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**境外学者发表的结核病英文文章摘要**

**（87篇）**

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

**1. Elife. 2025 Oct 3;14:e105545. doi: 10.7554/eLife.105545. Online ahead of print.**

Pleomorphic effects of three small-molecule inhibitors on transcription

elongation by Mycobacterium tuberculosis RNA polymerase.

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The Mycobacterium tuberculosis RNA polymerase (MtbRNAP) is the target of the

first-line anti-tuberculosis inhibitor rifampin, however, the emergence of

rifampin resistance necessitates the development of new antibiotics. Here, we

communicate the first single-molecule characterization of MtbRNAP elongation and

its inhibition by three diverse small-molecule inhibitors:

N(α)-aroyl-N-aryl-phenylalaninamide (D-IX216), streptolydigin (Stl), and

pseudouridimycin (PUM) using high-resolution optical tweezers. Compared to

Escherichia coli RNA polymerase (EcoRNAP), MtbRNAP transcribes more slowly, has

similar mechanical robustness, and only weakly recognizes E. coli pause

sequences. The three small-molecule inhibitors of MtbRNAP exhibit strikingly

different effects on transcription elongation. In the presence of D-IX216, which

inhibits RNAP active-center bridge-helix motions required for nucleotide

addition, the enzyme exhibits transitions between slowly and super-slowly

elongating inhibited states. Stl, which inhibits the RNAP trigger-loop motions

also required for nucleotide addition, inhibits RNAP primarily by inducing

pausing and backtracking. PUM, a nucleoside analog of UTP, in addition to acting

as a competitive inhibitor, induces the formation of slowly elongating RNAP

inhibited states. Our results indicate that the three classes of small-molecule

inhibitors affect the enzyme in distinct ways and show that the combination of

Stl and D-IX216, which both target the RNAP bridge helix, has a strong

synergistic effect on the enzyme.

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**2. Lancet Infect Dis. 2025 Jun 5:S1473-3099(25)00157-4. doi:**

**10.1016/S1473-3099(25)00157-4. Online ahead of print.**

Management of individuals exposed to multidrug-resistant or rifampicin-resistant

tuberculosis.

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Denholm JT(7), Dravniece G(8), Fox GJ(9), Furin J(10), Geliukh E(11), Goncharova

O(12), Guglielmetti L(13), Harries AD(14), Hesseling AC(4), Nguyen BH(15),

Kavenga F(16), Khan U(17), Kherabi Y(18), Kiria N(19), Kock Y(20), Liu Q(6),

Mesic A(21), Moore DAJ(22), Mubanga A(23), Naidoo L(24), Nilsen D(5), Piubello

A(25), Reuter A(26), Rich ML(27), Satyanarayana S(28), Schaaf HS(4), Schoeman

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Individuals exposed to a person with infectious multidrug-resistant or

rifampicin-resistant (MDR-RR) tuberculosis are at risk of developing

tuberculosis disease. Historically, insufficient empirical evidence for

preventive treatment in this group has permitted inadequate guidance for

clinical decision making. However, several high-quality studies have been

published detailing preventive treatment options for these contacts at high

risk. In this Review, we discuss the management of individuals exposed to

patients with infectious MDR-RR tuberculosis. We pay particular attention to the

entire spectrum of clinical care for this population, including baseline

assessment, possible preventive treatments, follow-up, and shared decision

making. We discuss the available evidence, the rationales for different

management strategies, and the interactions with (and implications of) secondary

comorbidities such as HIV or malnutrition.

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data mining, AI training, and similar technologies.

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**3. PLoS One. 2025 Oct 10;20(10):e0333992. doi: 10.1371/journal.pone.0333992.**

**eCollection 2025.**

Generalized estimating equations for modeling cluster randomized trial data on

smoking cessation among tuberculosis patients.

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There is a paucity of studies applying Generalized Estimating Equations (GEE)

for longitudinal analysis of smoking cessation outcomes within the framework of

a cluster randomized trial, especially among tuberculosis (TB) patients. In this

study, a GEE model which accounts for repeated measures and cluster-level

effects was implemented to identify factors associated with smoking cessation

among TB patients. The data included 375 TB patients who were smokers and given

TB treatment during 2013-2016 in Kanchipuram and Villupuram districts under a

cluster randomized trial. GEE modeling provided robust, population-averaged

estimates while accounting for intra-cluster correlation, confirming the

sustained impact of these interventions. The model demonstrated that smoking

cessation interventions, when integrated with TB treatment, had an impact on

cessation outcomes in these populations.

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**4. Arch Microbiol. 2025 Oct 10;207(11):293. doi: 10.1007/s00203-025-04501-1.**

Probable role of naturally derived bergapten molecule promotes autophagy in

Mycobacterium tuberculosis-infected macrophages via PI3K/Akt/mTOR pathway.

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According to the recent WHO figures, nearly 23% of the world's population is

infected with tuberculosis. The causative pathogen Mycobacterium tuberculosis

(Mtb) primarily resides in the macrophages of host cells and hinders the

autophagy mechanism by preventing the fusion of phagolysosomes. This study

investigated the intracellular antituberculosis activity of bergapten (TPB1),

isolated from Tridax procumbens, in human monocytic leukemia-derived (THP-1)

cells, as well as its effects on the molecular expression of autophagy-related

genes. The determination of the minimum inhibitory concentration (MIC) of

bergapten against Mycobacterium tuberculosis by radiometric BACTEC MGIT

(Mycobacteria growth indicator tube) 960 and microbroth dilution methods yielded

an identical MIC value of 62.5 µg/mL. A molecular dynamics (MD) simulation was

conducted to assess the stability of the compound and its induced conformational

changes in Autophagy-related gene 5 (ATG5) and Microtubule-associated protein 1B

light chain 3 (LC3) under real physiological conditions. A 100 ns simulation

conducted using GROMACS (GROningen Machine for Chemical Simulations) revealed

binding stability as assessed by root-mean-square deviation (RMSD) and

root-mean-square fluctuation (RMSF) parameters. Quantitative analysis of mRNA

expression revealed that TPB1 has the potential to enhance autophagy by

upregulating LC3 and ATG5 genes. Our findings emphasize the significance of

investigating naturally derived compounds for the treatment of Mycobacterium

tuberculosis and identifying potential antitubercular candidates for further

investigations.

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**5. BMC Microbiol. 2025 Oct 10;25(1):652. doi: 10.1186/s12866-025-04347-z.**

Performance of the low-cost phenotypic thin-layer agar MDR/XDR-TB Colour Test

(first generation, 1G, Color Plate Test) for identifying drug-resistant

Mycobacterium tuberculosis isolates in a resource-limited setting.

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**BACKGROUND:** The accessible, easy to use and timely, diagnosis of tuberculosis

(TB) drug-susceptibility, is often challenging, particularly in

resource-constrained settings. We therefore evaluated the phenotypic thin-layer

agar based MDR/XDR-TB Colour Test, also known as the "First Generation (1G)

Color Plate Test (TB-CX)" performance for detecting resistance of Mycobacterium

tuberculosis (Mtb) isolates to selected anti-TB drugs versus other tests

routinely used in our setting.

**METHODS:** A cross-sectional study was conducted on Mtb clinical isolates stored

at the Armauer Hansen Research Institute TB laboratory in Addis Ababa, Ethiopia.

Drug-susceptibility testing was performed on 78 Mtb isolates for isoniazid,

rifampicin, and moxifloxacin using the Colour Test and the Indirect Proportional

Method (IPM) "in house" assay. Isoniazid and rifampicin were also evaluated by

the Mycobacterial Growth Indicator Tube (MGIT) commercially available assay.

Test accuracy was calculated as % agreement with 95% confidence intervals

(95%CI).

