings suggest that TB notification rates are independently

associated with material deprivation, such as unemployment and low income, as

well as crowded settings, including overcrowded households and densely populated

areas. Enhancing TB control in metropolitan France could involve targeted

outreach programs for screening and treatment in materially deprived areas,

characterized by high unemployment rates and low median incomes, and adopting a

'Health in All Policies' approach to address urban and household crowding.

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**2. BMJ. 2025 Sep 19;390:r1943. doi: 10.1136/bmj.r1943.**

Supporting the Global Fund to Fight AIDS, Tuberculosis, and Malaria.

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DOI: 10.1136/bmj.r1943

PMID: 40973433

**3. BMJ Glob Health. 2025 Sep 18;10(9):e017621. doi: 10.1136/bmjgh-2024-017621.**

Tuberculosis at the crossroads: urgent actions for migrant and refugee health in

a turbulent era.

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

affecting the most vulnerable, including refugees and migrants. Their

vulnerability is intensified by structural and social barriers that hinder

diagnosis and treatment and restrict healthcare access. To put a spotlight on

this issue, the WHO in collaboration with the Qatar Foundation launched a

technical report on innovative solutions for TB elimination among refugees and

migrants at the Seventh World Innovation Summit for Health (WISH) in November

2024. The report proposes 10 policy options and includes seven illustrative case

studies to address the issue of TB among refugees and migrants. The global

public health landscape has shifted dramatically since the report's release.

Widespread funding cuts for health and development coupled with escalating

geopolitical tensions now threaten hard-won public health gains. On the back of

an already chronically underfunded TB response, where only 26% of the needed

funds were available, both global and local responses to TB are

faltering-putting lives, equity and elimination goals at serious risk. While the

2024 WISH report outlined policy actions to address TB among refugees and

migrants, shrinking funding for health and development now threatens

implementation. Therefore, in this analysis piece, we examine the current and

urgent challenge of addressing TB among migrants and refugees framed in the

context of three policy actions in the WISH report-namely, political commitment,

adequate resourcing and equitable access to healthcare. We argue that sustaining

and scaling up efforts to end TB is not optional-it is imperative.

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DOI: 10.1136/bmjgh-2024-017621

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**4. PLoS Pathog. 2025 Sep 19;21(9):e1013497. doi: 10.1371/journal.ppat.1013497.**

**Online ahead of print.**

The association of class II HLA alleles with tuberculosis-associated immune

reconstitution inflammatory syndrome.

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Genetic associations within the human leukocyte antigen (HLA) gene complex and

linked genes in TB-IRIS outcomes remains population specific and not well

understood. Here, we conducted a study including well characterised HIV-TB

coinfected patients with (n = 86) and without (n = 124) TB-IRIS from the

randomized, double-blind, prophylactic prednisone trial (PredART study) with

HLA, ERAP and KIR genotyping data. We confirmed the association of TB-IRIS with

lower CD4 counts pre-ART initiation. We identified nine classical class I and II

HLA alleles protective against TB-IRIS, while four alleles were linked to

increased risk. Associations ranged from strongly protective (HLA-DQB1\*05:01,

OR: 0.07, 95%CI: 0.02-0.28, Pc < 0.001) to strongly risk associated (notably

DRB1\*01:02, OR: 5.92, 95%CI: 1.36-26.7, Pc = 0.028), with conflicting signals at

the HLA-DRB1 locus. Conditional regression analysis revealed that residue E71 at

the polymorphic position 71 within the HLA-DRB1 peptide-binding groove was

critical, and grouping of HLA-DRB1 alleles by the residue at position 71

corresponded with differential TB-IRIS association. In conclusion, this study

identifies population-specific genetic factors influencing TB-IRIS

susceptibility and highlights a potential mechanistic role for specific HLA-DRB1

residues in modulating immune responses during ART.

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PMID: 40972103

**5. Neurology. 2025 Oct 21;105(8):e214200. doi: 10.1212/WNL.0000000000214200. Epub 2025 Sep 19.**

Acute Hemorrhagic Necrotizing Encephalitis as the Initial Radiologic

Manifestation of CNS Tuberculosis.

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DOI: 10.1212/WNL.0000000000214200

PMID: 40971742

**6. PLOS Glob Public Health. 2025 Sep 19;5(9):e0004808. doi:**

**10.1371/journal.pgph.0004808. eCollection 2025.**

Facilitators and barriers for completion of the diagnostic process among people

with presumed tuberculosis in Central Uganda.

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Uganda has improved its tuberculosis (TB) diagnostic processes over the years

since the scale up of the Xpert MTB/RIF testing in 2012. However, there are

continued delays in diagnosis and missing people with TB who are either not

diagnosed or notified. We explored facilitators and barriers for completion of

the TB diagnostic process among people with presumed TB in selected health

facilities in Central Uganda. This was a qualitative exploration involving 25

in-depth interviews with people with presumed TB and six sex stratified focus

group discussions with people with TB who had recently initiated treatment. We

also conducted 20 key informant interviews with health workers providing TB

services. All interviews and discussions were audio recorded and transcribed

verbatim. Thematic analysis was carried out using Atlas.ti software version 6.0

guided by the constructs of the socio-ecological model. Key facilitators for

completion of the TB diagnostic process included; individual factors (persistent

symptoms and the desire to get better, obtaining same day results and prior TB

knowledge); community (social support); and health system factors (caring health

workers and calling of patients to collect results). Barriers were; individual

factors (TB and HIV stigma, inability to produce sputum, lack of transport to

return to the health facility); and health system factors (long turnaround time

of results, stock out of supplies, unclear appointment for collection of

results, inadequate patient contact details and negative health worker

attitude). Completion of the TB diagnostic process is influenced by individual,

health system and community related factors. To enhance completion, there is

need for availing same day results, making clear appointments for collection of

results and improving health worker attitudes at the health facility level. At

the individual and community level, TB/HIV stigma reduction interventions,

community health education on TB and provision of social support to patients

with presumed TB should be emphasized.

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**7. PLoS One. 2025 Sep 19;20(9):e0332125. doi: 10.1371/journal.pone.0332125.**

**eCollection 2025.**

Evaluation of QIAreach QuantiFERON-TB lateral-flow nanoparticle fluorescence

assay for TB infection diagnosis among TB household contacts in three

high-burden settings.

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**BACKGROUND:** Tuberculosis infection (TBI) testing, and treatment are fundamental

to achieve TB elimination. TBI testing among close or household contacts (HHCs)

has been limited, in part due to perceived complexity and high operational cost.

We evaluated the performance of a new near-patient and field-based QIAreach

QuantiFERON-TB (QIAreach) against QuantiFERON-TB-Gold-Plus (QFT-Plus) among HHCs

of people with TB.

**METHODS:** A cross-sectional study was conducted from July 2021 to September 2022

in Lesotho, South Africa and Tanzania. Blood samples were collected from HHCs

for paired QFT-Plus and QIAreach processing, testing and interpretation. To

evaluate the performance of QIAreach against QFT-Plus as a reference, we

determined the: i) prevalence of TBI, ii) total concordance using Cohen's Kappa,

iii) predictors of discordant results using logistic regression, and iv)

relationship between time to results and interferon-gamma (IFN-γ) response

levels using linear correlation.

**RESULTS:** Out of 964 enrolled HHCs, 464 had paired results, of whom 64.9%

(302/465) were female with a cohort median age of 27 years (interquartile range

(IQR): 13-45). Overall, 50.9% (236/464) tested positive on QFT-Plus, while 57.1%

(265/464) were positive on QIAreach assay. Total concordance between QFT-Plus

and QIAreach was 78.4% [353/450, 95% confidence interval (CI): 74.4-82.2,

Cohen's Kappa: 0.5627, p < 0.001]. Discordance between assays was 23.9%

(111/464) and was associated with Lesotho site (adjusted odds ratio 2.70, 95%CI:

1.48-4.92, p = 0.001). HHCs with higher IFN-γ response (QFT-Plus) (≥0.35

IU.ml-l) had a shorter time to results on QIAreach. In addition, a strong

negative correlation between QIAreach time to results and IFN-γ response

(QFT-Plus) levels (R = -0.64, 95% CI: -0.87 to -0.41, p < 0.001) was observed.

**CONCLUSION:** QIAreach demonstrated a moderate concordance against QFT-Plus among

HHCs in three high-burden countries. Further work is needed to understand and

improve its usability in high TB and low resource settings.

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PMID: 40971381 [Indexed for MEDLINE]

**8. Med Microbiol Immunol. 2025 Sep 19;214(1):43. doi: 10.1007/s00430-025-00851-1.**

Therapeutic potential of Bacillus sonorensis PMC204 membrane vesicles against

drug-resistant Mycobacterium tuberculosis.

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Tuberculosis remains a severe global health threat, exacerbated by the rising

prevalence of multidrug-resistant (MDR) and extensively drug-resistant (XDR)

Mycobacterium tuberculosis. Despite the urgent need for effective interventions,

the development of anti-tuberculosis drugs has been slow, and the emergence of

pan-drug-resistant strains underscores the critical need for innovative

therapeutic strategies. This study introduces Bacillus sonorensis PMC204, a

novel probiotic strain with potent anti-tuberculosis properties identified

through extensive screening. PMC204 significantly reduced M. tuberculosis H37Rv

and XDR strains within Raw 264.7 macrophage cells. Moreover, membrane vesicles

(MVs) derived from this strain exhibited superior inhibitory effects against

both standard and XDR strains of M. tuberculosis. Proteomic analysis of the

isolated MVs revealed a high abundance of flagellin proteins, which are

hypothesized to play a pivotal role in the observed anti-tuberculosis effects.

These findings also suggest a close link between the therapeutic efficacy of

PMC204 and autophagy activation. Safety assessments further demonstrated the

feasibility of PMC204 as a potential anti-tuberculosis therapeutic. The

anti-tuberculosis activity of bacterial MVs represents an innovative approach in

microbiome therapeutics, positioning PMC204 as a next-generation probiotic

distinct from conventional strains. This study contributes to advancing the

field of microbiome-based therapeutics and presents promising avenues for

managing drug-resistant tuberculosis.

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DOI: 10.1007/s00430-025-00851-1

PMCID: PMC12449405

PMID: 40970967 [Indexed for MEDLINE]

**9. Cureus. 2025 Sep 17;17(9):e92517. doi: 10.7759/cureus.92517. eCollection 2025**

**Sep.**

Atypical Presentation of Disseminated Tuberculosis With Third Cranial Nerve

Palsy and Aortic Aneurysm: A Case Report.

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Tuberculosis (TB) remains a leading cause of mortality among infectious diseases

globally, posing significant diagnostic and therapeutic challenges despite being

curable.This case highlights a delayed diagnosis of miliary TB with rare and

severe complications in a patient with an atypical presentation. A 44-year-old

female of African origin presented with non-specific symptoms, including fever,

malaise, and deranged liver function tests, after travel to Nairobi. After

nearly two months of intermittent symptoms, she developed neurological signs,

including a third cranial nerve palsy, eye pain, and ptosis, prompting further

investigation. Brain imaging revealed multiple enhancing nodules consistent with

TB granulomas and a striato-capsular infarct. Subsequently, thoracic imaging

showed a thoracic aortic aneurysm, extensive lung miliary nodularity, and

"tree-in-bud" appearance, indicative of miliary tuberculosis. The patient

developed tuberculous vasculopathy, likely contributing to the acute brain

infarct, and a rare but life-threatening tuberculous aortic aneurysm. While

cranial nerve palsies are known complications of central nervous system TB,

isolated third nerve involvement and the co-occurrence of a large-vessel

aneurysm are uncommon. This case emphasizes the need for a high index of

suspicion for TB in patients with unusual or multifocal symptoms, even in the

absence of typical signs. Early diagnosis, followed by prompt initiation of

antituberculosis therapy with appropriate surgical intervention for

complications such as aneurysms, is important in reducing morbidity and

preventing fatalities in such complex presentations.

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PMCID: PMC12441987

PMID: 40970233

**10. Infect Dis (Lond). 2025 Sep 19:1-12. doi: 10.1080/23744235.2025.2562230. Online ahead of print.**

Age differences in factors associated with pulmonary tuberculosis: a

cross-sectional study of Indonesian Basic Health Research (RISKESDAS) 2018.

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**OBJECTIVES:** To investigate the prevalence across age groups and age disparities

in factors associated with pulmonary tuberculosis (PTB) in Indonesia through a

large-scale sample study.

**METHODS:** The data source was the National Basic Health Survey 2018. We recruited

715,394 individuals aged 16 years and older in this study. Rao-Scott Chi-square

analyses and binary logistic regressions were employed to investigate the

association of PTB with a significance threshold of 5%. Age-group disparities in

factors significantly associated with PTB in all age groups were identified by

interaction term analysis.

**RESULTS:** In youth, middle-aged, and elderly groups, the prevalence of PTB was

3.5‰, 6.8‰, and 9.6‰, respectively. Logistic regressions with interaction term

analysis found age differences in the association between PTB and former smokers

(p for interaction = 0.022), diabetes (p for interaction = 0.0001), and heart

disease (p for interaction = 0.005). Moreover, our findings showed age-related

differences in the effect of sex, family size, and unemployment status on PTB.

Males exhibited a greater PTB risk than females only among the middle-aged group

(OR: 2.06; 95% CI: 1.48-2.86) and older adults (OR: 1.89; 95% CI: 1.38-2.62).

Larger families (OR: 1.33; 95% CI: 1.12-1.59) and unemployed individuals (OR:

1.49; 95% CI: 1.21-1.83) were significantly associated with PTB only among

middle-aged adults.

**CONCLUSION:** Comprehending age-specific factors for PTB is crucial for developing

effective public health strategies. Early detection and advanced health

education for PTB should be targeted at elderly men and middle-aged men who are

jobless or have a large family.

DOI: 10.1080/23744235.2025.2562230

PMID: 40968710

**11. BMJ Open. 2025 Sep 17;15(9):e094954. doi: 10.1136/bmjopen-2024-094954.**

Evaluating the diagnostic accuracy of WHO-recommended treatment decision

algorithms for childhood tuberculosis using an individual person dataset: a

study protocol.

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J, Mavale S, Dim B, Lauzanne A, Borand L, Mao TE, Kim A, Kheang C, Pol S,

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**INTRODUCTION:** In 2022, the WHO conditionally recommended the use of treatment

decision algorithms (TDAs) for treatment decision-making in children <10 years

with presumptive tuberculosis (TB), aiming to decrease the substantial case

detection gap and improve treatment access in high TB-incidence settings. WHO

also called for external validation of these TDAs.

**METHODS AND ANALYSIS:** Within the Decide-TB project (PACT ID:

PACTR202407866544155, 23 July 2024), we aim to generate an

individual-participant dataset (IPD) from prospective TB diagnostic accuracy

cohorts (RaPaed-TB, UMOYA and two cohorts from TB-Speed). Using the IPD, we aim

to: (1) assess the diagnostic accuracy of published TDAs using a set of

consensus case definitions produced by the National Institute of Health as

reference standard (confirmed and unconfirmed vs unlikely TB); (2) evaluate the

added value of novel tools (including biomarkers and artificial

intelligence-interpreted radiology) in the existing TDAs; (3) generate an

artificial population, modelling the target population of children eligible for

WHO-endorsed TDAs presenting at primary and secondary healthcare levels and

assess the diagnostic accuracy of published TDAs and (4) identify clinical

predictors of radiological disease severity in children from the study

population of children with presumptive TB.

**ETHICS AND DISSEMINATION:** This study will externally validate the first

data-driven WHO TDAs in a large, well-characterised and diverse paediatric IPD

derived from four large paediatric cohorts of children investigated for TB. The

study has received ethical clearance for sharing secondary deidentified data

from the ethics committees of the parent studies (RaPaed-TB, UMOYA and TB Speed)

and as the aims of this study were part of the parent studies' protocols, a

separate approval was not necessary. Study findings will be published in

peer-reviewed journals and disseminated at local, regional and international

scientific meetings and conferences. This database will serve as a catalyst for

the assessment of the inclusion of novel tools and the generation of an

artificial population to simulate the impact of novel diagnostic pathways for TB

in children at lower levels of healthcare. TDAs have the potential to close the

diagnostic gap in childhood TB. Further finetuning of the currently available

algorithms will facilitate this and improve access to care.

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PMID: 40967651 [Indexed for MEDLINE]

**12. Antimicrob Agents Chemother. 2025 Sep 18:e0049225. doi: 10.1128/aac.00492-25. Online ahead of print.**

Deconvoluting drug interactions using M. tuberculosis physiologic processes:

transcriptional disaggregation of the BPaL regimen in vivo.

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K(2)(3)(4)(5), Hendrix J(2)(3)(4), Voskuil MI(3)(6), Obregón-Henao A(7), Lyons

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A key challenge in preclinical tuberculosis drug development is identifying

optimal antibiotic combinations. Drug interactions are complex because one drug

may affect Mycobacterium tuberculosis (Mtb) physiology in a way that alters the

activity of another drug. Conventional pharmacodynamic evaluation based on

colony-forming units (CFU) does not provide information about this physiologic

interaction because CFU enumerates bacteria but does not give information about

the drug's effect on bacterial cellular processes. SEARCH-TB is a novel

pharmacodynamic (PD) approach that uses targeted in vivo transcriptional

profiling to evaluate drug effects on Mtb physiology. To evaluate SEARCH-TB's

capacity to elucidate drug interactions, we deconstructed the BPaL (bedaquiline,

pretomanid, and linezolid) regimen in the BALB/c high-dose aerosol mouse

infection model, measuring the effect of 2-, 7-, and 14-day treatment with drugs

in monotherapy, pairwise combinations, and as a three-drug combination.

Monotherapy induced drug-specific Mtb transcriptional responses by day 2 with

continued evolution over 14 days. Bedaquiline dominated pairwise combinations

with pretomanid and linezolid, whereas the pretomanid-linezolid combination

induced a transcriptional profile intermediate between either drug. In the

three-drug BPaL regimen, adding both pretomanid and linezolid to bedaquiline

yielded a greater transcriptional response than expected, based on pairwise

results. This work demonstrates that physiologic perturbations induced by a

single drug may be modified in complex ways when drugs are combined. This

establishes proof of concept that SEARCH-TB provides a highly granular readout

of drug interactions in vivo, providing information distinct from CFU burden and

suggesting a future where regimen selection is informed by in vivo molecular

measures of Mtb physiology.

DOI: 10.1128/aac.00492-25

PMID: 40965512

**13. J Acquir Immune Defic Syndr. 2025 Sep 18. doi: 10.1097/QAI.0000000000003761.**

**Online ahead of print.**

Low Cholesterol associated with TB in people living with HIV in an Asia-Pacific

cohort.

Henry RT(1), Khol V(2), Duy CD(3), Marbaniang I(4), Somia IKA(5), Kumarasamy

N(6), Yunihastuti E(7), Azwa I(8), Ditangco R(9), Kiertiburanakul S(10), Lee

MP(11), Avihingsanon A(12), Chen HP(13), Chaiwarith R(14), Khusuwan S(15), Pham

TN(16), Pujari S(17), Choy CY(18), Choi JY(19), Gani Y(20), Uemura H(21), Ross

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**BACKGROUND:** Tuberculosis (TB) remains the leading cause of illness and death

among people living with HIV (PLHIV), particularly in high-burden areas. This

study examined associations between TB and routine clinical markers: serum

cholesterol, platelet count, and CD4 cell count.

**SETTING:** The analysis included data from the TREAT Asia HIV Observational

Database (TAHOD), a multicenter cohort of adult PLHIV receiving care across the

Asia-Pacific region.

**METHODS:** We conducted a cross-sectional matched case-control study of

prospective and retrospective TB cases, comparing clinical and laboratory data

within ±3 months of TB diagnosis. Conditional logistic regression assessed

associations between TB and covariates.

**RESULTS:** The analysis included 4,244 PLHIV from 20 sites: 1,427 TB cases and

2,817 matched controls. TB cases were predominantly male (75.3%) and 45.7% aged

31-40. Multivariable analysis showed greater odds of TB diagnosis among males,

those with low BMI, prior AIDS diagnosis, high HIV viral load, low CD4+ counts,

or low total cholesterol. CD4+ counts <200 cells/μL had higher TB odds (adjusted

OR [aOR] 12.90, 95% CI 8.84-18.82) compared to CD4+ >500 cells/μL. Cholesterol

<3.9 mmol/L had higher TB odds (aOR 3.11, 95% CI 1.94-4.98) compared to

cholesterol >5.5 mmol/L.

**CONCLUSION:** In this Asia-Pacific cohort of adults living with HIV, low CD4+ cell

count and low total serum cholesterol were associated with increased TB odds.

Cholesterol may represent a low-cost adjunct marker to support TB risk

stratification in PLHIV in endemic settings, but requires validation and

evaluation of feasibility and cost-effectiveness.

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PMID: 40965078

**14. Glob Health Action. 2025 Dec;18(1):2556529. doi: 10.1080/16549716.2025.2556529. Epub 2025 Sep 18.**

Primary health care response to tuberculosis treatment in Brazilian cities

during the COVID-19 pandemic: a mixed-method study.

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Hino P(2), da Silva de Souza S(3), Bertolozzi MR(4), Ramos Ribeiro R(1), Guedes

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**BACKGROUND:** The interruption of tuberculosis care and monitoring activities

during the Covid-19 pandemic resulted in delays in diagnosis and treatment of

this disease, which compromised progress towards the goal of elimination.

**OBJECTIVES:** Analyze tuberculosis-related activities offered in primary health

care settings in Brazil during 2020-2022.

**METHODS:** This mixed-method convergent parallel study was conducted in four state

capitals, with the number of health units defined by sample calculation.

Professionals in various areas were interviewed as key informants in primary

care services to investigate tuberculosis-related activities provided during the

pandemic. Using these findings, we identified common themes in both the

quantitative and qualitative data.

**RESULTS:** Four major themes were identified: 'Consultations for people undergoing

tuberculosis treatment within the context of health reorganization;'

'Compromised testing and surveillance;' 'Drug dispensing in collaborative

activities to reduce the exposure of people undergoing treatment;' and 'Changes

in directly observed therapy to reduce infection risk.' Changes in the

tuberculosis-related activities were identified in all four cities during the

study period; the mean rates of change were lowest in São Paulo and higher in

Goiânia and João Pessoa for nearly all the activities offered.

**CONCLUSIONS:** Structural barriers must be identified in each city (such as

laboratory network function, reorganization strategies, and local and national

directives) to address specific needs related to tuberculosis care during

emergency situations and continue progress toward eliminating this disease.

DOI: 10.1080/16549716.2025.2556529

PMCID: PMC12447464

PMID: 40964876 [Indexed for MEDLINE]

**15. Monaldi Arch Chest Dis. 2025 Sep 17. doi: 10.4081/monaldi.2025.3363. Online**

**ahead of print.**

Determinants of unsuccessful treatment outcome of pulmonary tuberculosis under

the National Tuberculosis Elimination Program in Mohali district, India.

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Tuberculosis is a global healthcare concern, being the leading infectious cause

of mortality by a single infectious agent. India bears the highest burden of

tuberculosis. Disease outcome is an important indicator for the successful

implementation of the National Program. Risk factors associated with

unsuccessful outcomes must be identified, and differential care must be provided

to those with risk factors. The study included all pulmonary tuberculosis

patients registered from 1st October 2022 to 30th September 2023 at the Directly

Observed Therapy Short Course Center, Dr. BR Ambedkar State Institute of Medical

Sciences, Mohali, who received treatment. Data was collected from the Nikshay

portal retrospectively. Out of 1103, 575 (52.13%) patients were declared cured,

whereas 452 (40.97%) were declared treatment completed. A total of 19 (1.72%)

pulmonary tuberculosis patients died during treatment, and 57 (5.16%) were

declared failures. Advanced age [adjusted odds ratio (AOR) 4.028, 95% confidence

interval (CI): 1.368-4.610, p=0.003], people living with HIV (AOR 0.185, 95% CI

0.031-1.082, p=0.05) and male gender (crude OR 1.611, 95% CI: 0.371-1.006,

p=0.050) were associated with poor outcomes. Diabetes, retreatment,

microbiological confirmation, and low body mass index were not statistically

significant in the study. Age above 45 years, male sex, and HIV co-infection are

determinants for unsuccessful treatment outcomes in patients with pulmonary

tuberculosis.

DOI: 10.4081/monaldi.2025.3363

PMID: 40964790

**16. BMC Microbiol. 2025 Sep 18;25(1):576. doi: 10.1186/s12866-025-04361-1.**

Computational guided identification of novel anti-mycobacterial agent proved by

in-vitro and in-vivo validation.

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**BACKGROUND:** An upsurge of antibiotic resistant bacteria such as Mycobacterium

tuberculosis is recorded on daily bases as a result of many factors including:

the daily antibiotics exploitation, failure to follow lengthy complex drug

regimen, and ongoing bacterial mutation. TB treatment protocol is usually a

lengthy and expensive one that is composed of 4 or even 5 drugs that have

multiple substantial side effects. Traditional drug discovery methodologies are

usually lengthy multifaceted process complicated with unpredictable outcomes in

terms of efficacy and safety, hence there is an urge to find innovative drug

discovery method that can produce multiple novel potential antimycobacterial

agents that are safe and effective both in-vitro and in-vivo.

**RESULTS:** The obtained results illustrated that maleic acid represented a

potential drug with minimum inhibitory concentration of 312 µg/ml and an

identical minimum bactericidal concentration against Mycobacterium tuberculosis.

Its IC50 was measured to be 374.44 mg/ml with SI of 1200. Preliminary testing

showed that maleic acid can be considered as a possible histidinol-phosphate

aminotransferase inhibitor with a high binding affinity (-5.0475 kcal/mol) and

promising molecular dynamics. Maleic acid combination with rifampicin had ƩFIC

of 0.375 which indicated synergistic activity between them. It efficiently

produced 3 ± 0.3009 log10 CFU reduction of infected mice lungs compared to

control group and illustrated superior preservation of lung tissue and structure

on histological screening level.

**CONCLUSION:** After careful filtration processes, computational guided scavenge of

online protein databases for potential druggable targets represents a promising

pathway for identification of novel antimycobacterial agents. One of the

promising identified agents was maleic acid which can act as an

alternative/additional drug for combating tuberculosis infection.

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DOI: 10.1186/s12866-025-04361-1

PMCID: PMC12445033

PMID: 40963122 [Indexed for MEDLINE]

**17. ChemMedChem. 2025 Sep 17:e202500398. doi: 10.1002/cmdc.202500398. Online ahead of print.**

Rational Design and Antimycobacterial Evaluation of Aryl Sulfonamide-Linked

Isoniazid Hydrazones Against Mycobacterium Tuberculosis.

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Despite significant advancements in antituberculosis (TB) drug discovery,

considerable scope remains for novel therapeutic development. Molecular

hybridization represents a promising strategy for generating new anti-TB agents.

In this study, in silico molecular docking is employed to design novel

isoniazid-sulfonamide hybrids connected via a hydrazone bridge, designated as

series 7j-r and 8a-i. Docking analysis reveals that these compounds interact

significantly with the active site of InhA, particularly engaging the catalytic

triad residues Y158, F149, and K165, as well as the cofactor NAD. Subsequently,

both series are synthesized and evaluated against Mycobacterium tuberculosis.

Generally, compounds from both series (7 and 8) exhibit enhanced activity

compared to their precursors. Notably, compound 8a demonstrated approximately

twofold greater potency ( minimum inhibitory concentration

(MIC) = 0.156 µg mL-1) with respect to compound 7j (MIC = 0.313 µg mL-1).

However, these compounds lose efficacy against INH-resistant M. tuberculosis

strains harboring katG mutations and remain ineffective against

multidrug-resistant and extensively drug-resistant strains of M. tuberculosis.

Encouragingly, the tested compounds exhibit little cytotoxicity against the

THP-1 human monocytic cell line at a concentration of 20 µg mL-1. Additionally,

the structural stability studies using 1H NMR confirm the structural integrity

of these compounds. Overall, these molecular hybrids are promising for further

development as anti-TB agents after relevant structural optimizations.

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DOI: 10.1002/cmdc.202500398

PMID: 40962703

**18. BMJ Open. 2025 Sep 16;15(9):e104093. doi: 10.1136/bmjopen-2025-104093.**

Feasibility and acceptability of implementing the three-stage model of HIV and

tuberculosis care in prisons in sub-Saharan Africa: a pilot implementation

research study from Central Malawi.

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**OBJECTIVE:** Malawi's prisons are overcrowded, contributing to tuberculosis (TB)

and Human Immunodeficiency Virus (HIV) transmission and service delivery gaps

for both conditions. We applied an empirically supported three-stage model of

HIV/TB care to guide the improvement of TB/HIV service delivery in select

Malawian prisons.

**DESIGN:** We conducted a pilot implementation research study using multimethods

from May 2022 to April 2023.

**SETTING:** Two semi-urban prisons in Malawi.

**PARTICIPANTS:** We purposively sampled participants detained at the study sites

during the study period.

**METHODS AND INTERVENTION:** We collected data on sociodemographics, medical

history and screening results for sexually transmitted infections (STIs), HIV

and TB results. We conducted in-depth interviews with prison professional staff

and used content analysis to explore the feasibility of implementing the

three-stage model of HIV and TB care in Malawian prisons.

**RESULTS:** Mean participant age was 35 years (SD 12.2 years). We screened 100 out

of 647 (15%) incarcerated people for TB/HIV according to the three-stage model

and identified the following: five cases of TB disease; two cases of

HIV-associated TB; seven persons living with HIV; eight persons diagnosed and

treated for STIs, including genital ulcer disease and syphilis. For those tested

for HIV at entry, midpoint and exit screening, there was no documented case of

seroconversion during the incarceration period. There was evidence of potential

STI transmission during incarceration, as suggested by a 4% rate of new urethral

discharge among participants. Qualitative data suggest that it is feasible to

implement the three-stage model of HIV/TB in the Malawi prison setting.

**CONCLUSIONS:** We found evidence of HIV, TB and STIs among incarcerated people in

two semi-urban prisons in Malawi, with low HIV status awareness on prison entry.

It is feasible to implement the three-stage model of HIV/TB in prison settings,

although with material support to overcome implementation challenges.

Coordination with Ministry of Health officials could facilitate model

feasibility and sustainability in Malawi's prisons.

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**19. J Am Acad Dermatol. 2025 Sep 15:S0190-9622(25)02805-1. doi:**

**10.1016/j.jaad.2025.09.021. Online ahead of print.**

Elevated risk of active tuberculosis with interleukin (IL)-17, IL-23, IL-12/23,

Janus kinase inhibitors, cyclosporine, and Tumor Necrosis Factor-α inhibitors

compared with the general population: A population-based analysis using TriNetX.

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DOI: 10.1016/j.jaad.2025.09.021

PMID: 40962194

**20. PLOS Glob Public Health. 2025 Sep 17;5(9):e0004617. doi:**

**10.1371/journal.pgph.0004617. eCollection 2025.**

Awareness of management of pulmonary multidrug-resistant tuberculosis (MDR-TB)

among private practitioners in suburban areas of Pune city, India: Input for

developing an educational tool.

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Private practitioners (PPs) play a major role in caring for people with

tuberculosis (TB) in India. At the same time, PPs have limited access to

continuing medical education and oversight especially with regards to recent

changes in the management of multi-drug resistant (MDR- TB). As a part of a

larger study aimed at developing an educational tool for improving

multidrug-resistant TB management, we conducted a baseline knowledge assessment

of MDR-TB among PPs in suburban areas of Pune City, India. This study with a

cross-sectional design was conducted during July 2022 to May 2023 among 100 PPs,

who either refer and/treat TB and MDR-TB cases in Pimpri-Chinchwad Municipal

Corporation (PCMC) areas of Pune in Maharashtra State. The inquiry was made

using an interview schedule focused on suspicion of pulmonary TB and MDR-TB,

their diagnosis and treatment. The majority of PPs were allopathic practitioners

(85%) practicing in private clinics (82%). Most PPs reported that they suspect

TB based on three cardinal symptoms: cough for >2 weeks (97%), fever (93%) and

weight loss (82%). While 54% PPs considered the Xpert assay as the first test to

diagnose MDR-TB, 32% were unaware of any test.Only 37% PPs were aware of whole

genome sequencing for MDR diagnosis. A fifth of PPs selected Mantoux test use

for the diagnosis of active TB. Less than a fourth of PPs knew about the

second-line anti-TB drugs such as bedaquiline, delamanid or linezolid etc. and

their availability either in the National TB Elimination Program (NTEP) or the

private sector. Our study indicates considerable lack of awareness about

pulmonary MDR-TB management among allopathic PPs in the study area and

highlights the need for education and creating awareness about the same. It

identified specific areas for developing an educational tool for PPs in India

and elsewhere.

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unrestricted use, distribution, and reproduction in any medium, provided the

original author and source are credited.

DOI: 10.1371/journal.pgph.0004617

PMCID: PMC12443276

PMID: 40961043

**21. Am J Ther. 2025 Sep 18. doi: 10.1097/MJT.0000000000001991. Online ahead of**

**print.**

Efficacy of BPaL and BPaLM Regimens in Treating Drug-Resistant Tuberculosis: A

Systematic Review and Meta-Analysis.

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DOI: 10.1097/MJT.0000000000001991

PMID: 40960978

**22. Cell. 2025 Sep 15:S0092-8674(25)00982-1. doi: 10.1016/j.cell.2025.08.027. Online ahead of print.**

Mining the CD4 antigen repertoire for next-generation tuberculosis vaccines.

Vidal SJ(1), Lasrado N(2), Tostanoski LH(2), Chaudhari J(2), Mbiwan ER(2), Neka

GD(2), Strutton EA(2), Espinosa Perez AA(2), Sellers D(2), Barrett J(2), Lifton

M(2), Wakabayashi S(3), Eshaghi B(4), Borducchi EN(2), Aid M(2), Li W(5), Scriba

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Tuberculosis (TB) is the leading cause of death from infectious disease

worldwide, and Bacillus Calmette-Guérin (BCG) remains the only clinically

approved vaccine. An enduring challenge in TB vaccine development is systematic

antigen selection from a large repertoire of potential candidates. We performed

an efficacy screen in mice of antigens that are targets of CD4 T cells in

humans. We found striking heterogeneity in protective efficacy, and most of the

top protective antigens are not currently in clinical development. We observed

immunologic cross-reactivity among phylogenetically clustered antigens,

reflecting common CD4 epitopes. We developed a trivalent mRNA vaccine consisting

of PPE20 (Rv1387), EsxG (Rv0287), and PE18 (Rv1788), which augmented and

exceeded BCG protection in multiple mouse models. Finally, we observed cellular

immune responses to these antigens in 84% of humans exposed to M. tuberculosis.

These data advance our understanding of TB vaccine immunology and define a

vaccine concept for clinical development.

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PMCID: PMC12445596

PMID: 40957415

**23. Trop Doct. 2025 Sep 16:494755251376416. doi: 10.1177/00494755251376416. Online ahead of print.**

Local, regional, and continental trends in tuberculosis mortality rates across

the Americas at the beginning of the XXI century.

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(1)Researcher, Faculdade de Medicina de Bauru, Universidade de São Paulo, Bauru,

São Paulo, Brazil.

This ecological time-series study analysed tuberculosis (TB) mortality trends in

the Americas from 2000 to 2019 using data from the Pan American Health

Organization. Age-adjusted mortality rates by country and sex were assessed with

Joinpoint regression to estimate annual percentage changes. Results showed a

general decline in TB mortality, with average annual reductions of -2.3% in men

and -1.9% in women. Brazil, Colombia, and Canada exhibited continuous decreases,

while Saint Lucia, Jamaica, and Honduras had episodes of increase or

fluctuation. The highest mortality rates persisted in Bolivia, Mexico,

Nicaragua, Honduras, and Peru. Regional analyses indicated periods of trend

stabilisation, especially in Central and South America during the latter years.

Despite overall progress, significant disparities by region and sex remain,

reflecting complex social, economic, and healthcare factors. Strengthening

surveillance systems and tailoring interventions to specific local contexts are

crucial for further reducing TB mortality across the continent.

DOI: 10.1177/00494755251376416

PMID: 40956969

**24. Trop Med Int Health. 2025 Sep 16. doi: 10.1111/tmi.70030. Online ahead of print.**

Implementation Fidelity of Diabetes Mellitus Screening Among Tuberculosis

Patients in Primary Healthcare in Karanganyar District, Indonesia: A

Mixed-Method Study.

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Surakarta, Indonesia.

**BACKGROUND:** Indonesia faces a dual burden of high tuberculosis (TB) burden and

rising diabetes mellitus (DM) prevalence. Given that DM is a significant risk

factor for TB, screening people with TB for DM comorbidity is important for

early management to mitigate adverse outcomes.

**OBJECTIVES:** This study aimed to measure the degree of implementation fidelity,

moderating factors, and barriers to implementing DM screening among TB patients

in Indonesia's Primary Healthcare setting.

**METHODS**: A sequential explanatory mixed method was used. A cross-sectional

survey was conducted with 42 Directly Observed Treatment, Short-course providers

to assess adherence to DM screening guidelines. Screening coverage was evaluated

through the TB information system. In-depth interviews with providers, managers,

and patients identified key barriers and enablers.

**RESULTS:** Screening coverage ranges from 36.3% to 97.6% between 2020 and 2024.

High fidelity was reported among providers, with 95% screening for DM at the

time of TB diagnosis. Facilitators included TB-DM policy availability, screening

affordability, provision of equipment, and patients' responsiveness. However,

delays in data reporting and insufficient cross-sector collaboration posed

challenges to the implementation.

**CONCLUSION:** Despite positive progress in integrating TB-DM care, addressing

barriers is essential to optimize the programme's impact. Strengthening

reporting mechanisms and fostering collaboration could enhance programme

outcomes.

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DOI: 10.1111/tmi.70030

PMID: 40955440

**25. BMJ Glob Health. 2025 Sep 15;10(9):e018252. doi: 10.1136/bmjgh-2024-018252.**

It is time to increase Africa's governmental representation on the governing

board of the global fund to fight AIDS, tuberculosis and malaria.

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PMCID: PMC12439154

PMID: 40954071

**26. Med Microbiol Immunol. 2025 Sep 15;214(1):42. doi: 10.1007/s00430-025-00856-w.**

Regulated expression of galectins 1 and 3 IS associated with dysregulated T cell

responses in pulmonary and pleural tuberculosis.

Imhoff M(1)(2), Diab MN(1), Gallucci G(2), Stupirski JC(3), Díaz A(1)(2),

Bongiovanni B(1)(2), Bertola D(2)(4), Lioi S(5), Bottasso O(1)(2), Rabinovich

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Galectins exert a wide range of effects on immune cells in acute and chronic

pathologies, although their effects are less described in chronic infections

such as tuberculosis-TB. We assessed galectin-1 (Gal-1) and galectin-3 (Gal-3)

concentrations and immune mediators in plasma from pulmonary TB-PTB cases

(n=38), healthy controls-Hco (n=24), and patients with pleural TB-PLTB (n=11) in

which pleural fluid-PLF was also evaluated. Galectin transcripts expression,

together with glycosyltransferases, that positively (MGAT5, GCNT1) or negatively

(ST6GAL1) control galectins activity, were assessed in mononuclear cells (MC).

We also evaluated Gal-1 production, along with other immune-mediators, in

Mtb-stimulated MCs. Both patient groups presented elevated circulating levels of

pro- and anti-inflammatory mediators and reduced cell proliferation, but a

marked T-cell response at the pleural compartment. PTB patients had increased

Gal-1 in levels in plasma and higher Gal-1 mRNA levels in MCs (p<0.01, vs. Hco).

Both TB groups showed high plasma Gal-3 concentrations and increased expression

in MCs (p<0.01 vs. HCo). PLF showed the lowest levels of both galectins, as did

their expressions on MCs from pleural effusion. Only PBMCs from PTB exhibited

increased expression of GCNT1 (p<0.04) together with diminished ST6GAL1

suggesting enhanced availability of galectin ligands. Mtb-stimulated MCs from

both patient groups showed increased Gal-1 production compared to HCo. Moreover,

unstimulated cultures from PTB presented a major basal production of Gal-1.

Thus, a balance of circulating levels of galectins, pro- and anti-inflammatory

mediators, and the differential expression of these lectins as well as

glycosylation-related enzymes in MCs, may condition cell function particularly

in PTB cases.

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**27. Antimicrob Agents Chemother. 2025 Sep 15:e0012625. doi: 10.1128/aac.00126-25. Online ahead of print.**

Targeting mycobacterial transpeptidases: evaluating the roles of Ldt and PBP

inhibition in suppressing Mycobacterium smegmatis.

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β-lactams demonstrate promising in vitro activity against Mycobacterium species

and are being explored for tuberculosis treatment; however, evidence of their in

vivo efficacy versus Mycobacterium tuberculosis remains limited. To achieve

broad clinically relevant potency, optimization of the classical β-lactam

scaffolds or development of new or non-β-lactam inhibitors for mycobacterial

transpeptidases is likely required. In mycobacteria, potential targets of

β-lactams include l,d-transpeptidases (Ldts) and penicillin-binding proteins

(PBPs). Reports suggest that dual inhibition of Ldts and PBPs may be necessary

to achieve effective anti-mycobacterial activity, yet the specific contributions

of Ldt and PBP inhibition to the β-lactam antibacterial mechanisms are poorly

understood. We used fluorogenic substrate mimics to investigate the effects of

β-lactams and reported LdtMt2 inhibitors on Mycobacterium smegmatis (Msm),

assessing their impacts on Ldt and PBP transpeptidase activities in living

cells. The results reveal a statistically significant correlation between both

Ldt and PBP inhibition and Msm growth suppression; under the tested conditions,

a stronger correlation between Ldt inhibition and Msm growth suppression was

observed. Notably, apparent inhibition of both PBPs and Ldts was observed with

all active inhibitors, though β-lactams manifest increased potency of PBP

inhibition. The combination of the β-lactams meropenem and faropenem with

selected LdtMt2 inhibitors manifested an additive inhibitory effect against Msm.

Our results highlight the importance of further optimizing β-lactam efficacy

versus mycobacterial PBPs and Ldt transpeptidases.

DOI: 10.1128/aac.00126-25

PMID: 40952390

**28. Ann Lab Med. 2025 Sep 15. doi: 10.3343/alm.2025.0101. Online ahead of print.**

Prospective Comparative Evaluation of the Xpert MTB/RIF and Xpert MTB/RIF Ultra

Assays for Detecting Mycobacterium tuberculosis and Rifampin Resistance in

High-resource, Intermediate-burden Settings.

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**BACKGROUND:** The Xpert MTB/RIF Ultra (Xpert Ultra) was introduced to enhance the

sensitivity of tuberculosis detection, particularly in smear-negative cases,

compared with its predecessor, Xpert MTB/RIF (Xpert). However, its performance

in high-resource, intermediate-burden settings remains unassessed. We

prospectively compared the diagnostic accuracy of Xpert Ultra and Xpert for

detecting Mycobacterium tuberculosis (MTB) and rifampin resistance in Korea.

**METHODS:** In total, 309 respiratory specimens were analyzed using both assays. We

used two reference standards: mycobacterial culture and a composite reference

standard based on clinical diagnosis and treatment decisions. Diagnostic

performance, including sensitivity, specificity, and agreement between the two

assays, was assessed. Spiking experiments using 13 MTB isolates with known rpoB

mutations were performed to evaluate rifampin resistance detection.

**RESULTS:** Xpert Ultra showed increased, albeit not significantly, sensitivity

(73.7% vs. 65.8% with culture; 63.8% vs. 53.2% with the composite reference

standard) over Xpert. Its specificity was comparable to that of Xpert; however,

a few false-positive results were observed among trace- and very low-positives.

Among six culture-negative but Xpert Ultra-positive cases, two were clinically

diagnosed as tuberculosis. Of the 13 rpoB mutant strains, Xpert correctly

detected all mutations in the rifampin resistance-determining region, whereas

Xpert Ultra yielded indeterminate results for Q432P and Q429H/L430P/H445Q.