**RESULTS:** The median (range) times in days determining Mtb resistance or

susceptibility for the Colour Test, IPM and MGIT assays were of 9 (5-18), 15

(13-18) and 19 (14-21) days, respectively. The Colour Test provided results

significantly (p < 0.001) more rapidly than the IPM or MGIT assays. The colour

test showed a sensitivity and specificity of 91%(95% CI: 87-96) and 87%(95%

CI:75-95) for detecting isoniazid resistance,and 93%(95% CI:81-99) and 92%(95%

CI:82-97) for detecting rifampicin resistance, respectively, when compared to

MGIT DST. For detecting MDR-TB the sensitivity and specificity were 90%(95%

CI:76-97) and 96%(95% CI:88-99),respectively. The colour test showed a

sensitivity of 97%(95%CI = 87-100) and specificity of 89% (95%CI = 79-96) for

detecting isoniazid resistance while for rifampicin resistance,it showed a

sensitivity of 82%(95%CI = 64-93)and a specificity of 80%(95% CI = 68-90)

rifampicin resistance. Colour Test accuracy compared to IPM to detect isoniazid,

rifampicin resistance and MDR-TB was 92% (95%CI = 86-98), 81% (95%CI = 72-90),

and 90% (95%CI = 83-96). IPM test accuracy compared to MGIT DST for detecting

isoniazid and rifampicin resistance and MDR-TB was 91% (95%CI = 85-97), 83%

(95%CI = 75-92), and 85% (95%CI = 77-93), respectively. Moxifloxacin

drug-susceptibility testing could not be assessed because only two isolates

showed evidence of resistance.

**CONCLUSION:** The accuracy of Mtb drug-susceptibility testing was similar

comparing: Colour Test versus IPM, Colour Test versus MGIT; and comparing IPM

versus MGIT. The Colour Test was easy to use and determined drug-susceptibility

significantly more rapidly than the IPM and MGIT assays. Thus, implementing the

Colour Test in clinical settings could make drug-susceptibility testing more

accessible and rapid in high TB burden, and resource-constrained settings,

including in Ethiopia.

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**6. Sci Rep. 2025 Oct 9;15(1):34310. doi: 10.1038/s41598-025-20188-2.**

Dexamethasone inhibits Mycobacterium tuberculosis-induced glycolysis but

preserves antimicrobial function in primary human macrophages.

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Glucocorticoids (GC) are useful adjunctive host directed therapies (HDT) for

sub-types of tuberculosis (TB). Macrophages play a central role in controlling

Mycobacterium tuberculosis (Mtb) infection, relying on glycolytic reprogramming

to support an effective host defence, yet the influence of GC on these important

phagocytes is poorly understood. Here, we examined the impact of dexamethasone

on metabolic and functional responses of primary human airway macrophages (AM)

from bronchoalveolar lavage fluid and monocyte-derived macrophages (MDM). We

found that dexamethasone significantly reduced basal and compensatory glycolysis

in both AM and MDM, and decreased expression of the glycolytic enzyme PFKFB3.

Oxidative metabolism was lower in dexamethasone AM but not MDM, indicating

different specific metabolic sensitivity of macrophages. Dexamethasone also

inhibited the glycolytic response to Mtb and reduced secretion of IL-1β, TNF,

IL-6, IL-8, and IL-10. Dexamethasone-treated macrophages showed enhanced

survival following Mtb infection and these cells had a significant reduction in

bacterial burden. This antimicrobial effect was impaired when macrophages were

pre-treated with bafilomycin A1, implicating that phagosomal acidification may

at least in part mediate dexamethasone-induced bacterial control. Collectively,

these findings demonstrate that dexamethasone reprograms human macrophage

metabolism toward a less glycolytic state while preserving their ability to

limit Mtb growth. These results may provide a basis for the clinical benefit of

GC in some TB presentations and support the development of targeting GC

therapies to macrophages, thereby mitigating inflammation without compromising

host antimicrobial defence.

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DOI: 10.1038/s41598-025-20188-2

PMID: 41068481 [Indexed for MEDLINE]

**7. Sci Rep. 2025 Oct 9;15(1):35270. doi: 10.1038/s41598-025-18084-w.**

Molecular docking and pharmacokinetics of benzimidazole-based FtsZ inhibitors

for tuberculosis.

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Benzimidazole derivatives are privileged heterocyclic scaffolds with

broad-spectrum pharmacological activities, notably antitubercular and

antibacterial. In particular, 1,2-disubstituted benzimidazoles have emerged as

potent bioactive candidates due to their unique structural features and target

specificity. In this study, fifty novel 1,2-disubstituted benzimidazole

derivatives were computationally screened against Mycobacterium tuberculosis

cell division protein FtsZ (PDB ID: 2Q1Y, GTP-γ-S complex) using AutoDock Vina

v1.5.6. Docking poses were analyzed via PyMOL and Discovery Studio Visualizer to

elucidate key binding interactions. Pharmacokinetic evaluation through SwissADME

was performed to predict drug-likeness and ADME profiles. ADME analysis revealed

that several lead candidates possessed favorable absorption, distribution,

metabolism, and excretion properties, underscoring their suitability as orally

bioavailable agents. Docking scores ranged from - 6.8 to - 9.6 kcal/mol, with

multiple derivatives surpassing the binding affinity of standard antitubercular

drugs, including isoniazid and para-aminosalicylic acid. The integration of

structure-based molecular docking with in silico pharmacokinetic profiling

highlights substituted benzimidazole scaffolds as promising next-generation FtsZ

inhibitors for antitubercular drug development.

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**8. J Pediatr Adolesc Gynecol. 2025 Oct 7:S1083-3188(25)00362-6. doi:**

**10.1016/j.jpag.2025.10.002. Online ahead of print.**

Laparoscopic Management of Tubercular Pyosalpinx Torsion in an Adolescent Girl:

A Case Report.

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Female genital tuberculosis (FGTB) is a form of extrapulmonary tuberculosis that

predominantly affects women of reproductive age and is a significant cause of

infertility in TB-endemic countries like India. Tubercular pyosalpinx is a rare

presentation of FGTB. Even more uncommon is its complication by isolated tubal

torsion, which may mimic other causes of acute abdomen, making early diagnosis

challenging. We report the case of a 15-year-old girl who presented with acute

lower abdominal pain and vomiting. She had a two-month history of low-grade

evening fever. Clinical evaluation and ultrasound findings suggested pyosalpinx

or hematosalpinx with normal ovarian morphology, raising suspicion of isolated

tubal torsion. Diagnostic laparoscopy revealed a torsed, distended fallopian

tube filled with purulent material and multiple peritoneal tubercles. The tube

was excised using a glove-made improvised endobag to prevent intra-abdominal

spillage. Histopathology confirmed tubercular salpingitis with caseous necrosis,

and GeneXpert was positive for Mycobacterium tuberculosis. The patient was

started on standard anti-tubercular therapy and had an uneventful recovery. This

case underscores the importance of considering tuberculosis as an etiology in

adolescent girls presenting with pyosalpinx, especially in TB-endemic regions.

It also highlights the value of safe laparoscopic management with innovative

surgical techniques in resource-limited settings. Early diagnosis, surgical

intervention, and timely initiation of anti-tubercular therapy are crucial for

effective management and preservation of reproductive health.

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PMID: 41067697

**9. J Med Imaging Radiat Sci. 2025 Oct 8;56(6):102115. doi:**

**10.1016/j.jmir.2025.102115. Online ahead of print.**

Multi-class deep learning architecture for COVID-19, tuberculosis, and pneumonia

classification using chest X-ray images.

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Advancements in medical imaging and deep learning have enabled the development

of intelligent systems that assist clinicians in diagnosing complex pulmonary

diseases. This study addresses the growing concern over lung abnormalities

caused by diseases such as COVID-19, tuberculosis (TB), and pneumonia. We

propose a convolutional neural network (CNN)-based multi-class classification

framework that uses chest X-ray images to automatically detect COVID-19, TB,

pneumonia, and normal conditions. The original publicly available dataset

exhibited class imbalance, with significantly fewer COVID-19 cases compared to

other categories. To address this, the Synthetic Minority Oversampling Technique

(SMOTE) are applied at the feature level, generating a balanced dataset of 6,000

chest X-ray images equally distributed across the four classes. The

preprocessing techniques have been used to enhance model generalisation,

including image normalization, augmentation, and resizing. We evaluated multiple

deep learning architectures, including ResNet-50, EfficientNet, DenseNet, and

VGG-19. Among these, VGG-19 achieved the highest test accuracy of 97.5%, with

precision, recall, and F1-score all exceeding 96% across classes. This unified

deep learning pipeline integrates data preprocessing, feature extraction, and

classification. The proposed model is intended as a research framework and is

currently non-clinical; however, it demonstrates promising potential and could

be further explored for assisting radiologists in diagnostic decision-making.

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**10. PLoS Negl Trop Dis. 2025 Oct 9;19(10):e0013513. doi:**

**10.1371/journal.pntd.0013513. eCollection 2025 Oct.**

Mycobacterium tuberculosis complex Lineage 1: A neglected cause of tuberculosis.