**CONCLUSIONS:** Xpert Ultra tends to have increased sensitivity; however, it shows

potential diagnostic ambiguity associated with trace- or very low-positive

results. These findings highlight the importance of clinical correlation,

particularly in culture-negative cases. Indeterminate results in certain rpoB

mutations require cautious interpretation.

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PMID: 40947993

**29. Brief Bioinform. 2025 Aug 31;26(5):bbaf484. doi: 10.1093/bib/bbaf484.**

Characterization of the complex TB pharmacogenomic landscape in Africa using

bioinformatic tools.

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Currently, many of the world's most culturally and genetically diverse

populations, located in Africa, risk exclusion from advancements in

pharmacogenomics (PGx) and personalized medicine. Optimizing treatment outcomes

for these populations is crucial, particularly for widespread diseases such as

tuberculosis (TB). Reducing adverse drug reactions is essential for improving

treatment adherence and overall outcomes. However, investigating the PGx

landscape in African populations is challenging due to the lack of genotype and

phenotype data, as well as limited computational tools and resources tailored to

their genetic diversity. This study assessed various bioinformatic methodologies

to characterize variations in the absorption, distribution, metabolism, and

excretion (ADME) of anti-TB drugs in a large African cohort (>21 populations

from public and in-house datasets). Special focus was placed on the Khoe-San,

one of Africa's most genetically diverse groups, and the South African Coloured

(SAC) community, whose richly diverse genetic background arises from recent

admixture. We developed a graphic resource to support the investigation of

anti-TB drug PGx in Africa. African-specific genomic studies addressing major

health challenges on the continent are critical for informing the development of

relevant genotyping and reference panels, enabling more cost-efficient

personalized care in the region. This study offers a comprehensive assessment of

the TB PGx landscape in Africa and highlights the potential of computational

methods to promote the inclusion of genomically diverse African populations in

PGx research.

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PMID: 40975835 [Indexed for MEDLINE]

**30. Indian J Tuberc. 2025 Oct;72(4):562-565. doi: 10.1016/j.ijtb.2025.04.012. Epub 2025 Apr 30.**

Clinico-demographic profile of pre-extensively drug-resistant pulmonary

tuberculosis patients in India.

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Sridhar R(11), Vadgama P(12), Suryakant(13), Prabhakaran R(14), Ramesh PM(15),

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Drug-resistant tuberculosis (DR TB) is a major public health problem and an

important area of research. Identification of various risk factors is essential

for its prevention and management. Adults weighing more than 30 kg, aged 18

years or more diagnosed with pre extensively drug resistant TB (pre-XDR TB) were

initiated on bedaquiline and linezolid based regimens along with

pretomanid/delamanid as part of two multicentric clinical trials in India.

Pre-XDR TB was defined as patients infected with M. tb strains resistant to

rifampicin (may or may not be resistant to isoniazid) with additional resistance

to fluoroquinolones and/or second line injectable as per the existing World

Health Organization (WHO) definitions during the trial period. We describe here

the baseline demographic and clinical profile of patients with pre-XDR TB and

enrolled in those two trials. Of 554 Pre-XDR TB patients, 297 (54 %) were males.

Median age (IQR) was 27 years [22.0-36.3] and body mass index was 17.4

[15.7-20.1] kg/m2. Of all, 326 (59 %) had BMI <18.5 kg/m2. History of previous

episodes of TB was reported by 415 (75 %) patients. Among them, 142 (34 %) had

taken treatment more than once, 279 (67 %) had treatment failure during the

previous episodes. Persons with a known history of diabetes were 67 (12 %).

Cough, cough with expectoration, fever and weight loss were the presenting

complaints in 539 (97 %) and 487 (88 %), 337 (61 %) and 314 (57 %) respectively.

Sputum smear microscopy showed more than ++ acid-fast bacilli in 264 (48 %).

Chest x-ray showed bilateral lung involvement in 329 (60 %) with more than two

zones involvement in 304 (55 %) and presence of cavities in 264 (48 %) patients.

Persons in the younger age group, those with malnutrition and previous history

of TB treatment were observed to be more in these cohort of patients with PreXDR

TB. High rates of treatment failure during the earlier episodes of TB with

increased disease severity and drug resistance during the current episode is a

matter of grave concern. Improved treatment success during the management of

drug sensitive TB, addressing the nutritional challenges are some of key areas

of focus in the prevention of DRTB burden.

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**31. Indian J Tuberc. 2025 Oct;72(4):556-559. doi: 10.1016/j.ijtb.2025.01.002. Epub 2025 Jan 11.**

Co-infection of Nocardia otitidiscaviarum and Mycobacterium tuberculosis in an

immunocompetent elderly patient with chronic obstructive pulmonary disease: A

rare case from North India.

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Chronic obstructive pulmonary disease (COPD) patients are susceptible to various

bacterial and viral respiratory infections due to jeopardized structural and

immunological defense mechanism along with long term or intermittent local

corticosteroid administration. COPD is a common susceptibility factor for both

Mycobacterium tuberculosis (MTB) and Nocardia spp. Herein, we report a case of

co-infection of pulmonary nocardiosis and pulmonary tuberculosis (PTB) in a

75-year-old man with COPD. Infections due to Nocardia otitidiscaviarum remain

infrequently reported. Concurrent PTB with nocardiosis may have devastating

outcomes and may be missed. Hence, early diagnosis and initiation of therapy are

crucial in both Tuberculosis and Nocardiosis.

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**32. Indian J Tuberc. 2025 Oct;72(4):552-555. doi: 10.1016/j.ijtb.2024.09.005. Epub 2024 Sep 21.**

Tuberculoma of deep peroneal nerve- a rare case report.

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Tuberculosis can mimick various diseases, causing a diagnostic

dilemma.Tuberculomas of peripheral nerves arerare, only 9 cases were reported

till date, we report a case of tuberculoma of deep peroneal nerve. A 29 year old

subject, presented with complaints of painful swellings over right leg& foot

since 2months. Patient developed diffuse swelling of right lower limb 5 years

ago, for which he was treated with NSAIDs & serratiopeptidase by a local

practitioner for 2 weeks after which he noticed tiny swellings on lower half of

right shin & right foot which grew in size gradually &became painful since 2

months. Examination revealed tiny palpable mobile nodular soft swellings over

lower aspect of right leg & over right foot. Ultrasonography of the swellings

showed multiple ovale capsulated hypoechoic swellings largest measuring

18.9∗6.1 mm in the mid/lower leg subcutaneous plane anteriorly & similar lesions

in the lower leg & dorsum of foot, suggesting benign neoplastic etiology of

neural origin. Excision biopsy from deep peroneal nerve sheath tumour showed

extensive areas of caseous necrosis with few epitheloid clusters with dense

lymphocytic collections in the periphery, suggesting caseating granulomasof

tubercular etiology. After making a diagnosis of tuberculoma of deep peroneal

nerve, the patient has been initiated on Anti tubercular therapy & the patient

respoded to ATT. Tuberculomas of peripheral nerves are rare. Final diagnosis

comes from histopathology that reveals caseous necrosis surrounded by epitheloid

histiocytes with or without granulomas Nerve exploration, lesion resection, and

ATT results in good neurological recovery.

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**33. Indian J Tuberc. 2025 Oct;72(4):547-551. doi: 10.1016/j.ijtb.2025.03.013. Epub 2025 Mar 24.**

In search of a better tuberculosis governance in village level: A regulatory

analysis in Indonesia.

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Sciences, Universitas Diponegoro, Indonesia.

**BACKGROUND:** Amid the high prevalence of Tuberculosis (TB) in Indonesia,

Presidential Regulation No. 67 of 2021 introduces new hope by emphasizing a

multi-sectoral and multi-stakeholder approach, highlighting the potential for

greater involvement of village governments.

**AIMS:** This article explores opportunities and challenges for strengthening the

role of village governments in TB control through a review of relevant

regulations.

**METHODS:** A desk study approach was employed, using a policy analysis framework.

**RESULTS:** The regulation underscores the government's commitment to combating TB

through a comprehensive approach that engages various sectors and stakeholders,

including governments at all levels, the private sector, academia, and civil

society. A key aspect of the regulation is its emphasis on involving village

governments in TB governance. To date, village governments have had limited

involvement, with TB management largely remaining under the purview of health

offices. The Presidential Regulation attempts to position village governments,

as the closest administrative unit to communities, as an integral part of the TB

elimination mission. In the Indonesian context, this is a breakthrough. However,

regulatory analysis found that there is still a need to produce derivative

regulations to realize the empowered roles of village governments and enable

them to incorporate TB-responsive strategies into their development planning.

**CONCLUSION:** As such, the Presidential Regulation marks a significant step

forward in enhancing the role of village governments in TB control; however,

further regulatory support is necessary to realize its full potential.

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**34. Indian J Tuberc. 2025 Oct;72(4):540-546. doi: 10.1016/j.ijtb.2025.07.004. Epub 2025 Jul 11.**

Macrophage profiles in drug-resistant tuberculosis patients and their close

contacts: A pilot study.

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Macrophages play a key role in controlling tuberculosis infection. This pilot

study aimed to analyze the macrophage profile in drug-resistant tuberculosis

patients compared to a group of close contacts diagnosed with latent infection

and a group of healthy. The Interferon Gamma Release Assay (IGRA) was tested on

the close contact group to determine their infection status. PBMCs were cultured

using RPMI 1640 medium with M-CSF and autologous serum, incubated for 7 days at

37oC with 5 % CO2 Incubator. Macrophage profiles were analyzed using the flow

cytometry technique with CD68+, CD80+, CD206+ markers, and the cytokine profiles

were analyzed using multiplex immunoassay. The results of the IGRA showed that

of the 18 close contact subjects, 8 subjects (44.4 %) were declared latent

infected (LTBI) and 10 subjects (55.6 %) were declared healthy. The results

showed that the macrophage population exhibit CD206+ expression in each group,

which showed a tendency for macrophages toward the M2 type (Kruskal-Wallis,

p > 0.05). Cytokine examination showed high IL-10 levels in each group

(Kruskal-Wallis, p > 0.05). This research is expected to provide information

regarding the characteristics of macrophages as components of innate immune

cells which have an important role in tuberculosis infection.

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**35. Indian J Tuberc. 2025 Oct;72(4):537-539. doi: 10.1016/j.ijtb.2025.03.001. Epub 2025 Mar 7.**

Therapeutic Drug Monitoring-how to tackle non-responsive drug sensitive

tuberculosis.

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**BACKGROUND:** Therapeutic Drug Monitoring (TDM) helps in optimizing the dose which

maximizes the therapeutic benefit and minimizes the toxicity. In pulmonary and

extrapulmonary tuberculosis (PTB/EPTB), it allows the physician to take actions

timely for antitubercular treatment (ATT) regimen, required in patients who are

responding slowly to the treatment. Early interventions may prevent drug

resistance development in such patients.

**AIM:** To see the effect of Therapeutic Drug Monitoring in Non responding Drug

sensitive TB.

**METHODS:** A retrospective study was conducted, wherein 8 Cases of TB, who

underwent TDM, were studied. The dose of ATT was according to weight band and

drug sensitivity testing was already done.

**RESULTS:** TDM was done in 8 cases of TB proved as PTB (12.5%, n = 1) and EPTB

(87.5%, n = 7) by microbiological testing via AFB smear (12.5%, n = 1) and NAAT

(87.5%, n = 7) and were not responding to conventional antitubercular regimen.

Serum Rifampicin and Isoniazid levels were checked in 100% (n = 8) and 75% (n =

6) patients respectively. Serum Rifampicin level was reduced in 100% patients

and Serum Isoniazid level was reduced in 66.6% (n = 4) and normal in 33.34% (n =

2) patients. Normal Serum concentration was achieved after dose adjustment in

patients with low serum level of both drugs. Patients were monitored for adverse

drug reactions (ADR) including hepatotoxicity. No patient showed ADR after

increasing the dose.

**CONCLUSION:** We conclude that poor or no response to ATT makes the biased

physician conclude the diagnosis as drug resistant TB. Therefore, it is

important to look for another aspect for serum drug levels, hence TDM.

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**36. Indian J Tuberc. 2025 Oct;72(4):527-531. doi: 10.1016/j.ijtb.2025.02.018. Epub 2025 Mar 10.**

Ecological determinants of paediatric tuberculosis in India.

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**BACKGROUND:** Paediatric tuberculosis is a surrogate indicator of ongoing TB

transmission. The present study explores the relationship between the burden of

paediatric TB cases and their ecological determinants in different states of

India.

**METHODS:** Based on a conceptual model framework, an ecological record-based

analysis was conducted using accessible national data from 33 Indian states and

union territories. Based on the exploratory factors, negative binomial

regression was performed to predict the number of paediatric tuberculosis cases.

**RESULTS:** There was statistically significant geospatial clustering in paediatric

TB incidence among states. Notification of paediatric cases was not affected by

the size of the state. The rate of paediatric tuberculosis increased

significantly by a factor of 1.004 and 1.107 for each unit increase in TB

incidence per 100,000 population and the proportion of stunted children. The

rate dropped significantly by a factor of 0.888 for each unit increase in

chemoprophylaxis proportion. The rate of paediatric tuberculosis increases by

1.004, 1.100, and 1.899 times for every unit increase in BPL %, BCG coverage,

and mean household size, respectively.

**CONCLUSION:** Adult TB case pool, malnutrition, overcrowding, and chemoprophylaxis

are important predictors of variation in paediatric cases in India.

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**37. Indian J Tuberc. 2025 Oct;72(4):521-526. doi: 10.1016/j.ijtb.2025.01.010. Epub 2025 Jan 25.**

Silicotuberculosis: Newer trends.

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Silicosis, a progressive lung disease, caused by inhaling silica dust, poses a

substantial health risk to workers in industries like mining, construction, and

manufacturing. Development of new technological processes like jewellery

manufacturing, processing of artificial stones etc has increased the number of

cases with silicosis, especially in the female gender. Silicosis is incurable

and leads to significant social and economic impact. Silicosis not only impairs

the lung function but also raises the risk of several comorbidities, including

chronic obstructive pulmonary disease (COPD), lung cancer, autoimmune disorders,

and tuberculosis (TB). Silico-tuberculosis (Silico-TB), the overlap of TB in

individuals with silicosis, is especially concerning as TB incidence is

significantly higher among those with silica exposure, complicating both

diagnosis and treatment. Advances in rapid molecular and culture-based

diagnostics have improved TB detection in silicosis patients. TB treatment is

done as per National Tuberculosis Elimination Programme (NTEP) Guidelines and TB

preventive treatment (TPT) given to silicotic patients after ruling out TB.

However, comprehensive management and prevention of Silico-TB remains

challenging. Efforts to combat silicosis must include both effective diagnostics

and preventive measures. Raising awareness about occupational hazards in

affected industries and within communities is essential to reduce exposure

risks. Furthermore, exploring innovative therapeutic options is essential for

improving Silico-TB management.

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**38. Indian J Tuberc. 2025 Oct;72(4):517-520. doi: 10.1016/j.ijtb.2025.01.004. Epub 2025 Jan 19.**

Overview of the tuberculosis vaccine development landscape.

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The introduction of a novel tuberculosis (TB) vaccine will help to decrease TB

incidence and is essential for achieving TB elimination. Given the limitations

of BCG, there is a requirement for new vaccines for TB that can prevent the

development of TB disease across all age groups. Currently, there are about 17

vaccines in clinical development from phase I to phase III. They belong to

different vaccine types namely - viral vector, mycobacterial inactivated,

mycobacterial live attenuated, protein subunit and mRNA vaccines. The TB

vaccines in development are intended to prevent infection or disease, prevent

recurrence or to act as therapeutic vaccines. Revaccination with BCG vaccine is

also currently being evaluated in the prevention of TB. Developing an effective

TB vaccine is challenging. Basic science research, advancing clinical

development and research to ensure public health impact is crucial in TB vaccine

development. Engaging stakeholders, securing funding, and advocating for support

could expedite the development of new TB vaccines.

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**39. Indian J Tuberc. 2025 Oct;72(4):506-512. doi: 10.1016/j.ijtb.2024.12.001. Epub 2024 Dec 19.**

Advanced tuberculosis diagnosis system: Integrating case-based reasoning with

nearest neighbor algorithm.

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**BACKGROUND:** A serious infectious illness with a high morbidity and death rate

worldwide, tuberculosis (TB) is more prevalent in low- and middle-income

nations. Although there are a number of diagnostic techniques, the most only

address tuberculosis in the lung and ignore drug-resistant strains (MDR-TB,

XDR-TB) as well as tuberculosis lymphadenitis. A thorough diagnostic system that

covers all types of tuberculosis is essential.

**OBJECTIVES:** To enhance TB diagnosis, particularly pulmonary TB, lymphadenitis,

and drug-resistant TB, this study offers an expert system based on Case-Based

Reasoning (CBR) and the Nearest Neighbor Algorithm.

**METHODS:** Information was gathered from hospital records of prior tuberculosis

cases, including 43 cases from Debre Tabor General Hospital. In addition to

document analysis, information was acquired through both structured and

unstructured interviews with medical specialists. The R4 model-Retrieve, Reuse,

Revise, and Retain-is followed by the system architecture. Recall, expert

acceptance, and precision were among the evaluation metrics.

**RESULTS:** The system had an 86.5% expert acceptance rate, 84.7% precision, and

75.3% recall. Compared to previous medical diagnostic methods, it shown a

notable improvement, especially in diagnosing mental health and hypertension.

**CONCLUSION:** By combining Case-Based Reasoning and the Nearest Neighbor

Algorithm, it is possible to diagnose tuberculosis (TB) more effectively and

with greater accuracy. This integration also makes it possible to diagnose cases

that are resistant to drugs. In order to improve the system's performance even

more, future research may investigate the integration of additional reasoning

strategies.

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**40. Indian J Tuberc. 2025 Oct;72(4):500-505. doi: 10.1016/j.ijtb.2025.02.017. Epub 2025 Feb 25.**

Antibacterial susceptibility pattern of Mycobacterium isolates from Alborz

bird's garden: Insights into evolution and transmission dynamics.

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**BACKGROUND AND OBJECTIVES:** This study aimed to isolate and identify

Mycobacterium strains from the bird population at Alborz Bird Park, as well as

from personnel working in the vicinity. Mycobacterium is a historically

significant zoonotic pathogen that poses a serious threat to both humans and

various bird species.

**MATERIALS AND METHODS:** A total of ninety samples of bird feces from different

species were collected from CHAMRAN Bird's Park in Alborz province. These

samples underwent decontamination, culture, antibacterial susceptibility

testing, and PCR analysis.

**RESULTS:** PCR analysis revealed that 33 out of 42 suspected Mycobacterium

isolates from birds tested positive for the Mycobacterium genus. No

Mycobacterium tuberculosis complex was detected. The presence of Mycobacterium

avium complex was confirmed in 21 isolates, and 16 samples were identified as

Mycobacterium avium subsp. avium. Additionally, 12 isolates were identified as

non-tuberculous mycobacteria (NTMs).

**CONCLUSION:** The presence of Mycobacterium avium complex and non-tuberculous

mycobacteria in the bird population highlights the increasing prevalence of NTM

infections, particularly in regions with effective tuberculosis control

programs. Mycobacterium infections represent a significant threat to individuals

with AIDS, ranking as the second leading cause of infectious mortality in this

population.

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PMID: 40975581 [Indexed for MEDLINE]

**41. Indian J Tuberc. 2025 Oct;72(4):494-499. doi: 10.1016/j.ijtb.2025.02.004. Epub 2025 Feb 3.**

Community-based assessment of Tuberculosis Preventive Therapy among household

contacts living with index pulmonary TB patient in rural Delhi.

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**BACKGROUND:** Latent tuberculosis infection (LTBI) poses a substantial risk for

developing active TB, making TPT crucial for TB control. This study assesses the

initiation and completion rates of TPT among household contacts of TB patients

and reasons for non-initiation and non-completion.

**METHODS:** A community-based cross-sectional study was conducted in areas served

by the DOTS center under RHTC, Najafgarh. The study included 430 household

contacts of pulmonary TB patients registered from January 2022 to December 2022.

Participants were selected using a simple random sampling method.

**RESULTS:** Out of 430 participants, 220 (51.2%) were aware of TPT and only 202

(46.9%) of all potential household contacts were screened for active TB. Among

the aware HHCs (220), 188(85.4%) were initiated on TPT and among those who were

initiated on TPT, 125(66.5%) completed their treatment. In comparison, 59(31.4%)

were lost to follow-up, and 4(2.1%) discontinued due to side effects. The

primary reason for non-initiation was not feeling the need for TPT 29(90.6%),

and for non-completion of treatment, it was unavailability of medicine

32(50.8%).

**CONCLUSION:** There is a need for increasing awareness about TPT and a focus on

systematic screening for TPT among HHCs of pulmonary TB patients. Proper

implementation of government initiatives and monitoring are vital for improving

TPT initiation and completion rates.

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**42. Indian J Tuberc. 2025 Oct;72(4):489-493. doi: 10.1016/j.ijtb.2025.02.014. Epub 2025 Feb 20.**

Comparison of 6 months isoniazid versus 3 months isoniazid - rifampicin therapy

for prevention of tuberculosis in children suffering from tuberculosis infection

- A randomized controlled trial.

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**BACKGROUND:** Tubercular infection is highly prevalent in our country and

conversion to tuberculosis disease is a major concern. Under the National

Strategic Plan, India is heading towards ending tuberculosis by 2025. The

benefits of tuberculosis preventive therapy are being extended to the children

aged ≥5 years, adolescents and adults who are household contacts of people with

bacteriologically confirmed pulmonary tuberculosis who are found not to have

active tuberculosis. Many types of tuberculosis preventive therapy are studied,

the choice depends on availability and tolerability profile. Therefore, this

study had an aim of comparing effectiveness of 6 months of Isoniazid (6H) with 3

months Isoniazid-Rifampicin (3HR) therapy in children suffering from tubercular

infection.

**METHOD:** A randomized trial (CTRI No- CTRI/2022/02/040539), was carried out

comparing two different regimes of tuberculosis preventive therapy. Children

with age 6-14 years who were household contacts of bacteriologically confirmed

tuberculosis patients and having tubercular infection were enrolled. After

ruling out tuberculosis, they were randomized into two groups and started on

either six month of isoniazid therapy or three months of isoniazid-rifampicin

combination. They were followed up for a period of two years for development of

tuberculosis, treatment adherence, treatment completion and adverse effects.

**RESULT:** There was no incidence of active tuberculosis in either of two groups

till the last follow up. Treatment adherence was comparable in both the groups

(p = 1). Treatment completion rate was significantly higher in Group 3HR (96.9%)

as compared to that in Group 6H (p = 0.046). Loss to follow-up rate was 3.1% in

3HR as compared to 9.4% in 6H group (p = 0.613). No significant symptomatic

adverse events or derangement in liver enzymes was observed in either the

groups.

**CONCLUSION:** Three months of isoniazid-rifampicin therapy is an effective regime

for tuberculosis preventive therapy in children age 6-14 years living in

household contact of bacteriologically confirmed tuberculosis patients.

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PMID: 40975579 [Indexed for MEDLINE]

**43. Indian J Tuberc. 2025 Oct;72(4):471-476. doi: 10.1016/j.ijtb.2024.11.005. Epub 2024 Nov 21.**

Comparison of GeneXpert accuracy in diagnosis of tuberculosis between patients

with and without positive results of acid-fast bacilli smear and HIV.

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**BACKGROUND:** There is controversy regarding the indications of conducting

GeneXpert assay for patients suspected of tuberculosis (TB). Therefore, we

compared the accuracy of the assay between patients with and without positive

results of acid-fast bacilli (AFB) smear and HIV.

**METHOD:** The study was conducted on patients referred to Shiraz TB laboratory

from March 21, 2022, to March 20, 2023. Considering culture as the gold

standard, we determined and compared the accuracy of GeneXpert assay and area

under the Receiver Operating Characteristic (ROC) curve between high- and

low-risk groups, i.e., HIV-positive or AFB smear-positive ones vs. HIV-negative

ones with negative AFB smear.

**RESULT:** There was not a significant difference between the accuracy of the high-

and low-risk groups (91.34 vs. 92.44, p = 0.664). While the sensitivity (95.23),

specificity (92.29), and NPV (99.72) in the low-risk group were high, the PPV of

the group (39.89) was significantly lower (P < 0.001) than that of the high-risk group (83.86).

**DISCUSSION:** Because of the low PPV of the assay in HIV-negative patients with

negative AFB smears, our study could not confirm the necessity of conducting the

assay for the low-risk patients. However, the study indicated the necessity for

patients with HIV or a positive AFB smear.

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**44. Indian J Tuberc. 2025 Oct;72(4):465-470. doi: 10.1016/j.ijtb.2025.02.016. Epub 2025 Feb 25.**

Delay in TB preventive treatment (TPT) initiation among household contacts of

pulmonary TB patients: Does it affect the TPT outcome?

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**BACKGROUND:** TB Preventive Treatment (TPT) is considered as an effective

intervention to reduce TB incidence by reducing the pool of TB infection in the

community. This study was aimed to assess TPT outcome and its associations in

West Bengal.

**METHOD:** ology: A retrospective cohort study conducted using the data from

Ni-kshay, the web-based TB information management portal of India. All TPT

beneficiaries who have initiated with TPT in the year 2022 were included in the

study. To find out the independent risk factor associated with unsuccessful

outcome, risk ratio (RR) and adjusted risk ratio (aRR) has been calculated using

regression models.

**RESULTS:** Median age and BMI of the participants were 32 years, & 20.9 kg/m2

respectively. Median delay to TPT initiation from diagnosis of the index TB

patients was 23 days. 90.5% (90.2-90.7) outcomes were successful while 9.5%

(9.3-9.8) outcomes were unfavourable. 0-9yrs (aRR = 1.31), 10-19yrs (aRR = 1.16) & 20-39yrs (aRR = 1.10) age-groups were more likely to be associated with unsuccessful TPT outcomes. Overweight (aRR = 1.10) & Obese (aRR = 1.19) were associated with unsuccessful outcomes. Participants belong to urban areas (aRR = 1.37) & attending Private Health Facility (aRR = 1.17) were more likely to be associated with an unsuccessful outcome. TPT initiation delay of 8-30 days (aRR = 2.03) and >30 days (aRR = 2.90) was associated with unsuccessful TPT outcomes.

**CONCLUSION:** There are few gaps as well as few opportunities in the TPT programs

in West Bengal. Gaps are both in policy level as well as implementation level.

Identified gaps should be addressed for a better TB preventive strategy in West

Bengal.

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DOI: 10.1016/j.ijtb.2025.02.016

PMID: 40975575 [Indexed for MEDLINE]

**45. Indian J Tuberc. 2025 Oct;72(4):460-464. doi: 10.1016/j.ijtb.2024.11.004. Epub 2024 Nov 19.**

Knowledge, attitude and practice regarding tuberculosis among nursing students

in a coastal district of Karnataka.

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**INTRODUCTION:** India has the highest burden of Tuberculosis (TB) in the world.

Delay in diagnosis and treatment is one of the main reasons for high burden of

TB in India. Proper knowledge, attitude and practice regarding Tuberculosis

among health care workers is essential to improve case finding and treatment in

TB. Nursing students are the prospective healthcare providers in the fight

against tuberculosis.

**AIM:** To assess the knowledge, attitude, and practice regarding tuberculosis

among nursing students.

**METHODS:** This was a Cross-sectional, analytical type of study done on 313

nursing students after taking Institutional Ethical committee clearance. It was

done using a pre-tested, semi-structured questionnaire, on selected nursing

colleges in Mangalore city of Karnataka state. Analysis of data was done using

the software "IBM SPSS Statistics". Chi-square test was used to test

association. P value less than 0.05 was considered statistically significant.

**RESULTS:** Only 24.9% of the respondents had good knowledge and 58.8% had moderate

knowledge about tuberculosis. Students studying B.Sc. nursing knew more about

tuberculosis than those studying General Nursing. 67.4% of students had good

attitude towards tuberculosis. Practice towards various aspects of tuberculosis

was not satisfactory in more than 50% of the students.

**CONCLUSION:** Most of the nursing students have moderate knowledge about

tuberculosis, but their attitude and practice towards TB is not at satisfactory

level. Hence specific training measures should be included in their curriculum

to improve their knowledge, attitude, and practice regarding tuberculosis. This

will help in early diagnosis and proper treatment of TB.

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PMID: 40975574 [Indexed for MEDLINE]

**46. Indian J Tuberc. 2025 Oct;72(4):455-459. doi: 10.1016/j.ijtb.2025.09.001. Epub 2025 Sep 2.**

From data to decisions: Statistical tools and Artificial Intelligence in

tuberculosis Operational Research.

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**BACKGROUND:** Tuberculosis (TB) remains a major public health challenge,

especially in low- and middle-income countries. Operational Research (OR),

supported by robust statistical methods, plays a critical role in optimizing TB

control strategies.

**OBJECTIVE:** This review highlights the statistical tools applied in TB

Operational Research, their applications, and the emerging role of Artificial

Intelligence (AI) in strengthening data-driven decision-making.

**METHODS:** We examine classical statistical approaches alongside predictive

modeling, cost-effectiveness analysis, and AI-based frameworks. Case examples

from diverse settings illustrate their practical impact.

**FINDINGS:** Statistical methods underpin surveillance, diagnosis, treatment

evaluation, and policy modeling in TB programs. AI-driven techniques, such as

machine learning and deep learning, are expanding the analytical landscape by

enhancing prediction, identifying high-risk populations, and enabling real-time

program monitoring.

**CONCLUSION:** Statistical tools from traditional inference to AI-modeling are

essential for advancing TB control. Strengthening methodological rigor,

reporting standards and interdisciplinary collaboration will be pivotal in

harnessing data for effective TB elimination strategies.

Copyright © 2025. Published by Elsevier B.V.

DOI: 10.1016/j.ijtb.2025.09.001

PMID: 40975573 [Indexed for MEDLINE]

**47. Nucleic Acids Res. 2025 Sep 5;53(17):gkaf929. doi: 10.1093/nar/gkaf929.**

Inhibition of DNA cleavage and strand passage activities of Mycobacterium

tuberculosis topoisomerase I.

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Topoisomerase I (TopoI) is the sole DNA relaxase in Mycobacterium tuberculosis.

Despite being a validated drug target and indispensable to the pathogen, only a

limited repertoire of inhibitors targeting the enzyme have been identified. We

employed monoclonal antibodies (mAbs) to address this shortfall. From the pool

of a large number of mAbs, we describe an inhibitory mAb specific to

mycobacterial TopoI with a distinct mechanism of action. Among the various steps

of the TopoI reaction cycle, the mAb does not interfere with DNA binding but

impedes DNA cleavage. It does not alter the religation activity of TopoI;

however, it inhibits its strand passage activity. Probing with the mAb, we show

the precise step at which the topology of the DNA is changed during DNA

relaxation reaction. Surprisingly, instead of the initial strand scission action

of the enzyme, the subsequent strand passage followed by the second

transesterification entails the alteration in DNA topology. With their selective

and specific inhibitory properties, the mAb and its derived single-chain

variable fragment (ScFv) would serve to probe the structure of mycobacterial

TopoI and as a starting point in designing peptide inhibitors with therapeutic

potential to combat the rampant drug-resistant M. tuberculosis.

© The Author(s) 2025. Published by Oxford University Press.

DOI: 10.1093/nar/gkaf929

PMCID: PMC12449047

PMID: 40973451 [Indexed for MEDLINE]

**48. Rev Esc Enferm USP. 2025 Sep 8;59:e20250029. doi:**

**10.1590/1980-220X-REEUSP-2025-0029en. eCollection 2025.**

Information on latent tuberculosis infection in higher education: social

representations of nursing students.

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Enfermagem, Belém, PA, Brazil.

**OBJECTIVE:** To analyze the social representations of nursing students regarding

the sharing of information about latent tuberculosis infection in higher

education.

**METHOD:** Descriptive, qualitative study, anchored in the procedural aspect of the

Theory of Social Representations. It was carried out with 37 students who

reacted to the tuberculin test, enrolled from the 1st to the 5th grade, in the

Undergraduate Nursing Course at a public university in Belém, Pará, Brazil.

Between March and July 2023, semi-structured individual interviews were

conducted, the corpus of which was subjected to lexical analysis with the

software Interface de R pour les Analyses Multidimensionnelles de Textes et de

Questionnaires (0.7, alpha 2), using descending hierarchical classification.

**RESULTS:** A total of 1,939 text segments were identified, of which 1,686 (86.95%)

were used, generating seven lexical classes. It was decided to detail class 7,

which outlined two representational sets, addressing how information was shared

and suggestions on the topic.

**CONCLUSION:** The limitations that weakened the timely sharing and quality of

information motivated students to make suggestions to solve the challenges

inherent to this context or mitigate its harmful effects.

DOI: 10.1590/1980-220X-REEUSP-2025-0029en

PMCID: PMC12448237

PMID: 40971201 [Indexed for MEDLINE]

**49. Euro Surveill. 2025 Sep;30(37):2500119. doi:**

**10.2807/1560-7917.ES.2025.30.37.2500119.**

Tuberculosis screening among people who experience homelessness in Brno: a

20-year public health intervention, Czechia, 2005 to 2024.

Šponiar Ovesná V(1)(2), Ciupek R(2), Holčíková A(2), Jirková H(2).

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Czechia.

**INTRODUCTION** Tuberculosis (TB) is curable and preventable, yet remains a health

concern in vulnerable populations. Individuals experiencing homelessness are at

increased risk owing to medical, environmental and social factors.AIMWe aimed to

evaluate a 20-year TB screening programme in people experiencing homelessness in

Brno, Czechia (2005-2024), and analyse additional TB diagnoses in this

population made outside the project, to inform public health strategies for TB

control in vulnerable groups in a low-incidence country.**METHODS** Clinical

examination and chest X-ray screening were offered to people without stable

housing, incentivised by meal vouchers. Individuals with pathological findings

underwent further diagnostic evaluation and treatment. Demographic and clinical

data were collected. Additional TB diagnoses made in this population through

other detection methods were analysed for comparison.**RESULTS** Between 2005 and

2024, of 3,918 individuals approached, 2,664 participated in screening (average

participation rate: 68.0%), and 18 were diagnosed with TB through the project.

Another 132 individuals experiencing homelessness were diagnosed with TB through

other pathways, yielding 150 diagnoses, representing 19.3% of TB notifications

in Brno. The estimated TB incidence among people experiencing homelessness was

24.4 times higher than in the general population (95% confidence interval:

20.5-28.9). Despite a citywide decline in TB incidence, the proportion of TB

diagnoses among people who experience homelessness increased over

time**.CONCLUSION** Homelessness is a risk factor for TB in low-incidence settings.

This long-term screening initiative proved feasible and valuable, demonstrating

how outreach-based screening can support early detection and contribute to TB

prevention among socio-economically marginalised populations.

DOI: 10.2807/1560-7917.ES.2025.30.37.2500119

PMCID: PMC12449680

PMID: 40970305 [Indexed for MEDLINE]

**50. Cureus. 2025 Aug 18;17(8):e90393. doi: 10.7759/cureus.90393. eCollection 2025**

**Aug.**

Smear-Negative Pulmonary Tuberculosis with Cavitary Disease in a Young Immigrant

Patient: A Diagnostic Challenge.

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Tuberculosis (TB) remains a public health concern in the United States, with

most cases resulting from reactivation of latent infection. Smear-negative

pulmonary TB (SNTB) presents a diagnostic challenge, often lacking classical

radiographic findings or sputum smear positivity. Diagnosis in such cases

depends on a high index of suspicion and the integration of clinical,

radiographic, and epidemiologic information. We report the case of a 26-year-old

male patient with no significant past medical history who presented with

hemoptysis, fever, night sweats, and weight loss. He had immigrated from Cuba 18

months prior and worked in construction, with exposure to silica and aluminum

dust. Chest imaging revealed cavitary pneumonia. Despite treatment for a

presumed atypical pneumonia, his symptoms persisted. Immune-based testing

ultimately supported a diagnosis of TB, and the patient improved after

initiation of standard therapy. This case highlights the diagnostic complexity

of SNTB, especially when radiographic findings are atypical and confounding

serologic tests are present. His occupational exposure to silica likely

contributed to disease susceptibility. He had experienced fever, cough, night

sweats, weight loss, and hemoptysis for approximately one week prior to

presentation, underscoring the importance of considering epidemiologic and

occupational context in patients with acute respiratory symptoms. Early

recognition of smear-negative disease is critical for timely treatment and

public health control. As TB continues to affect urban U.S. areas with high

immigration and occupational risk, early recognition of smear-negative disease

is critical for timely treatment and public health control.

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DOI: 10.7759/cureus.90393

PMCID: PMC12442741

PMID: 40970031

**51. Front Immunol. 2025 Sep 3;16:1633977. doi: 10.3389/fimmu.2025.1633977.**

**eCollection 2025.**

The impact of mycobacteria-induced trained immunity on SARS-CoV-2 vaccine

responses.

Sánchez-Morales L(1)(2), Porras N(1), Pérez-Domingo A(1), Pérez-Sancho M(1)(2),

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**INTRODUCTION:** Beyond the role of Bacillus Calmette-Guérin (BCG) for tuberculosis

prevention, BCG has demonstrated heterologous protective effects. The global

health crisis caused by the SARS-CoV-2 virus led to research on whether

BCG-induced trained immunity could strengthen antiviral defenses. However,

studies reported quite different results on its effect against COVID-19.

**METHODS AND RESULTS:** In this study, we evaluated the impact of pre-existing

trained immunity induced by a BCG-derived Mycobacterium bovis strain (dpB), in

both live and inactivated forms, in combination with SARS-CoV-2 vaccination

prior to challenge in a mouse model. While the SARS-CoV-2 vaccine was enough for

protection in morbidity and mortality terms, its combination with live dpB

significantly enhanced immune responses reflected in higher levels of

pro-inflammatory cytokines, reduced pulmonary viral loads, and improved

histopathological outcomes. Additionally, the formation of inducible

bronchus-associated lymphoid tissue (iBALT) in lungs in vaccinated animals

pre-exposed to live dpB points to a potential mechanism for long-term immune

surveillance in the respiratory tract.

**CONCLUSIONS:** These immunological findings highlight the potential benefits of

integrating trained immunity inducers with pathogen-specific vaccines to enhance

immune responses and protection. Further research is needed to optimize

immunomodulation strategies, dosing regimens and administration routes to

maximize these synergistic effects and prevent potential negative effects.

Copyright © 2025 Sánchez-Morales, Porras, Pérez-Domingo, Pérez-Sancho,

García-Seco, Diaz-Frutos, Buendia, Moreno, Zamora, Balseiro, Risalde,

Rodriguez-Bertos, Gortázar, Domínguez and Domínguez.

DOI: 10.3389/fimmu.2025.1633977

PMCID: PMC12441830

PMID: 40969767 [Indexed for MEDLINE]

**52. Rev Bras Med Trab. 2025 Jun 11;23(2):e20251361. doi:**

**10.47626/1679-4435-2025-1361. eCollection 2025 Apr-Jun.**

Lymph node tuberculosis after occupational exposure in a Portuguese physician.

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Tuberculosis is an infectious disease that remains a significant work-related

health concern among health professionals. This report describes the case of a

48-year-old immunocompromised physician identified by Occupational Health

Services during contact tracing following high-risk exposure to a tuberculosis

case. The patient presented with fever, night sweats, and productive cough, and

was referred to a Pulmonary Diagnostic Center for further evaluation. After an

appropriate investigation, a diagnosis of lymph node tuberculosis was

established. Antitubercular therapy was initiated without complications, and the

patient returned to work following clinical and radiological improvement. An

occupational health assessment was conducted, and a formal report of

occupational disease was filed. This case highlights the essential role of

Occupational Medicine in the timely identification of workers at risk of

exposure and their appropriate follow-up.

DOI: 10.47626/1679-4435-2025-1361

PMCID: PMC12443378

PMID: 40969587

**53. Clin Respir J. 2025 Sep;19(9):e70126. doi: 10.1111/crj.70126.**

Prevalence, Distribution, and Risk Factors of Mycobacterium Other Than

Tuberculosis Among Tuberculosis Presumptive Patients in Karonga District in

Malawi.

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(3)Mzuzu Central Hospital, Mzuzu, Northern Region, Malawi.

**INTRODUCTION:** Besides tuberculosis (TB), there are also other nontuberculous

mycobacteria (NTM) that present with similar clinical signs and symptoms as TB.

If not promptly found and treated, these organisms may affect the programming of

the TB control and elimination campaign. The study sought to establish the

prevalence, distribution, and factors contributing to MOTT infections among

presumptive TB patients in the Karonga district.

**METHODS:** A descriptive cross-sectional study research design was employed. A

total of 196 participants were included in the study using a census approach.

Data were collected by administering a questionnaire to the health care worker,

and a sputum specimen was collected from the participants; this specimen was

used to examine the presence of mycobacterium using the microscope. Regardless

of the results at the district-level laboratory, all the specimens were then

sent to the Mzuzu region TB reference laboratory to isolate Mycobacterium

tuberculosis and Mycobacterium Other Than Tuberculosis.

**RESULTS:** Of the 196 samples collected, 14 (7.1%) were positive at the district

level. When sent for culture, 195 (99.5%) had culture results, and 23 (12%) had

growth in culture. Out of the 23 (100%) culture-positive results, 12 (52%) were

MOTT-positive, while 11 (48%) were MTB complex. There were more men, seven (58%)

with MOTT-positive than women, five (42%), and more in the age group of 15-39

years old, with six (50%) and less in more than 60 years old two (16.7%).

**CONCLUSION:** The results show the presence of MOTT infections among presumptive

TB patients who submitted samples to the study. The distribution by sex shows

that more men had MOTT infections than women. However, all the risk factors

listed for the study were not significant for MOTT infections. The

recommendation is to improve the testing techniques to identify these

microorganisms, which are neglected but very difficult to assess, especially

when no clear population is at risk of getting these infections compared with

TB.

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Sons Ltd.

DOI: 10.1111/crj.70126

PMCID: PMC12446564

PMID: 40968523 [Indexed for MEDLINE]

**54. Tuberculosis (Edinb). 2025 Sep 12;155:102691. doi: 10.1016/j.tube.2025.102691.**

**Online ahead of print.**

Whole-genome sequencing-based surveillance system for Mycobacterium tuberculosis

in Portugal.

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To improve TB surveillance and diagnosis, the Portuguese National Reference

Laboratory (NRL) began implementing whole-genome sequencing (WGS) for all

RR/MDR-TB cases in 2019. Since 2020, this approach has been expanded to

indiscriminately include all received isolates. We describe the current

WGS-based surveillance system in Portugal, framed in prospective and

retrospective data (n = 1171), upgraded for antimicrobial resistance (AMR)

prediction and epidemiological analysis. This system relies on three main steps:

QC/QA and contamination assessment, with a novel data filtering step; genotyping

and AMR prediction; and dynamic SNP-based approach, maximizing variable sites

under analysis. While lineage 4 was the most prevalent (84.3 %) followed by

lineage 2 (9.1 %), less common EU/EEA sub-lineages (e.g., lineages 3 and 6)

showcased cross-border transmissions. Molecular clusters (n = 157) displayed

distinct AMR profiles and diverse possible epidemiological contexts. Among the

pipeline upgrades, we highlight: i) the novel filtering step that allowed the

improvement of 123 out of 128 contaminated samples; ii) tolerating missing data

per site more than doubled core variable site resolution; iii) automatic

maximization of shared variable sites for in-depth cluster analysis, key for

consolidating genetic links in epidemiological investigation. This study

highlights the importance of sustained prospective genomic surveillance towards

strengthening TB management and diagnosis in Portugal.

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DOI: 10.1016/j.tube.2025.102691

PMID: 40967101

**55. J Public Health (Oxf). 2025 Sep 12:fdaf106. doi: 10.1093/pubmed/fdaf106. Online ahead of print.**

A rapid review of the causes of diagnostic and treatment delays for tuberculosis

in low-burden countries.

Preston L(1), Thompson A(1), Baxter S(1), Chambers D(1), Collini P(1), Falzon

L(1), Goodall J(1), Lee A(1)(2).