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The Mycobacterium tuberculosis complex (MTBC) phylogenetic lineages 1-4 (L1-L4)

are the main causes of human tuberculosis (TB). Until now, most of the focus in

the TB field has been on MTBC L2 and L4, as these two lineages are

geographically widespread and have been repeatedly associated with multidrug

resistance. By comparison, MTBC L1 has received little attention, partially

because of its restricted geographical range that mainly includes low- to

middle-income countries in South and Southeast Asia, and East Africa. However,

recent estimates indicate that MTBC L1 is in fact the most common cause of human

TB in terms of absolute numbers of TB patients, particularly among several high

TB burden countries. As more L1 strains are being sampled in L1-endemic

countries, the high genetic diversity of this geographically restricted MTBC

lineage is slowly uncovered. This discovery has also impacted L1 nomenclature,

which has been modified as new distinct L1 clades were identified. In parallel

to the genomic discoveries ushered by progress in whole genome sequencing,

clinical researchers have also studied several phenotypes that better describe

L1 TB disease. L1 strains have been shown to have increased vulnerability to

oxidative stress, which was associated with decreased virulence in animal and in

vitro models. L1 infection also shows possible association with extrapulmonary

TB and asymptomatic TB. However, despite belonging to the same lineage, L1

strains display phenotypic diversity that can be attributed to high

within-lineage genetic diversity and possibly the interaction of different L1

genotypes with different human host genotypes. Among the clinical phenotypes

that show heterogeneity are bacterial factors, immune profiles, and clinical

virulence. The traditional view regarding the reduced transmissibility in L1 is

now being challenged by new data indicating that L1 may be as transmissible as

L2 or L4. Lastly, although historically referred to as being negatively

associated with drug resistance, there is indication that the contribution of L1

to TB drug resistance is significant and that it may evolve drug resistance in

ways distinct from those of other MTBC lineages.

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**11. Infection. 2025 Oct 9. doi: 10.1007/s15010-025-02660-3. Online ahead of print.**

Hemoptysis in a patient with MDR-tuberculosis: successful diagnosis with photon

counting CT and embolization of a Rasmussen aneurysm.

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**BACKGROUND:** Multidrug-resistant tuberculosis (MDR-TB) remains a significant

clinical challenge and may be complicated by life-threatening hemoptysis. One

rare but serious cause of hemoptysis in TB patients is the development of

pulmonary artery pseudoaneurysms, known as Rasmussen aneurysms, which typically

arise within or adjacent to tuberculous cavitary lesions.

**CASE PRESENTATION:** We report the case of a 57-year-old male patient who was

diagnosed with MDR-TB in July 2024, confirmed by phenotypic resistance against

rifampicin and isoniazid. According to WHO recommendations treatment with the

BPaLM regimen (bedaquiline, pretomanid, linezolid, and moxifloxacin) was

initiated in early August 2024 and was administered according to an extended

9-month schedule due to clinical considerations. After approximately seven

months of therapy, the patient was re-hospitalized in March 2025 due to

hemoptysis. A thoracic photon counting CT scan revealed regressing bilateral

cavitary lesions. During the same month, a pseudoaneurysm arising from a

subsegmental pulmonary artery within a cavity-consistent with a Rasmussen

aneurysm-was identified. Successful embolization of the feeding vessel was

performed under angiographic guidance. Post-interventional bronchoscopy showed

minimal residual bloody secretions at the embolization site but no evidence of

active bleeding after thorough irrigation. At that time, pending cultures for M.

tuberculosis finally converted negative. The patient recovered well, and no

further hemoptysis occurred.

**CONCLUSIONS:** This case highlights the importance of considering Rasmussen

aneurysms as a potential cause of hemoptysis in patients with cavitary MDR-TB,

even several months after starting antibiotic therapy. Prompt imaging-based

diagnosis and endovascular intervention are critical to avoid life-threatening

complications.

© 2025. The Author(s).

DOI: 10.1007/s15010-025-02660-3

PMID: 41065995

**12. Eur J Clin Microbiol Infect Dis. 2025 Oct 9. doi: 10.1007/s10096-025-05301-7. Online ahead of print.**

Managing tuberculosis infection among migrants from high-incidence tuberculosis

countries: challenges, strategies and recommendations.

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Tuberculosis (TB) remains a significant global health challenge, especially in

countries with low TB incidence, exacerbated by the influx of migrants from high

TB-burden regions. This paper reviews the challenges and strategies for managing

TB infection (TBI) among migrants. Challenges in screening and treating TBI

among migrants include diagnostic limitations of available tests which are

tuberculin skin test (TST) and interferon-gamma release assay (IGRA),

socioeconomic barriers, cultural beliefs and mobility. Recommendations vary

among guidelines, ranging from proactive screening to targeted approaches. We

addressed the issue of two-step testing, discussing the use of an initial TST

followed by IGRA confirmation, with consideration of BCG vaccination status and

TB exposure history. Treatment options for TBI include isoniazid monotherapy and

rifamycin-based regimens in most cases, with varying preferences across

guidelines. Challenges in TBI treatment include hepatotoxicity and adherence

issues, particularly among migrants. Overall, a comprehensive approach

addressing socioeconomic, cultural, and structural factors is crucial for

effective TBI management among migrants. Collaboration between healthcare

providers, policymakers and migrant communities is essential for developing

culturally sensitive screening and treatment protocols. Further research is

needed to evaluate the efficacy and feasibility of different screening and

treatment strategies, particularly among migrant populations.

© 2025. The Author(s).

DOI: 10.1007/s10096-025-05301-7

PMID: 41065975

**13. Ann Afr Med. 2025 Oct 9. doi: 10.4103/aam.aam\_276\_25. Online ahead of print.**

Posterior Reversible Encephalopathy Syndrome in a Young Female with Takayasu and

Tubercular Arteritis: A Rare Case Report.

[Article in English, French; Abstract available in French from the publisher]

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Tuberculosis (TB) may co-occur with Takayasu arteritis (TA), a large vessel

vasculitis, thus complicating the management, particularly in endemic areas. We

report the case of a 17-year-old female who presented with severe headache,

blurred vision, giddiness, seizures, syncope, and hypertensive urgency (200/110

mmHg). Renal Doppler demonstrated left renal artery stenosis (RAS), and magnetic

resonance imaging showed posterior reversible encephalopathy syndrome (PRES). TA

was suggested by raised inflammatory markers (erythrocyte sedimentation rate: 70

mm/h, C-reactive protein: 212 mg/L) and computed tomography aortography

illustrating left RAS and circumferential wall thickening of the descending

aorta. Co-infection with TB was suggested by the presence of calcified lymph

nodes. On treatment with antihypertensives, anti-TB therapy, and

corticosteroids, the patient improved symptomatically and was discharged with

ongoing treatment. Our case emphasizes the significance of considering TB and TA

in young females who present with renovascular hypertension and PRES, thus

highlighting the role of inflammatory markers and imaging in early diagnosis and

treatment.

Copyright © 2025 Annals of African Medicine.

DOI: 10.4103/aam.aam\_276\_25

PMID: 41065758

**14. Lab Med. 2025 Oct 9:lmaf060. doi: 10.1093/labmed/lmaf060. Online ahead of print.**

An atypical finding on serum immunofixation: a case report.

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**INTRODUCTION:** Multiple myeloma (MM) is characterized by the abnormal

proliferation of plasma cells, resulting in the overproduction of distinctive

monoclonal proteins (M-protein). Suspected MM necessitates screening for

M-protein through a combination of serum protein electrophoresis, serum

immunofixation (SIFE), and serum free light chain (SFLC) determination. An

M-protein appears as a relatively restricted band on agarose gel, where

migration in ɑ-2 is rare.

**METHODS:** A 55-year-old man with pulmonary tuberculosis presented with severe

lower back pain. On examination, he appeared chronically ill, with conjunctival

pallor. X-rays revealed vertebral compression fractures. The full blood count

confirmed anemia; however, serum calcium and creatinine levels did not meet

myeloma-defining event criteria.

**RESULTS:** The serum protein electrophoresis revealed hypogammaglobulinemia, with

the SIFE demonstrating unusual unrestricted κ staining in the ɑ-2 region. A

markedly elevated κ SFLC and κ:λ ratio were found. Bone marrow examination

demonstrated approximately 90% plasmacytosis. Urine immunofixation revealed a

small, restricted κ band disproportionate to the κ SFLC. Notably,

matrix-assisted laser desorption/ionization time-of-flight mass spectrometry

identified only polyclonal κ SFLC.