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**BACKGROUND:** Delays in diagnosing and treating tuberculosis (TB) have significant

implications. We undertook a rapid review to explore factors associated with

delays at all stages of the diagnostic and treatment pathways in low-burden

settings.

**METHODS:** We searched databases (Embase, Medline, CENTRAL, Cinahl, PubMed,

Cochrane Database of Systematic Reviews, and Web of Science) for qualitative and

quantitative evidence (2010-25) from countries with low TB burden (incidence

rate <40/100 000 in 2020). Included studies were assessed on their robustness

and relevance. Due to the rapid review design, we did not conduct formal quality

appraisal.

**RESULTS:** The review included 3 reviews, 5 qualitative studies, 18 cohort

studies, and 13 cross sectional studies (n = 41) with varying robustness and

relevance. By synthesizing data using a patient pathway, we uncovered patient-

and healthcare-related factors that contribute to delays such as medical

history, health behaviours, level of patient and physician suspicion of TB,

service location (primary care), and timing of TB testing. Having extrapulmonary

TB was associated with greater total delay.

**CONCLUSIONS:** We have identified patient and health service factors that are

consistently associated with patient, diagnostic, and total delay from TB

symptom onset to initiation of treatment in low-burden settings. Factors

amenable to change should be the focus of public health interventions aimed at

reducing TB diagnostic delay.

© The Author(s) 2025. Published by Oxford University Press on behalf of the

Faculty of Public Health.

DOI: 10.1093/pubmed/fdaf106

PMID: 40966595

**56. J Public Health Res. 2025 Sep 14;14(3):22799036251373008. doi:**

**10.1177/22799036251373008. eCollection 2025 Jul.**

Prevalence of pulmonary tuberculosis and its associated risk factors among

suspected patients visiting Durbete Primary Hospital, northwest Ethiopia: A

cross-sectional study.

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**BACKGROUND:** Tuberculosis (TB) remains the leading cause of communicable

disease-related mortality worldwide. The present study aimed to determine the

prevalence of pulmonary tuberculosis (PTB), rifampicin resistance pattern, and

to identify the major explanatory risk factors among suspected patients visiting

Durbete Primary Hospital (DPH).

**DESIGN AND METHODS:** A cross-sectional study was conducted among patients

suspected with PTB at DPH from February to June 2022. All eligible suspected PTB

patients aged ≥18 years were included in the study. Data on risk factors were

collected using questionnaire. Two spot sputum specimens were collected from

each enrolled patient according to WHO guidelines. Sputum was examined by

GeneXpert and Ziehl-Neelsen microscopy. Logistic regression models were used to

determine the strength of association between dependent variable and risk

factors and to identify the major explanatory risk factors.

**RESULTS:** Of the total of 180 PTB suspected patients who participated in the

study, 17 (9.44%, overall prevalence) were identified as having PTB.

Participants who had an unknown history of hypertension (AOR = 8.483; 95% CI

1.059-67.935) and who had contact with known PTB cases (AOR = 16.108; 95% CI

1.983-130.844) were significantly associated with the prevalence of PTB

(p < 0.05). One (6.25%; 1/16) specimen that was detected as positive by the

GeneXpert was found to be resistant to rifampicin.

**CONCLUSION:** This study showed a relatively high prevalence of PTB among

suspected patients. Periodic surveillance of PTB and educating the local

community about major risk factors, such as contact with known PTB cases, are

necessary to reduce the prevalence of PTB.

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PMCID: PMC12437237

PMID: 40964422

**57. Indian J Radiol Imaging. 2025 Feb 25;35(4):558-567. doi: 10.1055/s-0045-1805004. eCollection 2025 Oct.**

Evaluation of Queue Management System (QMS) Use in Chest X-Ray for Tuberculosis

Screening: A Case Study.

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**BACKGROUND:** Tuberculosis (TB) remains a threat to public health globally and is

one of the top infectious killer diseases in Africa and Asia. The government and

international partners have strategically intervened by cascading chest

radiography (CXR) to identify, manage, and monitor treatments outcomes. However,

patient have reportedly been dissatisfied with the quality of CXR screening

services provided, raising complains that spans across quality of care, waiting

times, communication levels, staff attitudes, and treatment outcomes.

**AIM SETTINGS AND DESIGN:** Coming at this present time when the major focus in

health care is on improving patients' care and experience, this study aims to

ascertain the performance of queue management system (QMS) use for CXR-TB

screening in Nigeria as well as its acceptability; adopting quantitative

research design.

**MATERIALS AND METHODS:** Questionnaires were administered face-to-face to the

three categories of respondents (radiographers, radiology assistants, and

patients) who meet the specific set of inclusion criteria, following a brief

explanation about the research aim. Consent was gotten by way of a signed

consent form and ethical approval obtained. A Likert 5-point scale was utilized

in analyzing the responses, undergoing descriptive statistics using SPSS

(version 25) software.

**RESULTS:** QMS is extremely useful in workflow, accuracy, communication,

combatting work stress, and maintaining privacy, but with accompanying

occasional technical challenges. A remarkable preference for QMS to manual in

CXR-TB screening was noted among all research subjects, with strong level of

agreement (close mean values of 4.06, 3.81, 3.91; standard deviation of 0.70,

0.73, 0.60).

**CONCLUSION:** Findings from this study uncover the vital role the QMS plays in

improving the quality of CXR-TB screening services, demonstrating great

acceptability.

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PMCID: PMC12440589

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**58. Am J Hum Biol. 2025 Sep;37(9):e70146. doi: 10.1002/ajhb.70146.**

Immunity Switches and Macrophage Manipulations: Trauma, Ovulation, and

Depression as Latent Tuberculosis Reactivation Risks.

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Canada.

Inflammation is the immune system's natural response to initial tuberculosis

infection. Tuberculosis bacteria have gained adaptations to manipulate the

inflammatory process, sometimes settling into latency and containment in

granulomas, ensuring their survival. Grounded in an evolutionary framework, this

hypothesis-driven narrative synthesis centers upon immune-related switches,

macrophage manipulations, and the critical roles of vascular endothelial growth

factor A (VEGFA) in the body, exploring how this pro-inflammatory mitogen

expressed by M1 macrophages frames risks for latent tuberculosis reactivation.

The review focuses on trauma, ovulation, and depression, three case studies of

pro-inflammatory switches creating risks for reactivation because of M1

macrophage polarization, the up-regulation of VEGFA expression, and angiogenesis

(the sprouting of new blood vessels). A biological rationale is extended for why

skeletal tuberculosis is so often connected with onsets in childhood, why

adolescent and reproductive age females may experience heightened risks for

latent tuberculosis reactivation relative to males, and why there is a potential

for latent tuberculosis reactivation following onsets of depression. The

immunity switches and reactivation risks of trauma, ovulation, and depression

are problematic, particularly in contexts of endemic tuberculosis if large

numbers of people are routinely latently infected, and among individuals with

natural "high producer" VEGFA phenotypes, or those with strong type 1/M1/TH1 or

type 3/M1/TH17 pro-inflammatory switch tendencies, and in infections with

tuberculosis bacteria possessing macrophage- and granuloma-manipulating

adaptations (virulence factors). Arguably, any disease or physiological state

engaging pro-inflammatory switches (common and sometimes chronic in the modern

population) and M1 macrophage polarizations, and any drug treatments or

therapeutics intending to alter VEGFA expression should be considered for latent

tuberculosis reactivation risk.

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PMID: 40960002 [Indexed for MEDLINE]

**59. J Cytol. 2025 Jul-Sep;42(3):178-180. doi: 10.4103/joc.joc\_50\_24. Epub 2025 Aug 29.**

Diagnostic Utility of Fine Needle Aspiration Cytology in a Case of Pulmonary

Hydatid Cyst Masquerading as Tuberculosis.

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Hydatid cyst may mimic other diseases including carcinoma and tuberculosis which

may raise diagnostic dilemma that may be more enhanced in areas where

tuberculosis is endemic. This may result in delayed diagnosis of hydatid cyst

leading to its complications. The present case is therefore being reported as it

was clinically and radiologically diagnosed as tuberculosis but on fine needle

aspiration cytology (FNAC) turned out to be a case of hydatid cyst. In addition,

vigilant cytological examination revealed only protoscolices and hooklets

instead of laminated cyst membrane which is more commonly and easily observed.

FNAC serves as a valuable adjunctive tool in the diagnosis of hydatid cysts

providing rapid and accurate diagnosis that can guide clinical management and

improve patient outcome.

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PMID: 40959808

**60. IJTLD Open. 2025 Sep 10;2(9):501-504. doi: 10.5588/ijtldopen.25.0446.**

**eCollection 2025 Sep.**

Global child-friendly anti-TB medicines - where do we stand?

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Africa.

An increasing number of children are diagnosed and started on antituberculosis

treatment. Despite progress in developing child-friendly antituberculosis

formulations for drug-susceptible and drug-resistant TB, a single-medicine

rifampicin dispersible tablet is still needed. Further, many child-friendly

dispersible solid-tablet formulations are not available globally. Access

challenges lead to formulation manipulation of adult tablets, including the

development of extemporaneous solutions, supported by pharmacokinetic studies to

dose young children. Preparing extemporaneous formulations need pharmacies and

trained staff. Therefore, a need remains for global collaboration to prioritise

child-friendly solid, dispersible, functionally scored TB formulations and to

ensure equal access for all children with TB globally.

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PMCID: PMC12435452

PMID: 40959791

**61. Infect Chemother. 2025 Sep 12. doi: 10.3947/ic.2025.0029. Online ahead of print.**

Vitamin D Receptor Gene FokI Polymorphism in Patient with Human Immunodeficiency

Virus - Tuberculosis Coinfection and Associated Risk Factors.

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**BACKGROUND:** There is still unclear method for identifying people with human

immunodeficiency virus (HIV) who will develop tuberculosis (TB). This study

aimed to investigate the role of vitamin D receptor (VDR) gene FokI allele f and

associated risk factors in HIV-TB coinfection.

**MATERIAL AND METHODS:** This case control study was conducted with 60 total

subjects consisting 30 subjects of HIV-TB patients as the case group and 30

subjects HIV without TB as the control. VDR gene FokI polymorphism was detected

by polymerase chain reaction and sequencing, whereas light chain 3 (LC3) and

caspase-3 levels were measured by enzyme-linked immunosorbent assay, and CD4 T

cell by flowcytometry. Data analysis for different proportions used bivariate

analysis and relationship analysis tests using logistic regression.

**RESULTS:** The VDR gene FokI (rs2228570) polymorphism proportion of f alleles in

the case group were 26 (86.7%) and control 13 (43.3%). Low LC3 (LC3 ≤30 ng/mL)

found in 27 (90.0%) of the cases and 9 of the controls (30.0%). Low caspase-3

(Caspase3 ≤3 ng/mL) found 28 (93.3%) in cases and 15 (50.0%) in the controls.

The logistic regression analysis revealed that f allele of FokI VDR gene

polymorphism, low LC3, low caspase-3 and low CD4 T cells are risk factors for

HIV-TB co-infection as follows respectively; (odds ratio [OR], 6.921; 95%

confidence interval [CI], 1.199-39.936, P=0.031); (OR,=16.257; 95% CI,

2.568-102.928, P=0.003) and (OR, 7.448; 95%-CI, 0.851-65.211, P=0.070); (OR,

6.227; 95% CI, 0.36-37.419, P=0.046).

**CONCLUSION:** VDR gene FokI polymorphism alleles f, low LC3, caspase-3 and low CD4

T cell count was identified as risk factors for HIV-TB Coinfection.

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Antimicrobial Therapy, The Korean Society for AIDS, and Korean Society of

Pediatric Infectious Diseases.

DOI: 10.3947/ic.2025.0029

PMID: 40958482

**62. J Assoc Physicians India. 2025 Sep;73(9):91-96. doi: 10.59556/japi.73.1113.**

**Transmission of Mycobacterium Tuberculosis.**

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**INTRODUCTION:** Tuberculosis (TB) has been a leading killer of mankind since time

immemorial. There are four key components in the TB elimination approach. They

are known as "Detect-Treat-Prevent-Build". Under the preventive strategy,

scaling up of airborne infection control measures is an important step in

controlling the global disease burden.

**METHODS**: This is a narrative review for which we used online databases such as

PubMed, Embase, and CINAHL from inception to July 2024. The search terms used

include TB, transmission, aerosols, cough, droplet nuclei, Wells-Riley equation,

and ultraviolet germicidal irradiation (UVGI). All types of articles were

selected.

**RESULTS:** The primary mechanism of transmission of Mycobacterium tuberculosis (M.

tb) is the inhalation of small infected droplet nuclei (1-5 µm in diameter)

consisting of a few mycobacteria that have the capacity to reach the alveoli.

The transmission dynamics of TB can be influenced by various human,

environmental, and pathogenic factors. Several mechanisms such as coughing,

sneezing, talking, laughing, singing, and normal tidal breathing can produce

droplet nuclei.

**CONCLUSION:** It is crucial to thoroughly understand the mechanisms of TB

transmission for a better understanding of TB dynamics. TB is mainly transmitted

by droplet nuclei, and preventive strategies should incorporate this mechanism.

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DOI: 10.59556/japi.73.1113

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**63. J Assoc Physicians India. 2025 Sep;73(9):44-50. doi: 10.59556/japi.73.1115.**

Assessment of Handgrip Strength and Its Clinical and Hematological Correlates of

Inflammation among Adults with Pulmonary Tuberculosis: A Cross-sectional Study

from a Tertiary Care Center of Western India.

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**BACKGROUND:** Pulmonary tuberculosis (TB) is a significant contributor to illness

and chronic functional decline in developing countries. Although treated

aggressively through powerful antibiotics, the after-effect of the disease and

treatment often has a detrimental impact on overall health, especially muscle

function of the person affected. This study aimed at assessing the handgrip

strength and its association with common clinical and routine laboratory

parameters tested.

**MATERIALS AND METHODS:** This was a cross-sectional study with a predetermined

sample size of 72 participants. Sociodemographic data, symptoms, and complete

blood chemistry (CBC) findings were noted. Handgrip strength was measured by a

rather inexpensive and validated Camry handheld digital dynamometer, which

determined handgrip strength in pounds after adjusting for the individual's age,

sex, and weight.

**RESULTS:** Among the total number of study subjects, 49% were females and 51% were

males. Out of the total study population, 29 were newly diagnosed, while 43 were

treated for the disease. Symptoms of the disease (p < 0.001) and poor clinical

findings like tachycardia (p < 0.001), raised temperature (p = 0.011), low

mid-arm circumference (p < 0.05), and abnormal chest auscultatory findings (p =

0.002) were reported more among newly diagnosed patients. There was no

difference between handgrip strength or inflammatory indices among the two

groups (p > 0.05). The respective calf circumference and monocyte count were

significant factors determining handgrip strength.

**DISCUSSION:** This study accounts for the introduction of a new concept of

assessment of muscle function among patients and survivors of TB as an indicator

of disease improvement and to prognosticate outcomes and quality of life.

© Journal of The Association of Physicians of India 2025.

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**64. Pediatr Int. 2025 Jan-Dec;67(1):e70202. doi: 10.1111/ped.70202.**

Variation in tuberculosis screening and infliximab use in Kawasaki disease in

Japan.

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Wakayama, Japan.

**BACKGROUND**: This study examined nationwide variation in tuberculosis (TB)

screening and infliximab (IFX) use in the management of Kawasaki disease (KD) in

Japan. Immunosuppressive agents such as IFX, which is used to treat refractory

KD, may elevate the risk of TB infection. Although guidance exists for IFX use

in KD patients, standardized protocols for TB screening, particularly regarding

test selection and timing, are lacking.

**METHODS:** A nationwide, cross-sectional web-based survey was conducted from

October 2023 to February 2025. Eligible respondents were physicians involved in

the care of KD patients at institutions with at least two full-time

pediatricians or clinics staffed by pediatricians or internists. The

questionnaire covered four domains: respondent characteristics; TB screening

practices prior to IFX administration; clinical decisions regarding IFX use in

patients with active, past, or suspected TB; and preferences between originator

and biosimilar IFX products.

**RESULTS:** Among 2000 invited physicians, 871 responded (response rate: 43.6%).

Chest X-rays and interferon-gamma release assays (IGRAs) were frequently used

before IFX administration, while the use of other tests varied. The timing of TB

testing differed according to region, hospital type, and physician experience.

Physicians in urban areas and university hospitals more often conducted early

IGRA testing. The decision to administer IFX to patients with TB history also

varied, with younger physicians and those at tertiary centers more likely to

perform such administration.

**CONCLUSIONS:** Clinical practices regarding TB screening and IFX use in KD

patients vary widely. While national guidance exists, our findings underscore

the need for more detailed and uniformly implemented protocols to ensure safe

and consistent care.

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PMID: 40955494 [Indexed for MEDLINE]

**65. BMJ Open Respir Res. 2025 Sep 14;12(1):e002661. doi:**

**10.1136/bmjresp-2024-002661.**

Estimated costs of tuberculosis services in Brazil, 2023.

Jabbour E(1), Pinto M(2), Steffen RE(3), Dockhorn F(4), Pelissari DM(4), de

Souza NM(4), de Souza Alves E(4), Trajman A(1)(5), Campbell JR(6)(7)(8).

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**INTRODUCTION:** To eliminate tuberculosis (TB) in Brazil, scaling up screening and

prevention strategies will be essential. We estimated costs of TB services in

Brazil to support budgeting, cost-effectiveness analysis and inform the

implementation of these strategies.

**METHODS:** We leveraged databases from five large cities in Brazil (Manaus,

Recife, Porto Alegre, São Paulo and Rio de Janeiro) to estimate costs of TB

services in 2023 US dollars. We estimated mean costs and 95% uncertainty ranges

(95% UR) for specific components and combined these components according to

national algorithms for TB diagnosis and treatment in adults and children to

estimate costs for different services. We leveraged these outputs to estimate

the costs of household contact investigation.

**RESULTS:** We estimated the mean (95% UR) cost of testing children for TB

infection with a tuberculin skin test (TST) or interferon-gamma release assay

and providing 3 months of once-weekly isoniazid and rifapentine (3HP) was US$48

($25-$82) and US$67 ($43-$101), respectively. Providing 6 months of treatment

for drug-susceptible tuberculosis (DS-TB) to children was US$557 ($163-$1195).

In adults, costs were similar to the cost of TST and 3HP costing US$49 ($25-$86)

and 6 months of DS-TB treatment being $583 ($175-$1252). For both children and

adults, costs of newer, 6-month treatment regimens for rifampin-resistant

tuberculosis (RR-TB) were less expensive than 18-month regimens. In children,

the cost was US$4807 ($1559-$10 066) for the 6-month regimen and US$9212

($2756-$19 567) for the 18-month regimen. Corresponding costs in adults were

US$3518 ($1169-$7330) and US$7910 ($2533-$16 717). Across 10 000 households with

an index TB patient, we estimated use of a TST and 3HP for TB infection

screening and treatment and 6-month regimens for DS-TB and RR-TB disease to cost

$1 093 531 (95% UR $409 349-$2 217 054).

**CONCLUSION:** There are important cost differences in TB services depending on

diagnostic and treatment choices. These data are essential inputs for budgeting

and cost-effectiveness.

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**66. BMJ Open. 2025 Sep 14;15(9):e097505. doi: 10.1136/bmjopen-2024-097505.**

Assessing tuberculosis infection prevalence and test concordance in high-risk

groups: a cross-sectional study in Mexicali, Baja California.

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**BACKGROUND:** Despite low sensitivity and implementation challenges, the

tuberculin skin test (TST) remains the standard-of-care tuberculosis (TB)

infection test in Mexico. Interferon gamma release assays (IGRA) may overcome

TST-related challenges. Within the confines of the local programmatic setting,

this cross-sectional study evaluated the prevalence of TB infection (TBI) and

concordance of TST and IGRA in three high-risk populations in Mexicali, Baja

California, Mexico.

**METHODS:** Household contacts (HHC) of individuals with TB, people who use drugs

(PWUD), people deprived of liberty (PDL) and prison employees underwent

evaluation for TBI using TST and QIAreach, a novel IGRA. Prevalence of

infection, concordance of test results and reactivity trends of time-to-results

(TTR) by TST-induration size were assessed.

**RESULTS:** In total, 214 of 411 (52.07%) people who had TST and 269 of 460

(58.48%) people who had IGRA tested positive for TBI. Frequency of infection

varied across risk groups (HHC 29 (29.6%); PWUD 67 (70.53%); PDL 111 (56.06%)

and prison employees 7 (35.0%), p<0.001). Overall concordance of TST and IGRA

was 74.4%. Among people without a BCG vaccination, TTR decreased as TST

induration size increased (from 1200 s in 0-4 mm to 808 s in >20 mm, p=0.05).

**CONCLUSION:** All risk groups had a high frequency of TBI, necessitating locally

tailored guidelines for screening, treatment and management of TBI to optimise

care for vulnerable populations.

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**67. Int J Infect Dis. 2025 Sep 13:108065. doi: 10.1016/j.ijid.2025.108065. Online**

**ahead of print.**

Can 6-month long regimens become the standardized treatment for MDR-TB globally?

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Treatment for multidrug/rifampicin resistant (MDR/RR) tuberculosis (TB) was

traditionally long and poorly tolerated. In 2022, WHO recommended the first

6-month regimen (BPaLM), followed in 2025 by a second short-course option

(BDLLfxC) with potential drastic improvement of treatment outcome. The BDLLfxC

regimen addresses key gaps in target populations, including groups for whom

BPaLM is not indicated: children of any age, adolescents, and pregnant and

breastfeeding women (PBFW). A key difference between the two regimens is the

replacement of pretomanid with delamanid in the BDLLfxC. However, limitations

remain. Neither BPaLM nor BDLLfxC are recommended in patients with complicated

forms of extrapulmonary MDR-TB: central nervous system (CNS), osteoarticular

(OA) and disseminated disease. The problem is twofold: from one side there are

theoretical pharmacokinetic/pharmacodynamic reasons for lower concentrations of

the active principles at these sites, from the other side clinical experience is

virtually absent in such cases. In this narrative review, we explore the use of

6-month regimens for MDR/RR-TB in specific populations - children, PBFW, people

living with HIV, and those with challenging TB forms (e.g., CNS, bone,

disseminated). The overall aim is to discuss how far we still are from the goal

of a public health approach to the treatment of MDR-TB.

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**68. Lancet Child Adolesc Health. 2025 Sep 12:S2352-4642(25)00245-7. doi:**

**10.1016/S2352-4642(25)00245-7. Online ahead of print.**

Childhood tuberculosis: robust funding and integrated solutions needed now.

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DOI: 10.1016/S2352-4642(25)00245-7

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**69. Lancet Child Adolesc Health. 2025 Sep 12:S2352-4642(25)00218-4. doi:**

**10.1016/S2352-4642(25)00218-4. Online ahead of print.**

Potential paediatric tuberculosis incidence and deaths resulting from

interruption in programmes supported by international health aid, 2025-34: a

mathematical modelling study.

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**BACKGROUND:** Children are at increased risk of developing and dying from

tuberculosis. We aimed to estimate the additional paediatric tuberculosis deaths

that could occur over 2025-34 if programmes supported by US bilateral health aid

and The Global Fund to Fight AIDS, Tuberculosis, and Malaria are discontinued.

**METHODS:** For this modelling study we collated data on funding sources for

tuberculosis and HIV programmes in low-income and middle-income countries and

constructed scenarios representing reductions in health aid from 2025. Using

calibrated transmission-dynamic models of tuberculosis and HIV for 130

countries, we projected the discontinuation of tuberculosis and HIV treatment

services under several funding reduction scenarios, and how this would affect

paediatric (ages 0-14 years) tuberculosis exposure and treatment access. We

projected paediatric tuberculosis incidence and mortality over 2025-34 to

calculate the impact of funding reductions.

**FINDINGS:** Compared to maintenance of pre-2025 service levels, withdrawal of

services currently supported by US bilateral health aid is projected to result

in an additional 2·5 million (95% uncertainty interval [UI] 1·8-3·3) paediatric

tuberculosis cases and 340 000 (240 000-460 000) tuberculosis deaths over

2025-34. Withdrawal of US support to The Global Fund and reductions in non-US

contributions are projected to result in an additional 8·9 million (95% UI

6·9-11·5) paediatric tuberculosis cases and 1·5 million (1·1-2·0) tuberculosis deaths, more than double the number of paediatric tuberculosis deaths expected with continued service levels (1·10 million [0·89-1·38]). Impacts were greatest in the WHO African and South-East Asia regions. Restoration of services in 2026 was projected to lead to a substantially smaller number of additional deaths (39 000 [95% UI 29 000-51 000]).

**INTERPRETATION:** Without actions to restore discontinued services, cuts to health

aid for tuberculosis and HIV programmes could result in millions of additional

childhood tuberculosis cases and deaths in low-income and middle-income

countries over the next decade.

FUNDING: None.

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data mining, AI training, and similar technologies.

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Detection and Significance of Anti-Mycobacterium tuberculosis-specific

Immunoglobulin G Antibody Response for the Diagnosis of Pulmonary Tuberculosis

Using Enzyme-linked Immunosorbent Assay.

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Neurosciences, Bengaluru, Karnataka, India.

**BACKGROUND:** This study evaluates an enzyme-linked immunosorbent assay test for

the detection of immunoglobulin G (IgG) antibody response using in-house

prepared Mycobacterium tuberculosis H37Rv soluble extract (MTSE) antigen for

rapid diagnosis of pulmonary tuberculosis (PTB).

**METHODS:** A total of 758 PTB patients (652 acid-fast bacilli [AFB] positive and

106 AFB-negative), 276 healthy controls, and 43 pulmonary infectious disease

controls other than TB were recruited. IgG antibody level against MTSE was

measured in serum samples of all study groups. The level of IgG antibody

responses was compared among groups by the Kruskal-Wallis test, and pairwise

comparison was made by the Mann-Whitney test. A positive score was represented

by optical density (OD) above the cutoff value, which was calculated from OD

values of healthy controls by adding 2 standard deviations (SDs) to the mean OD

value. The evaluation of diagnostic value was considered based on sensitivity

and specificity.

**RESULTS:** Significantly higher levels of IgG antibody response were observed in

PTB patients compared to other groups (P < 0.0001). The percent positivity for

the IgG antibody response was higher in AFB-positive 574/652 (88.04%) and 79/106

(74.53%) AFB-negative PTB patients as compared to healthy control 9/276 (3.26%)

and non-TB other pulmonary infectious disease control 3/43 (6.97%). The

sensitivity of the test in PTB patients (AFB-positive and AFB-negative) was

86.15% (95% confidence interval [CI]: 83.48-88.53), and the specificity was

96.74% (95% CI: 93.90-98.50).

**CONCLUSION:** This immunological test could be an efficient test in detecting IgG

antibody response in PTB patients and could be useful for diagnosing

AFB-negative presumptive TB cases.

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Identifying High-Risk Tuberculosis Cases: Implementation of a Programmatic

Screening Tool in Bengaluru.

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**BACKGROUND:** Tuberculosis (TB) remains a significant global health challenge,

causing 1.3 million deaths in 2020. The COVID-19 pandemic has further

exacerbated the TB burden, leading to an 11% rise in TB mortality in India from

2019 to 2020. The World Health Organization aims to reduce TB deaths by 90% by

2030 and 95% by 2035. Early identification and management of severely ill TB

patients are crucial for achieving these targets. This study aimed to identify

adult TB patients at high risk of severe illness (HRSI) using a programmatic

screening tool, assess referral linkages, and evaluate care outcomes within the

first 7 days post-diagnosis in Bengaluru, India.

**METHODS:** A cross-sectional study was conducted over 18 months (August 2022 to

July 2023) across five Tuberculosis Units in the Bruhat Bengaluru Mahanagara

Palike district. Data were collected from National Tuberculosis Elimination

Program records and patient interviews, including 263 adult drug-sensitive TB

patients diagnosed at public health facilities. Patients were screened for HRSI

within 7 days of diagnosis using a tool assessing body mass index (BMI),

respiratory rate, and oxygen saturation. Descriptive statistics summarized

patient characteristics and outcomes, and associations were analyzed using

Chi-square and Fisher's exact tests.

**RESULTS:** Of the 263 TB patients screened, 20.9% were identified as being at

HRSI. Among these high-risk patients, 73.3% accessed inpatient care, with 51%

seeking treatment at district hospitals and 20% at private hospitals. Inpatient

mortality among high-risk patients was 19.4%, while no deaths were reported

among those managed as outpatients. Key severity indicators included BMI ≤14

kg/m2 (12%), respiratory rate >24 breaths/min (3%), oxygen saturation <94% (7%),

and inability to stand without support (8%). High-risk status was more prevalent

among patients over 65 years of age, males, those with microbiologically

confirmed or smear-positive pulmonary TB, HIV-reactive status, and diabetes

mellitus.

**CONCLUSION:** Early identification and referral of TB patients at HRSI are

essential to reduce mortality. The study highlights the effectiveness of a

simple screening tool in routine programmatic settings and underscores the need

for targeted interventions and improved healthcare access for high-risk TB

patients in India.

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**72. Int J Mycobacteriol. 2025 Jul 1;14(3):253-260. doi: 10.4103/ijmy.ijmy\_80\_25.**

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Concordance and Interferon-gamma Response Variability between TB1 and TB2 in the

QuantiFERON-TB Gold Plus Assay: Insights Across Clinical Subgroups.

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**BACKGROUND:** The QuantiFERON-TB Gold Plus (QFT-Plus) assay, widely used for

latent tuberculosis infection (LTBI) screening, includes two antigen tubes: TB1,

which stimulates T-helper cells expressing CD4 (CD4⁺ T cells), and TB2, which

additionally stimulates cytotoxic T cells expressing CD8 (CD8⁺ T cells).

However, the added diagnostic value of CD8⁺ stimulation in TB2 remains

uncertain. This study aimed to evaluate the diagnostic agreement between TB1 and

TB2 responses in the QFT-Plus assay and assess whether TB2 provides a

significant incremental benefit over TB1 in detecting tuberculosis infection

across demographic and clinical subgroups.

**METHODS:** This was a retrospective study that included individuals aged ≥14 years

who underwent QFT-Plus testing. Interferon-gamma (IFN-γ) responses in TB1 and

TB2 tubes were compared using the Wilcoxon signed-rank test. Qualitative

concordance was assessed using Cohen's kappa coefficient. Subgroup analyses were

stratified by age, sex, diabetes, and immunosuppressive therapy.

**RESULTS:** Among 761 participants, median IFN-γ responses were slightly higher in

TB2 than TB1 (0.21 vs. 0.19 IU/mL; median delta 0.02 IU/mL; P = 0.0002). This

difference was consistent but small across most subgroups. Overall concordance

between TB1 and TB2 qualitative results was 94.3% (Cohen's kappa = 0.868).

Agreement remained strong across sex, age, and diabetes groups, though it was

lower among users of tumor necrosis factor inhibitors (kappa = 0.582). No

subgroup demonstrated a clinically significant added benefit of TB2 over TB1.

**CONCLUSION:** TB2 elicited slightly higher IFN-γ responses than TB1, but the small

delta values and high concordance suggest limited additional diagnostic value in

most populations.

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**73. Int J Mycobacteriol. 2025 Jul 1;14(3):246-252. doi: 10.4103/ijmy.ijmy\_69\_25.**

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Antimicrobial Activity of Solanum torvum Crude Extracts against Important

Mycobacterial Strains.

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**BACKGROUND: T**uberculosis (TB) caused by Mycobacterium tuberculosis (M. tb)

complex remains a leading cause of morbidity and mortality worldwide. The

zoonotic infectious condition represents a never-ending challenge for which drug

discovery efforts are needed. The current study was designed to evaluate the in

vitro antimycobacterial activity and phytochemical composition of hydroethanolic

extracts from roots, stem bark, leaves, and unripe fruits derived from Solanum

torvum, a shrub traditionally used against respiratory tract illnesses,

including TB.

**METHODS:** The phenotypic colorimetric microplate alamar blue assay was used to

study the antimycobacterial activity of the hydroethanolic extracts against six

mycobacterial strains. Each experiment was run in triplicate. Data generated

were analyzed using descriptive statistics to obtain mean minimum inhibitory

concentration (MIC) values.

**RESULTS**: The roots, stem bark, leaves, and unripe fruits exhibited MIC values of

0.0195 mg/mL, 0.0781 mg/mL, 1.250 mg/mL, and 0.625 mg/mL against the pathogenic

mycobacterial strain, M. tb H37Rv (ATCC 27294), respectively.

**CONCLUSIONS:** S. torvum stem bark has demonstrated significant activity against

the pathogenic M. tb strain. This observation validates the

ethno-pharmacological use of the plant species against TB. Further studies are

required to isolate, elucidate the structure, and characterize the

antimycobacterial compounds responsible for the observed activity. These will

potentially contribute toward bioprospecting for a new class of ligands with

activity against sensitive and drug-resistant strains of M. tb.

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**74. Int J Mycobacteriol. 2025 Jul 1;14(3):239-245. doi: 10.4103/ijmy.ijmy\_60\_25.**

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Evaluation of Small Mothers against Decapentaplegic 3 and Transforming Growth

Factor Beta Levels in Relation to Lung Fibrosis and Function in Treated

Pulmonary Tuberculosis Patients.

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**INTRODUCTION:** Tuberculosis (TB) is a significant global health issue, with

posttreatment fibrosis negatively affecting pulmonary function and patient

quality of life. This research investigated the processes driving post-TB

pulmonary fibrosis and its impact on patients.

**METHODS:** This research involved a cohort of 38 pulmonary TB patients undergoing

intensive treatment for 2 months. Transforming Growth Factor Beta (TGFβ) and

Small Mothers Against Decapentaplegic 3 (SMAD3) levels were quantified pre- and

posttreatment using the Enzyme Linked Immuno Sorbent Assay method. Fibrosis was

evaluated via thoracic imaging, and lung function was assessed through

spirometry.

**RESULTS:** TGFβ and SMAD3 levels were decreased post-treatment (P = 0.03 and P =

0.01). A significant association existed between postintervention SMAD3 levels

and the occurrence of fibrosis (P = 0.03) and diminished lung function (P =

0.01). Receiver operating characteristic analysis indicated that

post-intervention SMAD3 exhibited an area under the curve of 0.8, with a

sensitivity of 87% and specificity of 71%, suggesting its potential as a

biomarker for fibrosis.

**CONCLUSION:** Levels of TGFβ and SMAD3 following pulmonary TB treatment are linked

to fibrosis and reduced lung function. SMAD3 post-intervention may be a fibrosis

biomarker in pulmonary TB patients.

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**75. Int J Mycobacteriol. 2025 Jul 1;14(3):232-238. doi: 10.4103/ijmy.ijmy\_91\_25.**

**Epub 2025 Sep 15.**

Diagnostic Delay and its Predictors among Tuberculosis Patients in Kandahar,

Afghanistan: A Cross-sectional Analytical Study.

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Education, Kandahar, Afghanistan.

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**BACKGROUND:** Diagnostic delay among tuberculosis (TB) patients leads to late

anti-TB treatment initiation, which is associated with poor prognosis and

increased TB transmission. Despite its recognized negative consequences,

diagnostic delay among TB patients is common in developing countries, including

Afghanistan, where evidence on its predictors is limited. We aimed to evaluate

diagnostic delay and its predictors among newly diagnosed TB patients attending

healthcare facilities in Kandahar, Afghanistan.

**METHODS:** A multicenter, cross-sectional study was conducted in Kandahar between

February and May 2025. Newly diagnosed TB patients aged 18 years or older were

randomly recruited from the TB care centers of six healthcare facilities. Delays

in TB diagnosis encompassed both patient and healthcare system delays. The

predictors of diagnostic delay were identified using a multivariable logistic

regression model.

**RESULTS:** Patient and health system delays were noted in 44% and 59.4% of cases,

respectively. Patients' low education level, extrapulmonary TB, longer distance

to healthcare facility, and positive history of self-medication were significant

predictors of diagnostic delays.

**CONCLUSION:** Despite the well-established benefits of early TB diagnosis, this

study revealed that delay in TB diagnosis is still a public health challenge in

Kandahar province. Late presentation for TB care was a result of factors that

relate to the patient's education, TB type, distance to healthcare facility, and

history of self-medication. Therefore, focusing extra attention on these factors

could potentially reduce diagnostic delays among TB patients in Afghanistan.

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**76. Int J Mycobacteriol. 2025 Jul 1;14(3):226-231. doi: 10.4103/ijmy.ijmy\_81\_25.**

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Antimycobacterial Activity of Allium Cepa and Allium sativum Hydroethanolic

Crude Extracts against Pathogenic and Nonpathogenic Mycobacterial Strains.

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**BACKGROUND:** Tuberculosis (TB) caused by Mycobacterium tuberculosis complex

remains a leading cause of morbidity and mortality worldwide. The zoonotic

infectious condition represents a never-ending challenge toward which drug

discovery efforts are needed. The current study was designed to evaluate the in

vitro antimycobacterial activity of hydroethanolic extracts from Allium sativum

and Allium cepa bulbs and leaves, traditionally used against respiratory tract

illnesses, including TB.

**METHODS:** The phenotypic colorimetric microplate Alamar blue assay was used to

study the antimycobacterial activity of the ethanolic extracts against six

mycobacterial strains. Each experiment was run in triplicate. Data generated

were analyzed using descriptive statistics to obtain mean minimum inhibitory

concentration (MIC) values.

**RESULTS:** The A. sativum bulbs, A. sativum leaves, A. cepa bulbs, and A. cepa

leaves exhibited MIC values of 19.5 µg/mL, 78.1 µg/mL, 78.1 µg/mL, and 19.5

µg/mL against the pathogenic mycobacterial strain, M. tuberculosis H37Rv (ATCC

27294), respectively.

**CONCLUSION:** In conclusion, the tested A. sativum and A. cepa bulbs and leaves

have demonstrated significant activity against the pathogenic M. tuberculosis

strain. This observation validates the ethnopharmacological use of the Allium

species against TB. Further studies are required to isolate, elucidate the

structure, and characterize the antimycobacterial compounds responsible for the

observed activity. These will potentially contribute toward bioprospecting for a

new class of ligands with activity against sensitive and drug-resistant strains

of M. tuberculosis.

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**77. Int J Mycobacteriol. 2025 Jul 1;14(3):219-225. doi: 10.4103/ijmy.ijmy\_67\_25.**

**Epub 2025 Sep 15.**

The Effect of Hepatoprotectors on the Risk of Drug-induced Hepatitis in

Pulmonary Tuberculosis Patients.

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**BACKGROUND:** Anti-tuberculosis (TB) drugs are a common cause of hepatotoxicity.

Hepatoprotective agents are often empirically used to prevent anti-TB

drug-induced hepatitis (DIH). This study aimed to evaluate the incidence of DIH

in new TB patients receiving hepatoprotective agents and identify associated

risk factors.

**METHODS:** A retrospective cross-sectional study was conducted on 140 new

pulmonary TB patients at two hospitals in Makassar, Indonesia. The diagnosis of

TB and DIH severity (based on World Health Organization criteria) was determined

by pulmonologists. Data on demographics, comorbidities, time to DIH onset, liver

enzyme levels such aspartate aminotransferase (AST), alanine aminotransferase

(ALT), and bilirubin were analyzed using Chi-square and paired t-tests.

**RESULTS:** DIH was observed in 38 (27.1%) patients. It was more prevalent in

females and individuals over 50 years. The majority of DIH cases were grade two,

characterized by elevated AST (71.1%) and ALT (47.7%). Comorbidities, including

diabetes mellitus (28.9%), human immunodeficiency virus (10.5%), and chronic

kidney disease (2.6%), were significantly associated with a higher incidence of

DIH (P < 0.001). The mean onset of DIH was within 14 days in 94.7% of cases.

While AST and ALT significantly increased posttreatment (P < 0.001), bilirubin

levels did not correlate with these increases. The administration of

hepatoprotective agents was associated with a 73% reduction in DIH incidence.

**CONCLUSION:** Despite the use of hepatoprotective agents, advanced age and the

presence of comorbidities significantly increase the risk of DIH in TB patients

undergoing anti-TB treatment. These findings highlight the importance of careful

monitoring and management of high-risk TB patients, even with hepatoprotective

co-administration.

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**Epub 2025 Sep 15.**

Microbiota of the Lung Tuberculoma: Paucibacillary Bacterial Community.

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Caseum, the central necrotic material of tuberculous lesions, is a reservoir of

drug-resistant persisting Mycobacterium tuberculosis (MTB). However, tubercle

bacilli are not the only bacterial inhabitants of this necrosis. We discuss the

available data on metagenomic and amplicon sequencing of 16S rRNA of caseous

necrosis from surgically excised tuberculosis (TB) foci. This approach

facilitated the characterization of the biodiversity and the potential

biochemical pathways of these bacterial communities. We postulate that in terms

of MTB content relative to satellite anaerobic lipophilic bacteria, caseum may

present two distinct terminal states. "True" TB necrosis, containing 99.9%

tubercle bacilli, and a polymicrobial community wherein anaerobic lipophilic

bacteria predominate over MTB. Isolation from caseum and genomic

characterization of several Corynebacterium and Staphylococcus species support

this concept.

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**79. J Vis Exp. 2025 Aug 29;(222). doi: 10.3791/68370.**

Amplicon Sequencing using the Long-Read Sequencing Technologies.

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The World Health Organization (WHO) continues to emphasize the urgent need for a

rapid, cost-effective, and user-friendly diagnostic method for tuberculosis (TB)

and drug-resistant TB (DR-TB). Next-generation sequencing (NGS) technologies,

endorsed by the WHO, have significantly improved the detection of DR-TB. Among

these, targeted NGS (tNGS) enables focused detection of genetic mutations

associated with drug resistance, eliminating the need for traditional

culture-based diagnostics. One widely used tNGS assay provides rapid and

comprehensive drug susceptibility testing but has been primarily optimized for

sequencing platforms with high accuracy. However, the high cost of these

sequencing systems has limited accessibility in low- and middle-income

countries, particularly across Africa. Portable sequencing technologies present

a promising alternative, offering flexibility and reduced infrastructure

requirements. In this study, DNA was extracted from rifampicin-resistant TB

(RR-TB) isolates, amplified using a tNGS assay, and sequenced on a portable

sequencing platform. The same amplification products were also sequenced on a

high-accuracy short-read sequencing platform to serve as a reference. Data from

the portable sequencer were processed using a bioinformatics pipeline designed

for long-read sequencing, while short-read sequencing data were analyzed using

an established web-based application. The analysis showed that the long-read

sequencing approach successfully identified high-frequency resistance-associated

variants detected by short-read sequencing but exhibited limitations in

detecting low-frequency variants.

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**80. Monaldi Arch Chest Dis. 2025 Sep 12. doi: 10.4081/monaldi.2025.3418. Online**

**ahead of print.**

The role of counseling in maintaining blood sugar control in patients with

pulmonary tuberculosis and diabetes mellitus.

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Diabetes mellitus (DM) has emerged as an important comorbidity associated with

tuberculosis (TB). Both diseases are known to affect each other's course. There

has not been much data on the impact of frequent blood sugar monitoring and

counseling in patients with TB and DM. A study was therefore conducted to assess

the effects of these measures on glycemic control, radiological improvement, and

treatment outcomes. A total of 50 sputum-positive pulmonary TB and DM patients

were enrolled and divided into 2 groups (A and B) of 25 patients each. Blood

sugar monitoring in both groups was done at the initiation of treatment, at the

end of the intensive phase (IP), and at the end of the continuation phase (CP),

and they were counseled for glycemic control. Additionally, group A patients

were counseled weekly in the IP and biweekly in the CP for glycemic control.