**DISCUSSION:** Given the absence of a discernible M-protein on SIFE, a small κ

restriction on urine immunofixation, and a polyclonal increase in κ SFLCs, the

patient's condition is being managed as an oligosecretory MM.

© The Author(s) 2025. Published by Oxford University Press on behalf of American

Society for Clinical Pathology.

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**15. J Proteome Res. 2025 Oct 9. doi: 10.1021/acs.jproteome.5c00416. Online ahead of print.**

A Phosphoproteomic Analysis of Mycobacterial PknG-Mediated Host Immune Evasion.

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Pathogenic mycobacteria, such as Mycobacterium tuberculosis, modulate the host

immune system to evade clearance and promote long-term persistence, leading to

disease progression or latent infection. Understanding how these mycobacteria

evade elimination is key to uncovering the molecular mechanisms of infection.

Protein kinase G (PknG) in pathogenic mycobacteria plays a critical role in

avoiding macrophage clearance by inhibiting phagosome-lysosome fusion; however,

the exact mechanism is not completely understood. To investigate the role of

PknG during early events of macrophage infection, RAW 264.7 macrophages were

infected with Mycobacterium bovis BCG wild-type and PknG knockout mutant

strains. Phosphoproteomic analysis, including TiO2-based phosphopeptide

enrichment and LC-MS/MS, identified 3003 phosphosites across 1638 host proteins.

Differential expression analysis revealed 143 phosphosites significantly altered

between wild-type and mutant infections, with 95 exhibiting increased

phosphorylation in the presence of PknG. Additionally, 34 phosphosites were

exclusively phosphorylated in the presence of PknG. Functional analysis

demonstrated that PknG kinase activity reprograms normal macrophage function by

interfering with host cytoskeletal organization, phagosome maturation, and

programmed cell death, establishing a new role for PknG in directing the fate of

mycobacteria within macrophages. Differentially phosphorylated proteins in this

study serve as a foundation for further validation and the assignment of PknG

host substrate assignment.

DOI: 10.1021/acs.jproteome.5c00416

PMID: 41064949

**16. Open Forum Infect Dis. 2025 Oct 7;12(10):ofaf503. doi: 10.1093/ofid/ofaf503.**

**eCollection 2025 Oct.**

Intensified Treatment of Tuberculous Meningitis in Adults: A Systematic Review

and Meta-analysis.

Llamas-Lopez A(1), Seddon JA(2)(3), Chow FC(4), Upton CM(5), Jain SK(6),

Alffenaar JW(7)(8)(9), Grint DJ(1), Dooley K(10), Aarnoutse R(11), Cresswell

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**BACKGROUND:** Tuberculous meningitis (TBM) remains the deadliest form of

tuberculosis. Inadequate penetration of rifampicin and ethambutol into the brain

and cerebrospinal fluid (CSF) may contribute to mortality. Over the last decade,

research has focused on "intensified" treatment (higher-dose first-line drugs or

addition of second-line drugs with good CSF penetration). This systematic review

and meta-analysis evaluates the impact of intensified TBM treatment on

mortality, disability, and safety.

**METHODS:** A systematic literature search was conducted of clinical trials

examining intensified TBM treatments compared with a rifampicin-based

standard-of-care regimen in adults. Odds ratios (ORs) were calculated using a

random-effects model with mortality as the primary outcome, with OR <1

indicating lower mortality. Disability and safety were examined as secondary

outcomes. Subgroup analyses included (1) higher-dose rifampicin, (2) addition of

fluoroquinolones, and (3) addition of linezolid.

**RESULTS:** Ten trials meeting eligibility criteria, involving 1369 participants,

were included. Higher-dose rifampicin (n = 1050; OR, 0.86; 95% CI, 0.54-1.35; P

= .50), adjunctive fluoroquinolones (n = 1115; OR, 0.85; 95% CI, 0.56-1.27; P =

.42), and linezolid (n = 79; OR, 0.73; 95% CI, 0.22-2.43; P = .61) did not

significantly reduce TBM mortality. Due to heterogeneity in disability and

safety endpoints, secondary outcomes could not be meta-analyzed.

**CONCLUSIONS:** Current clinical trial evidence does not support the use of

intensified TBM treatment in adults. However, these analyses are limited by

diverse TBM case definitions, absence of MRC grading at enrollment, variable

rifampicin dosing, limited data on linezolid and higher-dose isoniazid, and

heterogeneous disability and safety outcomes. Use of uniform case definitions

and consistent endpoints is essential to standardize data.

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**17. Clin Case Rep. 2025 Oct 6;13(10):e71121. doi: 10.1002/ccr3.71121. eCollection**

**2025 Oct.**

Chronic Pulmonary Aspergillosis Secondary Infection: A Case Report of

Achromobacter spp. Lung Infection.

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Both pulmonary tuberculosis (PTB) and coronavirus disease-2019 (COVID-19) are

risk factors for chronic pulmonary aspergillosis (CPA) and other pulmonary

infectious diseases because of residual lung damage. We report a case of

Achromobacter spp. infection following CPA in an immunocompetent woman with a

history of PTB and COVID-19. A 63-year-old Cameroonian woman presented in

November 2021 with a history of cough with productive muco-purulent sputum,

asthenia, headaches, and chest pain for 8 weeks. There was no history of

hemoptysis or difficulty in breathing. She was treated for PTB in 2002 and

COVID-19 in 2020 and had no other underlying co-morbidities. Chest X-ray showed

bronchiectasis in the right lung and features of healed PTB. SARS-CoV-2 antigen,

antibody, and real-time polymerase chain reaction tests were negative.

Microscopy and GeneXpert MTB/RIF on the sputum sample were both negative. Sputum

samples grew Aspergillus flavus complex and Aspergillus niger complex, and serum

Aspergillus-specific IgG-IgM antibody was positive, suggestive of CPA. She

showed significant clinical improvement on itraconazole tablets 200 mg (every

12 h) after 4 months of therapy. She presented 1 month later with severe

symptomatic relapse and elevated white blood cells (27,000 cells/μL). Antibiotic

therapy with amoxicillin + clavulanic acid and subsequently with ceftriaxone was

unsuccessful. Chest CT scan showed a middle right mediastinal tissue mass with

crenulated edges. Bronchoalveolar lavage (BAL) and lung biopsy testing yielded a

negative result for PTB, invasive aspergillosis, and lung cancer. However, the

BAL sample grew Achromobacter spp. She was initiated on imipenem 1 g

(3 g/day × 10 days) with resolution of symptoms. This case suggests that because

of the high burden of TB and COVID-19 in Cameroon, pulmonary bacterial and

fungal superinfections are underreported. CPA is presently undiagnosed and

underreported in Cameroon. Further investigations should be performed in

patients not responding to usual antibiotics.

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**18. Clin Case Rep. 2025 Oct 6;13(10):e70949. doi: 10.1002/ccr3.70949. eCollection**

**2025 Oct.**

Navigating Diagnostic Dilemmas in Cardiology: A Rare Case Report of Tuberculosis

Presenting as a Cardiac Abscess.

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Cardiac tuberculosis (TB) is a rare but important extrapulmonary form of TB that

often presents diagnostic challenges due to nonspecific symptoms and its ability

to mimic other cardiac conditions. We report the case of a 45-year-old woman

with end-stage renal disease secondary to granulomatosis with polyangiitis (GPA)

who presented with fever and a seizure-like episode. Initial investigations

identified a cardiac mass located in the mitral-aortic intervalvular fibrosa and

a cavitary lung lesion. Although sputum PCR tests for Mycobacterium tuberculosis

were negative, histopathological examination and PCR analysis of the surgically

resected cardiac mass confirmed necrotizing granulomatous inflammation

consistent with TB. This case highlights the difficulty of diagnosing cardiac

TB, particularly in patients with overlapping conditions such as GPA, as the

similar granulomatous histopathology can complicate differentiation. The initial

false-negative PCR results further emphasize limitations in current diagnostic

tests, especially in immunocompromised hosts or atypical presentations. Given

the complex interplay between cardiac TB and GPA, a multidisciplinary approach

is essential for accurate diagnosis and management, with early recognition and

tissue sampling critical to improving patient outcomes.

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**19. Health Sci Rep. 2025 Oct 6;8(10):e71338. doi: 10.1002/hsr2.71338. eCollection**

**2025 Oct.**

Assessment of Knowledge, Attitude, and Practice Toward Tuberculosis: A

Cross-Sectional Study in Balkh, Afghanistan.