Group B patients were provided with glucometers and told to record blood sugars

weekly during the IP and biweekly in the CP. The radiological improvement was

measured using the TIMIKA score, and treatment outcome was assigned based on end

CP sputum conversion. The mean age of groups A and B was 52.96±11.06 years and

51.6±13.05 years, respectively. The differences between the mean fasting blood

sugar (FBS) and TIMIKA scores of the two groups at treatment initiation, end IP,

and end CP were statistically non-significant (p=0.986, 0.70, and 0.650, and

p=0.190, 0.156, and 0.214, respectively). When the two groups were compared for

changes in mean FBS status and TIMIKA score from start to end IP, end IP to end

CP, and start to end CP, the changes were again statistically non-significant

(p=0.171, p=0.076, p=0.541, and p=0.892, p=0.691, p=0.461, respectively). The

final treatment outcomes of the two groups were also similar (p=1.000)

Counseling of patients with TB and DM was found to be similar to frequent blood

glucose monitoring, as no statistically significant differences in the two

groups concerning improvement in blood sugar levels, radiological changes, and

treatment outcomes were found. It is hence proposed that dedicated counseling

sessions are effective and should be a part of routine care in TB patients with

DM.

DOI: 10.4081/monaldi.2025.3418

PMID: 40952340

**81. Arch Razi Inst. 2025 Feb 1;80(1):19-35. doi: 10.32592/ARI.2025.80.1.19.**

**eCollection 2025 Feb.**

Advanced Therapeutic Interventions Targeting Mycobacterium Tuberculosis.

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Tuberculosis infection (TBI), caused by Mycobacterium tuberculosis (M.tb),

presents with or without clinical signs of active TB and is a persistent global

threat despite efforts to eradicate it. The emergence of HIV/AIDS is one of the

problems to complete eradication. Recent research has focused on vaccines,

diagnostics, and treatment. This review examines vulnerable populations,

high-risk groups, and socio-economic factors influencing TBI prevalence. It also

explores the intersection of TBI and the COVID-19 pandemic, including healthcare

disruptions and transmission dynamics. Advances in TBI diagnosis, biomarkers,

prophylactic therapies, and combination treatments are discussed, along with the

integration of artificial intelligence (AI) in TBI therapy to optimize treatment

and personalize care. Vulnerability to TBI varies based on age, socio-economic

status, and immune status. High-risk groups include those with compromised

immune systems, the elderly, and those in crowded or poorly ventilated settings.

Socioeconomic factors such as poverty and limited healthcare access also

contribute to TBI prevalence. The COVID-19 pandemic has disrupted TBI diagnosis

and treatment, with limited healthcare access impacting outcomes. Changes in

healthcare delivery, like telemedicine, may have long-term impacts on TBI care.

Improved biomarkers, like interferon-gamma release assays (IGRAs), offer faster

TBI diagnosis. Prophylactic therapies, such as isoniazid preventive therapy

(IPT), reduce active TB risk in high-risk groups. Combination treatments are

being evaluated for drug-resistant strains. AI integration in TBI therapy could

lead to better outcomes by analyzing patient data for personalized treatment

plans. In conclusion, TBI remains a global health threat requiring ongoing

research and innovative approaches for diagnosis and treatment. Advances in

diagnosis, prophylactic therapies, and combination treatments, along with AI

integration, offer hope for improved outcomes and better patient care, In

conclusion, traumatic brain injury (TBI) persists as a significant global health

concern, necessitating sustained research efforts and the development of

innovative diagnostic and therapeutic approaches. Advancements in diagnostic

methods, prophylactic therapies, combination treatments, and the integration of

artificial intelligence hold promise for enhancing outcomes and enhancing

patient care.

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PMCID: PMC12426472

PMID: 40951570 [Indexed for MEDLINE]

**82. Narra J. 2025 Aug;5(2):e1701. doi: 10.52225/narra.v5i2.1701. Epub 2025 Apr 21.**

Development and validation of clinical prediction score for mortality in

tuberculosis patients.

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Tuberculosis (TB) remains a global and national public health concern, with

mortality posing a significant challenge in treatment programs. The aim of this

study was to develop a simple risk-scoring system to predict mortality among TB

patients and assess its applicability in resource-limited settings. Data from TB

patient registries in Phichit Province, Thailand, covering from January 1, 2017,

to December 31, 2020, were used. Eligible participants were aged ≥18 years,

having completed treatment or death. A risk score was developed and internally

validated using logistic regression. Coefficients were used to assign weighted

points to predictors and applied to a validation cohort to assess diagnostic

performance. The performance was evaluated by generating a receiver operating

characteristic (ROC) curve. The study included 2,196 participants, randomly

allocated into derivation (n=1,600) and validation (n=596) cohorts. The risk

score included Charlson Comorbidity Index scores (1-2 points and ≥3 points) and

TB meningitis. It showed an area under ROC curve (AuROC) of 74.34% (95%CI:

70.80-77.88%) with good calibration (Hosmer-Lemeshow χ2: 0.53; p= 0.97).

Positive likelihood ratios for low (≤3) and high (≥6) risk were 1.06 (95%CI:

1.03-1.09) and 31.62 (95%CI: 7.23-138.37), respectively. In the validation

cohort, AuROC was 79.50% (95%CI: 74.40-84.60%), with 75% and 100% certainty in

low- and high-risk groups. In conclusion, this simple risk score, using routine

data and two predictors, can predict mortality in TB patients. It may aid

clinicians in planning appropriate care strategies. Nevertheless, the tool

should undergo external validation before being implemented in clinical

practice.

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PMID: 40951507 [Indexed for MEDLINE]

**83. Narra J. 2025 Aug;5(2):e1317. doi: 10.52225/narra.v5i2.1317. Epub 2025 Apr 21.**

Stigma and health-related quality of life (HRQoL) among people with

multidrug-resistant tuberculosis (MDR-TB): A cross-sectional study in Indonesia.

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Stigma often accompanies people with multidrug-resistant tuberculosis (MDR-TB)

and potentially affects their health-related quality of life (HRQoL). The aim of

this study was to investigate the stigma faced by patients with MDR-TB, both

from the patients' and community's perspective, and its relationship with HRQoL.

Data was gathered at the provincial hospital in Makassar, South Sulawesi,

Indonesia. The instrument employed in this research was the Indonesian version

of the tuberculosis (TB) stigma instrument to assess MDR-TB stigma from the

patient and community perspectives. The patient perspective represents how

individuals with TB perceive and experience stigma, including the fear of

disclosure, isolation, and guilt (feeling responsible for the burden on their

family or their own risky behaviors). Meanwhile, the community perspective

reflects how individuals with TB perceive societal attitudes towards them, such

as social distancing, avoidance, and reluctance to interact. HRQoL was measured

using the European quality of life-5 dimensions-5 level version (EQ-5D-5L)

instrument. Notably, the evaluation of anxiety and depression is centered on the

fifth dimension of the EQ-5D-5L instrument. A total of 210 patients with MDR-TB

were included in the study, all of whom reported experiencing stigma. Most

participants perceived stigma at a moderate level, with 76% from the patient

perspective and 71% from the community perspective. The average EQ-5D-5L index

score was 0.72 (95% confidence interval (95%CI): 0.68-0.76). Measurements from

both perspectives show similar scores. There is a substantial negative

association between the level of stigma and HRQoL, both from the patient's

perspective (R 2=-0.33; F=102.52; p<0.001) and the community's (R 2=-0.32;

F=96.76; p<0.001). The study highlights that the stigma of MDR-TB significantly

affects the HRQoL from the patient and community perspective.

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**84. Res Sq [Preprint]. 2025 Sep 3:rs.3.rs-7170241. doi: 10.21203/rs.3.rs-7170241/v1.**

Impact of Tuberculosis Preventive Treatment on Adverse Pregnancy Outcomes in

women living with HIV in Uganda: A Quasi-experimental study using routine care

data.

Musaazi J, Sekaggya-Wiltshire C, Zawedde-Muyanja S, Namuwenge PM, Ali MS, Manabe

YC, Castelnuovo B, Brusselaers N.

**BACKGROUND:** The World Health Organization recommends tuberculosis preventive

treatment (TPT) for people living with HIV, including pregnant women. However,

data on the safety of TPT during pregnancy particularly from routine care

settings in high tuberculosis (TB) burden countries remain limited. We evaluated

the association between TPT exposure and adverse pregnancy outcomes among

pregnant women living with HIV (WLHIV) in Uganda.

**METHODS:** We conducted a quasi-experimental study using routinely collected data

from five public urban primary health care facilities in Kampala, Uganda. We

included pregnant WLHIV on antiretroviral therapy (ART) between 2016 and 2023.

The primary outcome was a composite of adverse pregnancy outcomes: miscarriage,

stillbirth, low birth weight, congenital anomalies, or maternal/neonatal death.

The primary exposure was 6-months isoniazid TPT (IPT) during pregnancy. Analyses

used inverse probability of treatment weighting (IPTW) using logistic regression

model to adjust for confounding and multiple imputation for handling missing

data.

**RESULTS:** Analysis included 521 pregnant WLHIV, 44% were exposed to IPT during

pregnancy. Overall, 10.0% experienced an adverse pregnancy outcome, with no

significant difference between IPT-exposed and unexposed groups (10.3% vs. 9.6%;

p = 0.81). Adjusted IPTW analysis showed no significant association between IPT

exposure and adverse outcomes (pooled weighted odds ratio 1.04; 95% CI:

0.69-1.58). Sensitivity and subgroup analyses yielded consistent results.

**CONCLUSION:** We found no evidence that 6-month isoniazid TPT increases the risk

of adverse pregnancy outcomes. However, limitations in outcome and adverse event

documentation from routine care may affect these findings. Strengthening

pharmacovigilance and clinical reporting is essential to safeguard maternal and

neonatal health as TPT coverage expands in high TB/HIV burden settings.

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PMCID: PMC12425070

PMID: 40951302

**85. Res Sq [Preprint]. 2025 Sep 4:rs.3.rs-6947470. doi: 10.21203/rs.3.rs-6947470/v1.**

Development of a multiplex PCR for detection of pathogenic Mycobacterium orygis

in cattle tissues harboring tuberculous-like lesions.

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Mycobacterium orygis, a recently defined member species of Mycobacterium

tubercuolsis complex (MTBC), is emerging as a major threat to zoonotic

tuberculosis control, especially in the Asian Subcontinent. The dearth of

low-cost diagnostic assay to differentiate M. orygis from other members of the

MTBC leads to unavailability of information about the actual burden of this

species in human and animal population. In this study, we developed a multiplex

PCR for distinguishing M. orygis from other MTBC based on two M. orygis-specific

nonsynonymous point mutations in mbtG and fadD23 genes identified by comparative

genome analysis. The specificity of the assay shows that a 434 bp IS1081

fragment was amplified from common MTBC species including M. orygis while 240 bp

and 181 bp mbtG and fadD23 gene fragments were amplified only from M. orygis. No

amplification was observed for nontuberculous Mycobacterium (NTM) and

non-Mycobacterial pathogens. The multiplex PCR assay showed a detection limit of

32 pg of M. orygis DNA. Furthermore, a total of 85 tuberculous-like lesions in

the different tissues of slaughtered cattle were tested for identification of

the M. orygis, and the results showed IS1081, mbtG and fadD23 amplicons in three

tissue DNA extracts confirming they contain M. orygis DNA. Also, a single IS1081

amplicon was amplified from one tissue sample signifying presence of DNA of any

MTBC species other than M. orygis. An established TaqMan real time PCR assay

targeting region of differences (RD) in M. orygis genome was carried out to

validate the result of the assay. This showed 100 % accuracy of the in-house

developed multiplex PCR.

DOI: 10.21203/rs.3.rs-6947470/v1

PMCID: PMC12425058

PMID: 40951284

**86. Res Sq [Preprint]. 2025 Sep 1:rs.3.rs-7447805. doi: 10.21203/rs.3.rs-7447805/v1.**

TB-Related Stigma: A Hidden Obstacle to Adherence Monitoring with Video Directly

Observed Treatment Among Patients with Tuberculosis in Uganda.

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**BACKGROUND:** Adherence to video directly observed treatment (VDOT) remains

inconsistent, with some patients frequently missing video submissions. Stigma

associated with tuberculosis (TB) may influence patients' engagement with VDOT,

leading to non-adherence. This study examines the effect of baseline TB-related

stigma on missed VDOT submissions as a marker of patient engagement throughout

treatment among patients with TB.

**METHODS:** This study was a secondary analysis of 71 patients with TB from the DOT

Selfie Randomized clinical trial (RCT) in Kampala, Uganda (July 2020-October

2021). It focused on the association between baseline TB-related stigma and

missed video submissions during six months of VDOT. Stigma was measured using a

13-item tool covering self-, anticipated, and public stigma. Self-stigma is when

individuals believe and internalize negative views about TB, causing shame and

avoiding care. Public stigma involves harmful attitudes and discrimination from

others, leading to isolation. Anticipated stigma is the fear of being judged or

treated unfairly if one's TB status becomes known. Four negative binomial

regression models adjusted for HIV status, alcohol use, household size, marital

status, and TB severity were used to estimate adjusted incidence rate ratios

(aIRR) with their 95% confidence intervals (CIs) using STATA 14.2.

**RESULTS:** The study included 71 patients with TB with a mean age of 33 years (SD

= 12), and 36 (51%) were female. TB-related stigma was highly prevalent, with

51% (95% CI: 39-62) experiencing high levels of overall stigma. The prevalence

of public stigma was 97% (95% CI: 90-100), self-stigma was 80% (95% CI: 22-45),

and anticipated stigma was 68% (95% CI: 55-78). High overall stigma was

significantly associated with an increase in the rate of missed VDOT videos

(aIRR = 1.9; 95% CI: 1.1-3.5). Similarly, patients who reported anticipated

stigma missed twice as many VDOT videos as those without anticipated stigma

(aIRR: 2.1; 95% CI: 1.2-3.8). There was no significant association between self

and public stigma and missed videos.

**CONCLUSION:** TB-related stigma, particularly the anticipated fear of judgment,

undermines VDOT adherence monitoring. Interventions such as early screening for

stigma, patient counselling, and community education are essential to improving

outcomes.

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PMCID: PMC12425048

PMID: 40951265

**87. Cureus. 2025 Aug 13;17(8):e90000. doi: 10.7759/cureus.90000. eCollection 2025**

**Aug.**

Incidental Primary Hepatic Tuberculosis Mimicking Malignancy in a Patient With

Hepatolithiasis: A Case Report of a Rare Surgical Condition.

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Primary hepatic tuberculosis (TB) is an uncommon and diagnostically challenging

condition, particularly in the absence of miliary or pulmonary disease. It can

closely mimic hepatobiliary malignancies both clinically and radiologically,

often leading to misdiagnosis and unnecessary surgical interventions. We report

a case of a 45-year-old man who presented with right upper quadrant abdominal

pain, fever, and jaundice. His medical history included open cholecystectomy

with resection and anastomosis of the transverse colon, and endoscopic

retrograde cholangiopancreatography for a choledochocolic fistula three years

prior. Imaging revealed hepatolithiasis with left hepatic duct stricture and

lobe atrophy, raising suspicion of malignancy. The patient underwent left

lateral segmentectomy with ileal resection. Histopathological examination

revealed nonnecrotizing granulomatous inflammation consistent with hepatic TB.

Acid-fast bacilli staining was negative, and TB polymerase chain reaction could

not be performed. The patient was started on antitubercular therapy and

responded well. Given its rarity and nonspecific presentation, primary hepatic

TB should be considered in the differential diagnosis of hepatic lesions in

endemic regions. A high index of suspicion and the use of preoperative biopsy in

equivocal cases can help avoid unnecessary surgical intervention and facilitate

appropriate medical treatment.

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PMCID: PMC12430469

PMID: 40951027

**88. Front Med (Lausanne). 2025 Aug 29;12:1668254. doi: 10.3389/fmed.2025.1668254.**

**eCollection 2025.**

Editorial: Tuberculosis: recent updates in basic research, drug discovery and

treatment.

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Comment on

Editorial on the Research Topic Tuberculosis: recent updates in basic

research, drug discovery and treatment.

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PMID: 40950980

**89. Front Med (Lausanne). 2025 Aug 28;12:1645820. doi: 10.3389/fmed.2025.1645820.**

**eCollection 2025.**

Comparing the longer regimen and the shorter regimen for multidrug-resistant

pulmonary tuberculosis patients treated under the programmatic management of

drug-resistant tuberculosis.

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Multidrug-resistant tuberculosis is a major public health concern with prolonged

infectivity, a complex treatment regimen, and lower treatment success rates.

Despite the significant progress made by India in the control of Tuberculosis,

it remains the second leading cause of mortality among infectious diseases.

Shorter treatment courses for multidrug-resistant tuberculosis (MDR-TB) can

enhance patient adherence by decreasing the length of time for medication intake

and alleviating the challenges associated with prolonged treatment. Evaluating

the effectiveness of various treatment regimens is crucial for identifying the

best balance among treatment duration, efficacy, adverse drug effects, and

patient adherence. A prospective, observational study on 50 MDR-TB patients was

carried out at a tertiary care hospital. The final cure rates were 88% in the

shorter regimen and 84% in the longer regimen, with 12% treatment failure in

both groups. Both shorter and longer regimens demonstrated comparable efficacy

with slightly better adherence in the shorter regimen.

**CLINICAL TRIAL REGISTRATION:** The study was registered in the Clinical Trials

Registry-India (Indian Council of Medical Research-National Institute of Medical

Statistics), https://ctri.nic.in/, CTRI registration number CTRI/2024/01/061453,

registration date 15/1/2024, date of first enrollment is 24/1/2024.

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DOI: 10.3389/fmed.2025.1645820

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**90. Lancet Reg Health Eur. 2025 Jun 25;55:101354. doi: 10.1016/j.lanepe.2025.101354. eCollection 2025 Aug.**

Sex differences in risk factors for unsuccessful tuberculosis treatment outcomes

in Eastern Europe from 2020 to 2022: a multi-country retrospective cohort study.

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MD(9), Kilmnick J(9), Crudu V(10), Ciobanu N(10), Codreanu A(10), Toxanbayeva

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Vashakidze S(12)(13), Shubladze N(12), Avaliani Z(12)(14), Kadyrov A(15),

Kalmambetova G(15), Sydykova M(15), Ghita E(16), Grecu VI(17), Miulescu AM(18),

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**BACKGROUND:** Addressing the disproportionate representation between sexes is

essential for achieving universal health coverage. Studies on the association

between sex and unsuccessful tuberculosis treatment outcomes have shown

conflicting results. This study examines this association and analyses

sex-stratified risk factors associated with unsuccessful outcomes.

**METHODS:** This retrospective, observational cohort study analysed prospectively

collected data from six Eastern European countries from 2020 to 2022. Treatment

outcomes were defined using World Health Organization criteria. Uni- and

multivariable logistic regression models were used to assess the association

between sex and unsuccessful outcomes ('treatment failure', 'lost to follow-up',

'died', or any of these). After propensity score matching females and males, the

multivariable analysis was repeated. Risk factors were analysed separately for

each sex and compared using interaction terms.

**FINDINGS:** Among females, 19·5% (n = 290/1490) (95% confidence interval [CI]: 18,

22) achieved an unsuccessful treatment outcome, compared with 30% (n =

1363/4553) (95% CI: 29, 31) among males. In the multivariable analyses, female

sex was associated with 32% lower odds of any unsuccessful outcome (adjusted

odds ratio [aOR] 0·68, 95% CI: 0·58, 0·80), 36% lower odds of dying (aOR 0·64,

95% CI: 0·51, 0·80), and 37% lower odds of treatment failure (aOR 0·63, 95% CI: 0·47, 0·85). The association between sex and being 'lost to follow-up' was not significant. In the propensity score-matched cohort, sex was not associated with unsuccessful outcomes. Risk factors for unsuccessful outcomes were similar for females and males, except that in females aged >65 years, the odds of death were 2·2 times higher (95% CI: 1·1, 4·4).

**INTERPRETATION:** Male sex was associated with unsuccessful outcomes, including

death and treatment failure, but adjusting for socio-demographic and clinical

factors, and matching males to females, attenuated the association, suggesting

that sex disparities in tuberculosis outcomes may be driven more by behavioural

than biological factors. Longitudinal studies are needed to confirm these

findings.

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**91. Health Sci Rep. 2025 Sep 12;8(9):e71241. doi: 10.1002/hsr2.71241. eCollection 2025 Sep.**

Outcomes and Adverse Events of WHO Shorter Regimen in the Treatment of

Multi-Drug Resistant Tuberculosis in Bhutan: A Longitudinal Study.

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BACKGROUND AND AIMS: Bhutan first introduced the Shorter Regimen, consisting of

a combination of Amikacin, Clofazamine, Ethionamide, Ethambutol, high dose

Isoniazid, Moxifloxacin and Pyrazinamide, for the treatment of rifampicin or

multidrug resistant tuberculosis (RR/MDR-TB) in 2018. This study describes the

outcome, time to sputum conversion and adverse events of treatment among MDR-TB

patients treated with the Shorter Regimen in Bhutan.

**METHODS:** This was a longitudinal study among patients with RR/MDR-TB who were

treated with the Shorten Regimen between 2018 and 2020. Throughout the treatment

period, sputum smear, culture, and blood investigations were monitored.

**RESULTS**: There were 52 patients who received the shorter regimen for MDR-TB.

Forty-seven patients (90%) had pulmonary TB (PTB) and five (10%) had

extra-pulmonary TB (EPTB). Forty-one patients (79%) had confirmed MDR-TB and 11

(21%) had RR-TB. MDR-TB was detected in new cases in 35 patients (69%), while 11

(22%) were cases of TB relapse and five (10%) were cases of treatment failure.

There were 40 patients (86%) who achieved sputum smear conversion by the end of

4 months while all patients became culture negative by the end of 3 months. All

patients achieved culture conversion by the end of 3 months. The treatment

success rate was 94% and there were no deaths. The common side effects were

nausea, vomiting, arthralgia, dizziness, sleep disturbances, depressed mood and

skin rash. QTc prolongations were observed in six patients, for which five

patients needed dose modification of Moxifloxacin. Five patients had hepatitis,

and two needed dose modification. Two patients were switched to the longer

regimen due to amikacin-induced profound hearing loss and nephrotoxicity.

**CONCLUSIONS:** The treatment success rate of MDR-TB was high, with high sputum and

culture conversion rates. Adequate monitoring of side effects is important in

providing timely intervention.

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**92. medRxiv [Preprint]. 2025 Sep 2:2025.08.27.25334397. doi:**

**10.1101/2025.08.27.25334397.**

Comparison of phylogenetic metrics of transmission in symptomatic and

asymptomatic tuberculosis.