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

in Afghanistan, requiring enhanced community engagement for effective control.

This study assessed the knowledge, attitudes, and practices (KAP) related to TB

among outpatients in Balkh to inform targeted interventions.

**METHODS:** A convenience-based, face-to-face cross-sectional study was conducted

from June 2024 to April 2025 on 867 hospital outpatients in Balkh using a

structured questionnaire developed from peer-reviewed articles. A pilot study

with 30 participants showed Cronbach's α = 0.767. Descriptive statistics, χ 2

test, multivariable logistic regression analysis, and Spearman's correlation

were performed using SPSS v.27, with statistical significance set at p < 0.05.

**RESULTS:** Of the 867 participants, 63.7%, 52.7%, and 51.4% showed good knowledge,

attitude, and practice, respectively. Additionally, good TB-related knowledge

was significantly associated with being married (OR = 6.67), university

education (OR = 3.31), prior awareness of TB (OR = 2.29), history of TB

treatment (OR = 2.79), and TB vaccination (OR = 1.97) (all p < 0.05). Positive

attitudes were linked to being married, unskilled employment (OR = 1.83), higher

income (OR = 2.50), prior TB awareness (OR = 1.69), and having a window at home

(OR = 8.03). Better practice was associated with female gender (OR = 4.20),

higher income (OR = 2.02), TB awareness (OR = 1.48), and windowed housing

(OR = 6.48), though unvaccinated individuals showed slightly better practice

(OR = 1.44). Spearman's correlations showed significant positive associations

between KAP scores (all p < 0.001).

**CONCLUSION:** Significant gaps in TB KAP in Balkh reflect socioeconomic and

systemic barriers. Targeted education and community-based interventions are

essential for effective TB control.

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DOI: 10.1002/hsr2.71338

PMCID: PMC12500522

PMID: 41064196

**20. BMC Public Health. 2025 Oct 8;25(1):3382. doi: 10.1186/s12889-025-24709-6.**

Understanding the mechanisms of climate change impact on tuberculosis: a complex

systems approach.

Shadi Y(1), Morasae EK(2), Khazaei S(1)(3), Nasehi M(4)(5), Sharafi S(5),

Asakereh H(6), Tapak L(7), Kahramfar Z(8), Mohammadi Y(9)(10).

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**BACKGROUND:** Tuberculosis (TB) is a leading cause of disability and mortality in

many countries and is the leading cause of death from an infectious agent

worldwide. While TB is a curable and preventable disease, health systems'

ineffectiveness in case finding and appropriate treatment results in 10 million

new cases and 1.5 million deaths annually around the globe. Climate change is

expected to have a major impact on TB and other infectious diseases, although

the mechanisms for this are still poorly understood.

**METHODS:** We undertook a systematic review of Literature published up to

September 2024 about the effects of climate Change on TB incidence. The review

identified 35 papers that described possible mechanisms for the impact of

climate change on TB. We used a complex systems approach called causal loop

diagramming to integrate the identified mechanisms into a system map of climate

change effects on TB. A panel of experts on TB, epidemiology, and climate change

reviewed the map's structure and content.

**RESULTS:** The final map shows 6 reinforcing feedback loops and associated chains

of complex bio-socio-technical interrelations through which climate change can

affect TB risk. The loops included reciprocal relationships between

heatwave - energy use, indoors time - airborne disease risk, food

access - price, malnutrition - infectious disease, healthcare cost - detection

delay, and infectious contact - TB risk that translate to TB infection, directly

or indirectly, when activated.

**CONCLUSIONS:** The presented map illustrates and highlights the need for

coordinated, multisectoral and complex interventions across that

bio-socio-technical system to tackle the nexus of climate change and TB risk. In

this context, identifying key leverage points and implementing strategic actions

on these points are essential to effectively mitigate climate change-related

risks and their impact on TB transmission and incidence.

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PMCID: PMC12506164

PMID: 41062994 [Indexed for MEDLINE]

**21. BMC Infect Dis. 2025 Oct 8;25(1):1249. doi: 10.1186/s12879-025-11618-7.**

The treatment success rate and associated factors among pulmonary

bacteriologically confirmed and pulmonary clinically diagnosed drug susceptible

TB coinfected with HIV in Teso Sub-Region, North-Eastern Uganda 2020-2021. a

retrospective study.

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**BACKGROUND:** Tuberculosis (TB) remains a global public health burden, with

500,000 people dying of Tb in 2021. People living with HIV have an 18 times

higher risk of having TB, which is associated with poor treatment outcomes. This

study aimed to determine the treatment success rate and associated factors among

Pulmonary Clinically Diagnosed and Bacteriologically Confirmed TB individuals

coinfected with HIV in the Teso region, Northeastern Uganda.

**METHODS:** We conducted a retrospective study in Twenty-two (22) accredited

diagnostic and Tuberculosis Unit health facilities located in 11 districts of

the Teso region, Northeastern. Data was collected from the health facility's Tb

treatment register using a data abstraction tool in February 2024 for

individuals with drug-susceptible tuberculosis who started Tb treatment from

January 2020 to December 2021. Additional information relating to the patients

was collected from the Client Care Cards. The primary outcome was treatment

success (Yes and No). Continuous Data was summarized into mean and standard

deviation and categorical variables into proportions and frequencies. Binary

logistic regression analysis was conducted to determine factors associated with

TSR and reported as adjusted odds ratios (aOR). A p < 0.05 was considered

statistically significant.

**RESULTS:** A total of 801 individuals were included in the analysis, with a median

age of 42 years (interquartile range 33-52). Among these, 61.67% (n = 494) were

aged 15-49. The majority of individuals, 53.43% (n = 428), were males, with

67.92% (n = 544) having PBC. Among all participants, 40.5% (n = 325) had been on

treatment for more than 5 years. The Overall treatment success rate was 84.39%.

Factors that were associated with successful TSR were receiving services at a

specialized clinic (adjusted Odds Ratio (aOR) : 2.10, 95%CI; 1.03-4.23,

P = 0.041), having New TB (aOR: 3.30, 95%CI; 1.17-9.39, P = 0.025) and relapsed

TB (aOR: 9.71, 95%CI; 2.03-46.24, P = 0.004) and having viral load suppression

(aOR :2.85, 95%CI; 1.64-4.97, P = 0.001).

**CONCLUSION:** Receiving treatment in a specialized HIV clinic, having New and

relapsed TB, and having a suppressed viral load were associated with a

successful treatment rate. There is a need to scale up integrated TB/HIV

differentiated services, ensure Viral load suppression through adherence support

for the TB/HIV coinfected clients, and increase Tb awareness to achieve the end

TB Strategy by 2030.

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**22. BMC Infect Dis. 2025 Oct 8;25(1):1255. doi: 10.1186/s12879-025-11649-0.**

Factors associated with treatment outcomes (cured, completed, defaulted, and

death) among TB/HIV co-infected patients in East Coast Malaysia: A 5-year record

review (2016-2020).

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**BACKGROUND:** Tuberculosis (TB) and human immunodeficiency virus (HIV)

co-infection represent a significant public health challenge, especially in

regions with high prevalence. This study employs an epidemiological model to

examine the socio-demographic and clinical characteristics associated with

different TB treatment outcomes such as cured, completed, defaulted, and death

among TB/HIV co-infected patients on the East Coast of Malaysia over a five-year

period.

**METHODS:** This cross-sectional study utilised secondary data from the

e-Notifikasi for Tuberculosis Information System (TBIS) from January 2016 to

December 2020. The study was conducted at the State TB Organizer or TB/Leprosy

Unit, Jabatan Kesihatan Negeri (JKN) in Kelantan, Terengganu, and Pahang. Data

were analysed using multinomial logistic regression with IBM SPSS Statistics

version 25.0 and STATA 14. Ethical permission was obtained from the Medical

Research Ethics Committee (MREC) of the Ministry of Health (MOH).

**RESULTS:** There were 14,289 TB cases, with 1,292 (9.04%) being TB/HIV co-infected

patients. However, 69 TB/HIV cases were excluded due to transfer, change of

diagnosis, and still ongoing treatment. As a result, 1,223 TB/HIV co-infected

patients were assessed. The prevalence of cured was 33.5% (410), completed was

29.2% (357), defaulted was 6.4% (78), and died was 30.9% (378). There were no

failures identified. In multivariate analysis, it was found that duration of

treatment, diabetes mellitus, occupation, and Chest X-ray (CXR) status were

substantially linked with treatment completion. Age, duration of treatment,

residency, Directly Observed Treatment Short-course (DOTS) status, case

category, and CXR status significantly impacted treatment default. In contrast,

duration of treatment, diabetes mellitus, DOTS, occupation, and CXR had a

substantial effect on the death outcome.