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Colijn C(5), Cohen T(6), de Oliveira RD(7)(8), Bampi JVB(2), Croda MG(2),

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**BACKGROUND:** Understanding drivers of Mycobacterium tuberculosis (Mtb)

transmission remains a critical challenge in high-burden settings. Tuberculosis

control efforts traditionally target symptomatic individuals, yet the role of

asymptomatic cases in sustaining transmission is increasing recognized.

**METHODS:** We conducted a genomic and epidemiological analysis of Mtb isolates

collected in Mato Grosso do Sul, Brazil, between 2008 and 2024. From 2017 to

2022, active case finding was performed in three of the state's largest prisons,

whereby sputum was collected from individuals irrespective of symptoms and

tested by GeneXpert and culture. We evaluated several metrics of recent

transmission from symptomatic and asymptomatic individuals, including

phylogenetic clustering, Time-scaled Haplotype Density (THD), Local Branching

Index (LBI), and transmission probabilities inferred using the Bayesian

Reconstruction and Evolutionary Analysis of Transmission Histories (BREATH).

**FINDINGS:** We sequenced 2,362 Mtb strains, of which 3.5% (115/2,362) were

resistant to at least one drug, and 0.6% (16/2,362) were multi-drug resistant.

Most strains were lineage 4, and 78.2% of all isolates were part of a genomic

cluster. Among 2,362 individuals with tuberculosis, 1,137 were incarcerated at

the time of diagnosis. Among these, 505 were identified through active case

finding: 277 had symptomatic disease and 228 had asymptomatic tuberculosis.

There was no significant difference in phylogenetic clustering proportion (77%

vs. 85%; p= 0.816), THD (median 0.50 vs. 0.39; p = 0.120), or LBI (median

0.00863 vs. 0.00871; p = 0.086) between symptomatic and asymptomatic

individuals. Bayesian transmission trees revealed no significant difference in

the number of secondary infections inferred from symptomatic compared with

asymptomatic individuals (p = 0.56). These findings were consistent across

genomic clusters and robust to model assumptions.

**INTERPRETATION:** We identified no differences in transmission from symptomatic

compared with asymptomatic individuals, using several genomic measures of

transmission, underscoring the substantial contribution that asymptomatic

tuberculosis makes to transmission at the population level.

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PMID: 40950492

**93. medRxiv [Preprint]. 2025 Sep 7:2025.09.04.25335036. doi:**

**10.1101/2025.09.04.25335036.**

Hidden in Success: Gendered Patterns of Suboptimal Care Engagement Among TB

Patients Who "Successfully" Completed Treatment in South Africa.

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**BACKGROUND:** Adherence to tuberculosis (TB) treatment is key to optimal health

outcomes. Programmatic definitions of treatment success may mask heterogeneity

in care engagement patterns that increase risk of unfavorable outcomes.

**METHODS:** Using patient-level medication refill data, latent-class growth

modelling was used to identify longitudinal trajectories of care engagement

among participants who programmatically achieved treatment success. Logistic

regression was conducted to investigate participant-level characteristics

associated with trajectory class membership.

**RESULTS:** Among 548 participants, we identified three trajectories: Class 1

(consistent engagement; 84.1%), Class 2 (suboptimal engagement after 2 months;

7.7%) and Class 3 (suboptimal engagement from initiation; 8.2%). At treatment

completion, Classes 1-3 accumulated 9.7 (95% CI: 7.4-11.8), 68.4 (60.4-76.9) and

55.5 (48.1-62.7) missed refill days, respectively. In gender-stratified models,

men exhibited all three trajectories (83.1%, 7.4%, and 9.5%, respectively), and

accumulated 10.6 [7.8-13.3], 61.0 [50.2-71.3], 53.3 [53.3-71.4] missed refill

days, respectively. Women exhibited only Classes 1 and 3 (89.5% and 10.5%,

respectively) and accumulated 12.1 [7.8-16.5] and 46.9 [33.3-61.6] missed refill

days, respectively. Among men, prior TB (Class 2: aOR 7.44, 2.79-19.8; Class 3:

aOR 2.78, 1.07-7.25) and HIV-negative status (Class 3: aOR 2.72, 1.13-6.54) were

associated with suboptimal trajectories. Among women, prior TB was associated

with suboptimal engagement (aOR 5.22, 1.11-24.44).

**CONCLUSION:** Programmatic Treatment Success obscured suboptimal engagement

trajectories. Patient-centered counseling and gender-responsive interventions

are needed to address suboptimal engagement across treatment stages. Shorter

treatment regimens will unlikely resolve suboptimal engagement, underscoring the

importance of regimen forgiveness.

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PMCID: PMC12425060

PMID: 40950450

**94. medRxiv [Preprint]. 2025 Sep 4:2025.09.02.25334943. doi:**

**10.1101/2025.09.02.25334943.**

The potential impact, cost and cost-effectiveness of tuberculosis interventions

- a modelling exercise.

Horton KC(1)(2), Schwalb A(1)(2)(3), Harker MJ(1)(2)(4), Goscé L(1)(2),

Venero-Garcia E(1)(2), O'Brien L(1)(2), Gun A(1)(2)(5), Sumner T(1)(2), McQuaid

CF(1)(2), Clark RA(1)(2), Prys-Jones TO(1)(2), Bakker R(1)(2)(6), Liu YE(7)(8),

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**BACKGROUND:** While a range of interventions exist for tuberculosis prevention,

screening, diagnosis, and treatment, their potential population impact and

cost-effectiveness are seldom directly compared, or evaluated between settings

with different background TB epidemiology and structural drivers.

**METHODS:** We calibrated a deterministic TB model to epidemiological indicators in

Brazil, India, and South Africa. We implemented seven interventions across

countries focusing on prevention, screening and diagnosis, and treatment of TB,

as well as TB screening in prisons in Brazil and nutritional supplementation in

India. We standardised scale-up (2025-2030), coverage (80% of target

population), and strength of evidence for epidemiological impact using published

efficacy data. We estimated epidemiological impact and incremental

cost-effectiveness ratios (ICERs), expressed as costs per disability-adjusted

life year (DALY) averted by 2050.

**RESULTS:** Only three interventions prevented >10% of incident TB episodes by

2050: vaccination (median 15-28% across countries), symptom-agnostic

community-wide screening (32-38%) and screening in prisons (23%). The impact of

other interventions was more limited, ranging from 0% (shortened

drug-susceptible treatment) to 5% (nutritional supplementation). ICERs varied

widely by intervention and setting. Shortened drug-resistant treatment was

cost-saving across settings, with the next lowest ICERs for prison screening in

Brazil (72 USD/DALY) and nutritional supplementation in India (167 USD/DALY).

Within each country, both low-cost community-wide screening and TB vaccine

campaigns had lower USD/DALY than TB preventive treatment.

**CONCLUSION:** Interventions with meaningful epidemiological impact can also be

cost-effective, but need to target populations beyond clinic-diagnosed

individuals or their households. Achieving such potential requires a priority

shift in funding, policy and product development.

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PMID: 40950424

**95. medRxiv [Preprint]. 2025 Sep 5:2025.09.02.25334912. doi:**

**10.1101/2025.09.02.25334912.**

Demographic and Clinical Correlates of Discordant QuantiFERON TB Gold

Tuberculosis Screening Results in a Low Endemicity Setting.

Sharma GK, Haq F, Totten AH, Marcos LA, Vorkas CK.

Interferon-ɣ Release Assays (IGRAs), such as the QuantiFERON-TB Gold Plus

(QFTTB) and T-SPOT.TB, are commonly used to detect prior exposure to

Mycobacterium tuberculosis complex ( Mtb ), the causative agent of tuberculosis

(TB). IGRA positive (IGRA+) asymptomatic individuals are diagnosed with presumed

latent tuberculosis infection (LTBI) and often offered therapy to prevent

progression to active disease. However, discordant results during serial or

confirmatory IGRA testing pose challenges for interpretation and may lead to

unnecessary LTBI treatment. We conducted a retrospective study of subjects who

received QFTTB testing at Stony Brook Medicine between October 2020 and March

2024, focusing on discordant serial testing, to identify sociodemographic and

clinical variables associated with quantitative QFTTB results. Variables

measured included age, sex, race, comorbidities, and medication use. A total of

743 subjects were analyzed, including all 436 QFTTB-positive (QFTTB+) cases of

11,641 tests ordered (3.7%), of whom 16 were diagnosed with active TB. A random

sample of 307 age-sex-matched QFTTB-negative controls were included. Of 203

subjects undergoing serial QFTTB testing, 170 (83.7%) had concordant results,

while 33 (16.3%) showed discordance-23 (69.7%) with reversion and 10 (30.3%)

with conversion. Conversions occurred in significantly older subjects (mean age

51.1 ± 15.0 vs. 37.0 ± 15.6, p = 0.025) and over longer intervals (415.1 vs.

91.2 days, p = 0.026). Comorbidities including cardiovascular disease,

infections, and diabetes correlated with changes in NIL, TB1, and TB2 values.

These findings highlight inconsistencies in QFTTB testing that complicate LTBI

management and underscore the importance of confirmatory testing in

low-incidence settings.

**IMPORTANCE STATEMENT:** Reliable interpretation of interferon-γ release assays

(IGRAs) is critical for the diagnosis and management of latent tuberculosis

infection (LTBI). However, variability in test performance, particularly during

serial or confirmatory testing, complicates clinical decision-making and may

result in unnecessary treatment. Our study demonstrates that demographic

factors, clinical comorbidities, and testing intervals contribute to discordant

QuantiFERON-TB Gold Plus (QFTTB) results. These findings underscore the need to

integrate epidemiologic risk, clinical history, and repeat testing before

initiating therapy, especially in low-incidence regions where the pre-test

probability of infection is low. Improved understanding of IGRA variability can

strengthen both patient care and research applications, including TB vaccine and

biomarker studies.

DOI: 10.1101/2025.09.02.25334912

PMCID: PMC12424913

PMID: 40950418

**96. bioRxiv [Preprint]. 2025 Sep 3:2025.08.30.673236. doi:**

**10.1101/2025.08.30.673236.**

Cysteine reactivity profiling identifies host regulators of Mycobacterium

tuberculosis replication in human macrophages.

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Innate immune cells such as monocytes and macrophages provide the earliest

defense against infection by intracellular pathogens by initiating signaling

pathways and restricting pathogen replication. However, the full complement of

proteins that mediate cell-autonomous immunity remains incompletely defined.

Here, we applied cysteine-directed activity-based protein profiling (ABPP) to

map proteome-wide cysteine reactivity changes in THP-1 monocytes and primary

human monocyte-derived macrophages during Mycobacterium tuberculosis (Mtb)

infection. Across both cell types, we quantified 148 cysteine residues with

altered reactivity. Genetic perturbation of a subset of proteins harboring these

changes significantly impacted Mtb replication, revealing functional links

between site-specific cysteine reactivity and antimicrobial defense. These data

define previously unrecognized host protein changes during Mtb infection and

provide a resource for investigating post-translational events that regulate

innate immune responses to intracellular bacteria.

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PMID: 40950159

**97. bioRxiv [Preprint]. 2025 Sep 5:2025.09.02.673599. doi:**

**10.1101/2025.09.02.673599.**

SMURF2 inhibits autophagic control of Mycobacterium tuberculosis in macrophages.

Campos PC, Rahlwes KC, Eknitphong VA, Dias BRS, Naqvi KF, Alvarez-Arguedas S,

Shiloh MU.

Autophagy is a critical host defense mechanism that restricts intracellular

pathogens such as Mycobacterium tuberculosis (Mtb). A key step in this process

is the ubiquitination of Mtb or Mtb-associated structures. The E3 ligase SMURF1

catalyzes K48-linked ubiquitination, promoting bacterial clearance. However, the

function of its homolog, SMURF2, in host defense remains undefined. Here, we

demonstrate that Smurf2 deletion in murine macrophages increases SMURF1 levels,

enhances LC3B lipidation, augments K48 ubiquitination of Mtb-associated

structures, and reduces intracellular Mtb replication. These effects are

reversed by Smurf1 deletion, indicating that SMURF2 restricts autophagy in a

SMURF1-dependent manner. Mice with myeloid-specific Smurf2 deletion exhibit

modestly prolonged survival following aerosol Mtb infection. In human

macrophages, SMURF2 knockdown or its pharmacological inhibition with the HECT

ligase inhibitor Heclin reduces Mtb replication. Together, our findings identify

SMURF2 as a negative regulator of selective autophagy and host immunity to Mtb

and suggest that targeting SMURF2 may represent a novel host-directed

therapeutic strategy for tuberculosis.

DOI: 10.1101/2025.09.02.673599

PMCID: PMC12424680

PMID: 40950029

**98. Indian J Community Med. 2025 Aug;50(Suppl 1):S30-S34. doi:**

**10.4103/ijcm.ijcm\_74\_24. Epub 2024 Dec 4.**

Assessing the TB Mukt Gram Panchayat Program in Rajasthan: A Way toward

Tuberculosis Elimination.

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**BACKGROUND:** The TB Mukt Gram Panchayat program was launched by the National

Health Mission in Rajasthan on August 15, 2022 to engage Panchayati Raj

Institutions at the grass-root level to strengthen the fight against

tuberculosis (TB). This study was conducted to assess the progress and

achievements of this program in Rajasthan.

**METHODOLOGY:** The methodology involved the collaborative development of

assessment criteria by expert stakeholders to assess the TB-free status of Gram

Panchayats (GPs)/Wards (WAs) in Rajasthan. Two stages were conducted:

shortlisting based on specific criteria, including active case finding and

treatment linkage, and final assessment using a standardized questionnaire.

Indicators assessed included program delivery, active case finding, community

awareness, community support, district capacity, and TB burden, each with

defined qualifying criteria and achievement scores, yielding final scores for

each GP.

**RESULTS:** In the context of the GP/WA TB-Free Declaration Status, the results

depict a mix of statuses, including "Progress toward TB-free status" and

"Achieved TB-free status." Out of 51 GPs/WAs, 29 achieved TB-free status, 13

were in progress toward TB-free status, and the rest were not qualified, having

incomplete coverage.

**CONCLUSION:** This study highlights the progress in Rajasthan's TB Mukt Gram

Panchayat program and exemplifies stakeholder collaboration across sectors in

developing a verification framework for TB Mukt Gram Panchayat claims. Moreover,

this novel assessment framework offers a valuable tool for other states to

monitor their progress toward TB elimination.

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**99. ACS Omega. 2025 Aug 26;10(35):39875-39883. doi: 10.1021/acsomega.5c04174.**

**eCollection 2025 Sep 9.**

In Vitro Antimycobacterial Activity Evaluation of a New Lead Compound (LQFM326)

against Clinical Strains of Mycobacterium sp.

Martins TMM(1), Lião LM(2), Oliveira GAR(3), A Silva PE(4), Reis AJ(4), Neves

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Tuberculosis (TB) remains a significant global public health challenge. The

novel compound LQFM326 was evaluated for its antimycobacterial activity against

seven Mycobacterium species. Minimum inhibitory concentrations (MICs) were

determined, revealing values of 15.6 μg/mL against Mycobacterium tuberculosis

H37Ra and 12.5 μg/mL against clinical strains. The MIC values observed for these

reference antimicrobials against M. tuberculosis H37Ra were 0.25 μg/mL for

rifampicin and 0.125 μg/mL for isoniazid. Surface damage to Mycobacterium

abscessus cells was observed via scanning electron microscopy (SEM), confirming

morphological alterations induced by LQFM326. Cellular viability was assessed

using the Live/Dead assay, with a CC50 of 126.68 ± 42.66 μg/mL. The selectivity

index (SI), calculated from MIC and CC50 values, ranged from 2.03 to 10.13, with

values above 10 indicating favorable selectivity. Additionally, synergistic

effects were observed when LQFM326 was combined with other antibiotics. These

findings highlight LQFM326 as a promising antimycobacterial agent with potential

efflux-inhibitory and synergistic properties. Further studies are needed to

validate its efficacy across diverse clinical strains and to elucidate its

mechanism of action.

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**100. Cureus. 2025 Sep 10;17(9):e92017. doi: 10.7759/cureus.92017. eCollection 2025 Sep.**

Uncovering Latent Tuberculosis Masquerading as Bartonella henselae Infection in

a 12-Year-Old Patient.

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Bartonella henselae, the causative agent of cat scratch disease (CSD), and

Mycobacterium tuberculosis are two distinct pathogens that may affect the same

patient, particularly in areas where both are common and risk factors overlap.

We report the case of a 12-year-old Hispanic boy from South Texas, living near

the USA-Mexico border, who presented with cervical swelling and mild periorbital

edema for more than two weeks. Outpatient evaluation identified recent kitten

exposure and positive Bartonella henselae IgM titers, leading to a diagnosis of

CSD. Clindamycin was prescribed due to a documented penicillin allergy, although

it is not considered first-line therapy. The patient's lymphadenopathy persisted

after completing treatment, prompting admission to our hospital for further

evaluation. During hospitalization, azithromycin, the CDC-recommended first-line

antibiotic, was started for CSD, and latent tuberculosis infection was also

identified. Our case illustrates how an acute illness can dominate the clinical

presentation, overshadowing an underlying latent condition, creating a

diagnostic blind spot, thus reinforcing the need for comprehensive

history-taking, systematic evaluation, and a broad differential diagnosis,

especially in patients with multiple risk factors.

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PMCID: PMC12423474

PMID: 40949059

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**Online ahead of print.**

MmpS5-MmpL5 Transporters Deliver M. tuberculosis Resistance to Bedaquiline (BDQ)

and Delamanid (DLM).

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311, Sultanate of Oman.

**INTRODUCTION:** One of the earliest illnesses that has been identified is

tuberculosis (TB). The largest challenge in managing tuberculosis today is the

growing number of individuals infected with TB bacilli, particularly those that

are extensively and multidrug-resistant (MDR and XDR). However, by figuring out

the resistance's molecular mechanism, Advanced molecular methods may be used to

rapidly determine therapy plans. Combining Delamanid (DLM) with Bedaquiline

(BDQ), one of the recently authorized medications, indicates that the therapy is

effective.

**METHODS:** We aim to investigate efflux-mediated resistance mechanisms in M.

Tuberculosis by using quantitative real-time PCR to assess the expression level

of mmpS5 and mmpL5.

**RESULTS:** The median (M) and interquartile range (Iqr) of mmpL5 and mmpS5

expression varied from 5.65 to 9.01 and 7.95 to 10.74, respectively, when

resistant strains were compared with sensitive ones. M and Iqr of mmpL5 and

mmpS5 expression, however, ranged from 0.08-3.04 and 0.05- 1.61 for sensitive

strains, correspondingly.

**DISCUSSION:** Our findings have implications for the development of fast genotypic

drug susceptibility testing (DST). Quantitative real-time PCR to measure the

expression level of mmpS5 and mmpL5 of baseline and post-baseline isolates is

important to track the development of BDQ and DLM resistance.

**CONCLUSION:** Thus, when developing anti-tuberculosis drugs, mycobacterial

MmpS5-MmpL5 transporters should be taken into consideration early on, as they

are an MDR-efflux system.

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epub@benthamscience.net.

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Congenital Tuberculosis Following Disseminated TB in Pregnancy: A Case Report.

Allen J(1), Abdelrahman M(2), Muresan A(2), Sugrue R(2), Dolan L(1), Fitzgibbon

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Disseminated Mycobacterium kansasii infection revealing GATA2 haploinsufficiency

after presumed tuberculosis and early lung cancer.

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A 46-year-old previously healthy and asymptomatic woman was incidentally found

to have right lung opacities after a traffic accident. Histology revealed

chronic granulomatous inflammation, leading to an initial diagnosis of

tuberculosis with partial response to treatment. A persistent right upper lobe

nodule was later confirmed as minimally invasive lung adenocarcinoma. Post-wedge

resection, she developed recurrent fever, dyspnea, weight loss, leukopenia, and

monocytopenia. Subsequent PET revealed marked mediastinal lymphadenopathy, and

mycobacterial cultures of biopsied lymph nodes and bone marrow yielded

Mycobacterium kansasii. Further immunologic evaluation identified B-cell and

NK-cell deficiency without detectable anti-interferon-gamma autoantibodies.

Genetic testing uncovered a novel heterozygous GATA2 mutation, establishing a

diagnosis of MonoMAC syndrome. Notably, one asymptomatic sister carried the same

pathogenic variant. This case highlights the importance of considering GATA2

haploinsufficiency in adults with atypical mycobacterial infections and

cytopenias. Early recognition enables targeted infection surveillance,

multi-system assessment, family genetic counseling, and definitive hematopoietic

stem cell transplantation planning when indicated.

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An assessment of molecular diagnosis of tuberculosis and multi-drug resistant

tuberculosis testing and quality assessment: findings of an international

survey.

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Molecular 'in vitro diagnostic' (IVD) tests are established for the diagnosis of

tuberculosis (TB) and multi-drug resistant TB (MDR-TB). What is less clear is

how the use of TB or MDR-TB molecular IVD results differ across regions, whether

corroborative tests are conducted and what external quality assessment (EQA)

infrastructure exists to underpin test confidence. This study investigated the

current international status of molecular TB IVDs methods, application and

quality assessment. An online survey was distributed by the IFCC's Committee for

molecular diagnostics to TB diagnostic laboratories worldwide. 118 laboratories

from 41 nations indicated a range of IVDs were used. ∼75 % participated in EQA

programs and 32 % reported this used the WHO International Standard. ∼65 % also

delivered MDR-TB results the majority of which were used to change therapy; 1/6

of these do so without EQA evaluation of the MDR-TB result. The study

demonstrates a range of IVD solutions in use for TB diagnosis along with a high

uptake of EQA in support of this global uptake of this test modality. However,

we also reveal gaps in quality assurance for MDR-TB testing with 10 % of the

laboratories using resistant results alone without participating MDR-TB EQA.

This suggest additional work is required to build on established use of EQA to

better support MDR-TB testing and better ensure confident when results are used

to guide antibiotic use. Addressing these gaps will ensure the accuracy of

future MDR-TB results, which is critical for effective disease management and

help combat TB on a global scale.

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