**CONCLUSION:** Understanding the factors that influence TB treatment outcomes is

crucial for developing effective intervention strategies and enhancing patient

outcomes. The findings of this study provide a comprehensive understanding of

the relevant factors influencing treatment outcomes at all levels, which may aid

in the development of more effective treatment programs.

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**23. BMC Infect Dis. 2025 Oct 8;25(1):1250. doi: 10.1186/s12879-025-11669-w.**

Association of overweight with treatment outcomes in pulmonary tuberculosis.

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**BACKGROUND:** While overweight has been associated with a reduced risk of

developing tuberculosis and diabetes with an increased risk, it remains unclear

how these conditions influence anti-tuberculosis treatment outcomes. We aimed to

examine the association of overweight with anti-tuberculosis treatment outcomes,

and to evaluate whether this association differs by diabetes status, using two

Korean cohorts.

**METHODS:** Among patients with pulmonary tuberculosis enrolled in the multicenter

prospective cohort study of pulmonary tuberculosis (COSMOTB) and the Korea

Tuberculosis Cohort (KTBC) registry, we defined overweight as BMI ≥ 23 kg/m²

according to national criteria and compared it with normal/underweight

(BMI < 23 kg/m², per criteria). The primary and secondary outcomes were

unfavorable outcomes and mortality. Multivariable regression analysis was

conducted to evaluate the association of overweight with treatment outcomes,

adjusting for potential confounders. Subgroup analyses were performed to assess

the association in patients with and without diabetes.

**RESULTS:** In the COSMOTB dataset, the proportion of overweight individuals was

34.4%. Overweight was associated with a lower odds of unfavorable treatment

outcome (adjusted odds ratio [aOR], 0.61; 95% confidence interval [CI],

0.37-0.97) and all-cause mortality during treatment (aOR, 0.49; 95% CI,

0.24-0.93). In subgroup analyses, these associations were observed in patients

with diabetes but not in those without diabetes. In the KTBC database,

overweight was also associated with reduced odds of unfavorable outcome in

patients with diabetes.

**CONCLUSION:** In this observational study, overweight was associated with improved

treatment outcomes in pulmonary TB. This association was also significantly

observed in patients with diabetes; however, causality cannot be inferred.

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**24. Rev Argent Microbiol. 2025 Oct 7:S0325-7541(25)00094-X. doi:**

**10.1016/j.ram.2025.09.001. Online ahead of print.**

Tuberculosis after solid organ transplantation: Clinical experience in a

tertiary hospital from Argentina.

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Tuberculosis in solid organ transplant (SOT) recipients is a clinical challenge.

This opportunistic infection has atypical presentations and raises concerns due

to both the toxicity of antifimic drugs and their interaction with

immunosuppressive therapy that may result in graft loss or death. This

retrospective review of cases of active tuberculosis after SOT describes the

management of this infection in a hospital in Argentina. Between January 2006

and June 2022, 27 transplanted patients had positive cultures for the

Mycobacterium tuberculosis complex. Their median age was 56 years; 78% were

male. Ten (37%) patients had extra-pulmonary or disseminated tuberculosis.

Twenty-five (93%) patients required invasive procedures to reach a diagnosis. In

17 (63%) patients, the initial diagnosis was based on a positive Ziehl-Neelsen

smear. Twenty-four patients received a four-drug induction treatment without

rifampin. Clinical cure was 80% and crude mortality was 20%.

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**25. BMJ Glob Health. 2025 Oct 7;10(10):e019123. doi: 10.1136/bmjgh-2025-019123.**

Coordinated responses to maintain tuberculosis care amid climate emergencies:

challenges and perspectives based on the events of Brazil.

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The Unified Health System (Sistema Único de Saúde, SUS) is a cornerstone of

Brazil's public health, offering universal care and playing a critical role

during crises such as the COVID-19 pandemic and climate emergencies. Climate

change poses escalating threats to public health, intensifying vulnerabilities

and increasing the burden of diseases like tuberculosis. This study focuses on

the analysis of events resulting from heavy rains in the state of Rio Grande do

Sul, addressing the impacts of climate change, strategies for continued

tuberculosis control, logistical and operational challenges and prospects for

strengthening the SUS in times of climate crises. With Brazil's high

tuberculosis prevalence, climate events, such as the severe 2024 floods in Rio

Grande do Sul, disrupted healthcare infrastructure, delayed tuberculosis

diagnosis and treatment and worsened health inequities. The floods in Rio Grande

do Sul affected 96% of municipalities, displacing over 160 000 people and

damaging health centres. Efforts to maintain tuberculosis care included

deploying mobile units, relocating diagnostic equipment and implementing

extended medication dispensing. The SUS demonstrated resilience, but gaps in

real-time case monitoring and health infrastructure persist. Addressing these

gaps is critical, especially as climate change exacerbates social

vulnerabilities. The need for an effective tuberculosis vaccine has become

urgent in mitigating climate-related health crises. Additionally, adopting the

one health approach, improving cross-sector collaboration, investing in digital

health technologies and empowering communities are essential for building a

resilient health system. Integrated policies addressing climate change impacts

can safeguard public health and equity in Brazil.

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**26. PLOS Glob Public Health. 2025 Oct 8;5(10):e0005269. doi:**

**10.1371/journal.pgph.0005269. eCollection 2025.**

Children, caregivers and health workers' perceptions and experiences of the

XTEMP-R tool to improve tuberculosis treatment.

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Treating drug-resistant tuberculosis (DR-TB) in children remains a significant

challenge for patients, caregivers, and health systems, despite advances in

child-friendly drug formulations. While new formulations offer benefits, their

widespread availability is limited, and many exhibit poor palatability. A key

strategy to improve administration and mask the taste of paediatric TB

medications involves creating extemporaneous suspensions. However, this often

requires pharmaceutical services not readily available in high-burden settings.

To address this, the Global Alliance for TB Drug Development (TB Alliance)

developed XTEMP-R, an inexpensive prototype tool designed to facilitate

home-based preparation of liquid TB medication suspensions. This study explored

the experiences and perceptions of children, their caregivers, and health

workers regarding the XTEMP-R tool for preparing extemporaneous DR-TB treatment

suspensions. We collected qualitative data from two sites in South Africa. The

first component involved interviews with 17 caregivers and 12 health workers,

followed by focus group discussions, with participants directly interacting with

the XTEMP-R tool. The second component comprised 31 interviews with 11

caregivers of 13 children who used the XTEMP-R tool for home administration.

Case descriptions were iteratively refined and analyzed using deductive thematic

analysis. Findings indicate that children, caregivers, and health workers found

the XTEMP-R tool easy to use, clean, and store, appreciating its appealing color

and durability. Home users reported that the tool simplified treatment

preparation and administration, reducing time and relational burdens associated

with DR-TB treatment. While XTEMP-R effectively addressed usability challenges

related to drug preparation, fundamental obstacles concerning medication

palatability, nausea, and side effects remain significant barriers. Importantly,

the tool appeared to foster increased treatment responsibility among some

children, suggesting a potential pathway to improve therapeutic engagement and

agency. This research underscores the XTEMP-R tool's potential to ease

paediatric DR-TB treatment and highlights crucial areas for design refinement,

ultimately aiming to enhance adherence and overall outcomes.

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**27. J Infect Dis. 2025 Oct 8:jiaf481. doi: 10.1093/infdis/jiaf481. Online ahead of print.**

Tuberculosis Disease Prevalence Among People Who Smoke Illicit Drugs: A

Respondent- Driven Sampling Study in the Western Cape, South Africa.

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**BACKGROUND:** Tuberculosis (TB) transmission is heterogenous, yet high-risk

populations remain poorly defined. We aimed to assess whether people who smoke

drugs (PWSD) have elevated TB disease rates in a high-burden setting.

**METHODS:** We recruited PWSD from a rural community in the Western Cape, South

Africa, using respondent-driven sampling (RDS). Participants were ≥15 years old,

tested positive for methamphetamine and/or methaqualone, and completed TB and

HIV testing and biobehavioral surveys. We defined TB disease as culturable TB,

Xpert MTB/RIF Ultra (Ultra) MTB detected with no history of TB, Ultra traceamong

persons with HIV (PWH) >2 years from any prior diagnosis, or currently on TB

treatment. We summarized population-level characteristics and estimated TB

prevalence using the RDS-II estimator. We identified characteristics associated

with TB using logistic regression.

**RESULTS:** Between April 2021 and October 2023, we enrolled 750 PWSD. Overall,

71.5% (95% CI, 66.1%-76.8%) were male and the mean age was 34 years (95% CI,

33%-36%); 17.5% (95% CI, 13.0%-22.0%) were PWH, of whom 31.6% were newly

diagnosed. RDS-adjusted TB prevalence was 10.4% (95% CI, 6.5%-14.3%). TB

prevalence among PWSD without HIV was 8.1% (95% CI, 4.4%-11.9%), compared to

20.9% (95% CI, 8.4%-33.4%) with HIV. PWH had 3.3-fold greater adjusted odds of

having TB disease (95% CI, 1.9%-5.8%).

**CONCLUSIONS:** PWSD identified through RDS had substantially elevated TB and HIV

rates, with 20% of PWSD with HIV having TB. We successfully engaged PWSD in TB

screening using peer recruitment. These findings highlight opportunities for

community transmission identification and interventions.

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**28. Indian J Public Health. 2025 Oct 8. doi: 10.4103/ijph.ijph\_115\_24. Online ahead of print.**

Prevalence of Latent Tuberculosis Infection among Spouses and First-Degree

Relatives of Pulmonary Tuberculosis Cases in South India.

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**BACKGROUND:** A study was conducted to examine variations in latent tuberculosis

infection (LTBI) risk factors among household contacts (HHCs) of tuberculosis

(TB) patients.

**OBJECTIVES:** The objective of this study was to assess LTBI prevalence among

first-degree relatives (FDRs) and spouses of TB patients and identify associated

risk factors.

**METHODS:** A cohort study at JIPMER under Regional Prospective Observational

Research for TB India included HHCs of newly diagnosed pulmonary TB patients.

Prevalence ratios with 95% confidence intervals (CIs) were calculated using

generalized linear modeling.

**RESULTS:** Among 1318 HHCs of 548 TB patients, the mean ages were 45.2 (13.7) and

29.5 (16.1) years, respectively. LTBI prevalence was 58.1%, with 0.5%

progressing to active TB. Spouses had a higher LTBI prevalence (64.2%) than FDR

(55.8%), with a significantly elevated risk (PRR: 1.42, 95% CI: 1.11-1.83).

Older age (40-59 and ≥60 years), bed-sharing, female gender, prolonged exposure,

undernutrition, overweight/obesity, and alcohol use were linked to higher LTBI

prevalence. Female spouses spent more time caring for index cases than male

spouses.

**CONCLUSION:** Spouses had a higher LTBI prevalence than FDR. Screening programs

should prioritize female spouses, undernourished individuals, overweight/obese

individuals, and alcohol users to reduce TB transmission.

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**29. Am J Trop Med Hyg. 2025 Oct 7:tpmd250316. doi: 10.4269/ajtmh.25-0316. Online**

**ahead of print.**

Exploring γδ T-Cell Responses in Malaria and Tuberculosis: Implications for

Immunity, Coinfection, and Disease Management.

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This systematic review examines the multifaceted roles of γδ T cells in malaria

and tuberculosis (TB) with an emphasis on subset-specific dynamics and

functional plasticity. In malaria, γδ T cells, particularly Vγ9Vδ2+ cells, are rapidly activated upon infection with Plasmodium falciparum, exerting

antiparasitic effects through the production of proinflammatory cytokines,

cytotoxicity, and immune modulation. However, chronic or repeated exposure to

malaria leads to the functional exhaustion of Vδ2+ cells, which is characterized

by reduced cytokine responsiveness and a shift toward regulatory phenotypes. In

TB, γδ T cells contribute to pathogen containment through the secretion of

interferon-γ and interleukin-17, the activation of macrophages, and the

formation of granulomas. Yet, active TB is often associated with reduced

peripheral γδ T-cell frequencies, possibly because of tissue migration or

exhaustion. Emerging evidence also highlights distinct roles for CD8+ γδ T cells

and Vδ1+ subsets in latent infection and local tissue immunity. Understanding

the pathogen-specific and context-dependent functions of γδ T-cell subsets is

critical for informing the development of targeted immunotherapies and vaccine

strategies against malaria and TB.

DOI: 10.4269/ajtmh.25-0316

PMID: 41056925

**30. AIDS. 2025 Oct 7. doi: 10.1097/QAD.0000000000004364. Online ahead of print.**

Implementation of tuberculosis services for children living with HIV in

PEPFAR-supported programs in 16 high TB/HIV-burden countries in sub-Saharan

Africa, 2019-2022.

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Motebang M(3), Maphosa T(4), Mutisya I(5), Nyabiage L(5), Teferi W(6), Feleke

B(6), Nwagagbo F(7), Vilakazi-Nhlapo K(8), Shah N(9), Wolf HT(10), Pierre P(10),

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**INTRODUCTION:** We assessed implementation of TB services among children living

with HIV (CLHIV) (<15 years) in 16 African countries supported by U.S.

President's Emergency Plan for AIDS Relief (PEPFAR) between October

2018-September 2022 (fiscal year (FY) 2019-FY2022).

**METHODS:** We reviewed PEPFAR TB indicators describing symptom screening,

treatment initiation, and TB preventive treatment (TPT) initiation and

completion among CLHIV. We describe performance of these measures at semi-annual

time points from FY2019 to FY2022 with stratification by age, sex, geographic

region, and antiretroviral therapy (ART) status for FY2022.

**RESULTS:** During FY2019-2022, the proportion of CLHIV with a positive TB symptom

screen was low, ranging from 2.5%-4.1%, while TB treatment initiation among

those who screened positive fluctuated from 19%-43%. Similarly, TPT initiation

among CLHIV newly initiating ART fluctuated during this time, ranging from

13%-37%, while TPT completion rose from 55%-85%. In 2022, 80% of CLHIV were

screened for TB and 3.6% had a positive symptom screen. Among those, 15% of

CLHIV already on ART and 40% of CLHIV newly initiating ART were started on TB

treatment. In 2022, among CLHIV newly initiating ART, 37% started TPT within six

months and 84% completed the full course of TPT.

**CONCLUSIONS:** TB screening and screening positivity were suboptimal. CLHIV

starting TB treatment following positive symptom screen was higher than

expected, especially among those newly initiating ART. Most CLHIV didn't start

TPT within six months of ART initiation. These findings that programs are

missing opportunities to diagnose and prevent TB in CLHIV.

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**31. J Med Chem. 2025 Oct 7. doi: 10.1021/acs.jmedchem.5c01100. Online ahead of**

**print.**

Scaffold Hopping in Tuberculosis Drug Discovery: Principles, Applications, and

Case Studies.

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Tuberculosis (TB) imposes a major global health challenge, aggravated by the

emergence of drug-resistant Mycobacterium tuberculosis (Mtb) strains. Scaffold

hopping, a medicinal chemistry approach that modifies the molecular backbone of

known bioactive compounds, has emerged as a promising tool in the development of

novel drugs, including TB therapeutics. This perspective provides an insight

into the application of scaffold hopping across varying degrees of structural

modifications, highlighting successful case studies targeting key Mtb pathways,

including energy metabolism, cell wall synthesis, proteasome function, and

respiratory processes. Beyond traditional and in silico methods, scaffold

hopping has spurred the discovery of compounds with improved pharmacological

profiles, such as improved pharmacokinetics, enhanced efficacy, reduced

toxicity, and resistance circumvention. The findings support scaffold hopping's

potential to address the limitations of current anti-TB drugs as a versatile and

innovative approach to accelerate TB drug discovery.

DOI: 10.1021/acs.jmedchem.5c01100

PMID: 41055946

**32. J Infect Dis. 2025 Oct 7:jiaf499. doi: 10.1093/infdis/jiaf499. Online ahead of print.**

Increased plasmacytoid dendritic cells and inflammation persist in people with

HIV years after tuberculosis.

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USA.

**BACKGROUND:** People living with HIV who have history of cured TB have worse

outcomes, including increased all-cause mortality and risk for recurrent TB. We

hypothesized that persistent and global immune deficits could contribute to

these outcomes in people with history of TB.

**METHODS:** We completed FLEX Cellular Indexing of Transcriptomes and Epitopes by

Sequencing of PBMC of people living with HIV with (n=6) or without (n=3) TB

history at GHESKIO Centers in Haiti. We subtyped dendritic cells using flow

cytometry and quantitated cytokines on an expanded cohort (n=29) to confirm

FLEX-CITE-Seq findings.

**RESULTS:** Cell types with statistically significantly differential levels of

expression for more than 40 genes all had over-representation of a TNF-mediated

pathway. In an expanded cohort of 29 people with HIV, we found a larger

percentage of plasmacytoid dendritic cells by flow cytometry and increased

plasma IL-6, IL-12p70, IL-15, IL-2, IFN-alpha, and TNF in the TB history group

(n=18) compared to people with no history of TB (n=11).

**DISCUSSION:** A proinflammatory milieu and immune cell gene expression changes

mediated by TNF persist in people living with HIV even years after TB cure. If

the differences are pre-existing risk factors or establish during the natural

history of HIV and TB infections is still to be determined.

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Infectious Diseases Society of America.

DOI: 10.1093/infdis/jiaf499

PMID: 41055360

**33. ACS Infect Dis. 2025 Oct 7. doi: 10.1021/acsinfecdis.5c00419. Online ahead of print.**

Targeting Mycolic Acid Biosynthesis with Cyclic Sulfamates: A New Strategy

against Mycobacterium tuberculosis.

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Tuberculosis (TB), caused by Mycobacterium tuberculosis (Mtb), is the deadliest

infectious disease globally. Current TB regimens involving multidrug cocktails

for ≥4 months with significant side effects leave much to be desired, with the

first- and second-line drugs inhibiting only a limited number of bacterial

targets. Thus, potent antimycobacterial agents with novel targets and mechanisms

of action are urgently needed to overcome these limitations and the emergence of

multidrug-resistant strains. To address this need, we tested a panel of cyclic

sulfamate (CS) compounds and identified novel chemotypes that exhibit potent and

highly selective activity against Mtb. Most importantly, multiple lines of

evidence that include whole genome sequencing of spontaneous resistant mutants,

cell-wall damage reporter assays, modeling of drug-target interactions, and cell

wall lipid profiling support the hypothesis that these compounds kill Mtb by

inhibiting KasA. KasA encodes a β-ketoacyl synthase, whose role in elongation of

acyl-AcpM chains is required for the biosynthesis of mycolic acids. Despite

being well validated as an essential enzyme, KasA is still an underexploited

drug target in Mtb. In our work, the unchanged susceptibility of CS-resistant

mutants to front-line TB drugs provides further evidence that the CS series of

compounds acts via a novel mechanism of action. The knowledge gained in this

study about structure-activity relationships will guide future medicinal

chemistry optimization of the CS scaffold and evaluation of the in vivo efficacy

of this chemical series. If successful, this novel chemotype may serve as the

starting point for the development of alternative treatment options for TB.

DOI: 10.1021/acsinfecdis.5c00419

PMID: 41055087

**34. J Clin Lab Anal. 2025 Oct 7:e70113. doi: 10.1002/jcla.70113. Online ahead of**

**print.**

Advances in Isothermal Amplification for the Diagnosis of Tuberculosis.

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**BACKGROUND:** Detecting tuberculosis (TB) remains challenging in low-resource

settings due to limited access to advanced diagnostic tools. The emergence of

isothermal amplification techniques, such as loop-mediated isothermal

amplification (LAMP), presents a promising solution for TB detection. Several

isothermal amplification techniques, e.g., strand displacement amplification

(SDA), helicase-dependent amplification (HDA), recombinase polymerase

amplification (RPA), and rolling cycle amplification (RCA), have been attracting

attention for development as point-of-care testing (POCT) in many diagnostic

fields. The present review summarizes the most common isothermal amplification

techniques for the detection of TB.

**METHODS:** To collect the necessary information, we searched PubMed and Scopus for

scientific evidence published from 2000 to September 2024, using the keywords

loop-mediated isothermal amplification tuberculosis, strand displacement

amplification tuberculosis, helicase-dependent amplification tuberculosis,

recombinase polymerase amplification tuberculosis, rolling circle amplification

tuberculosis, polymerase spiral reaction tuberculosis, cross-priming

amplification tuberculosis, and multiple cross displacement amplification

tuberculosis.

**RESULTS:** The methodologies of the most usual isothermal amplification techniques

are addressed, as well as the advantages and limitations of the technique,

highlighting applications in TB diagnosis. Exploring these advances addresses

the principles of innovation in isothermal amplification, including their

performance and applicability across diverse sample types. Some techniques have

already been launched into routine TB diagnosis, while other promising tests are

still being researched or evaluated. These techniques are easy to perform and

provide results rapidly, enabling prompt treatment within a few hours.

Isothermal amplification techniques may be one of the key molecular tools to

fight TB in pursuit of the goals of the End TB strategy.

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PMID: 41054873

**35. Medicine (Baltimore). 2025 Oct 3;104(40):e44861. doi:**

**10.1097/MD.0000000000044861.**

The role of systemic inflammatory markers in differentiating tuberculosis from

nontuberculous mycobacterial colonization and infection: A retrospective

observational study.

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Culture confirmation for tuberculosis (TB) and nontuberculous mycobacteria (NTM)

is time-consuming, potentially delaying diagnosis and treatment. Identifying

systemic inflammatory markers from routine blood tests may provide supportive

information for differentiating TB from NTM infection or colonization. This

study evaluates the diagnostic value of systemic inflammatory indices in

distinguishing TB from NTM infection and colonization. This retrospective study

included 480 patients diagnosed between January 2018 and December 2023. TB and

NTM diagnoses were confirmed according to microbiological and clinical criteria.

Hematological parameters, including neutrophil-to-lymphocyte ratio,

platelet-to-lymphocyte ratio, lymphocyte-to-monocyte ratio,

lymphocyte-to-C-reactive protein ratio, systemic immune-inflammation index

(SII), and systemic inflammation response index (SIRI), were analyzed. Receiver

operating characteristic analysis was performed for parameters showing

statistical significance in differentiating TB from NTM colonization. Among the

inflammatory markers assessed, lymphocyte count and mean platelet volume were

significantly higher in TB compared with NTM colonization, while SII and SIRI

indices were significantly lower. Receiver operating characteristic analysis

identified optimal cutoff values for lymphocyte count (1.895; sensitivity 57.7%,

specificity 71.8%) and SII (2.345; sensitivity 73.1%, specificity 69.4%). The

95% confidence intervals for the area under the curve values are presented in

table and figures. Lymphocyte count, mean platelet volume, SII, and SIRI show

potential as supportive diagnostic markers for differentiating TB from NTM

colonization. These indices may aid clinical decision-making while awaiting

culture results; however, further studies with larger sample sizes and

prospective validation are warranted.

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**36. Sci Rep. 2025 Oct 6;15(1):34698. doi: 10.1038/s41598-025-16350-5.**

The impact of interferon-γ pathway on trained immunity induction by vaccination

with Bacille Calmette-Guérin.

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Bacillus Calmette-Guérin (BCG) has multiple heterologous off-target effects

which extend beyond tuberculosis (TB) prophylaxis, which include protection

against other non-tuberculous infections, autoimmune diseases, and tumor

development. These heterologous effects are at least partially mediated by

induction of trained immunity. In this study, we aimed to investigate the impact

of IFNγ production capacity on induction of trained immunity in human volunteers

vaccinated with BCG. We evaluated inflammation and immune activation-specific

cytokine responses (IFNγ, TNF, IL-1, and IL-6) in PBMCs isolated from 323

healthy volunteers vaccinated with BCG and stimulated with either Mycobacterium

tuberculosis or Staphylococcus aureus. We further assessed the impact of genetic

variants in genes crucial for the biological activity of IFNγ pathway on trained

immunity using single nucleotide polymorphism (SNP) genotyping. We found a

significant correlation between baseline IFNγ production capacity and induction

of trained immunity, as assessed by the fold-change increase in IL-6 production

at both day 14 and day 90 post-vaccination compared to production before

vaccination. A similar correlation was found between basal IFNγ production and

increased IL-1β production at day 14 after BCG. This suggests that individuals

with higher IFNγ production capacity exhibit stronger trained immunity responses

post-BCG vaccination. This hypothesis is supported by the finding that SNPs in

genes involved in the IFNγ biological pathway significantly influence trained

immunity responses in humans. IFNγ production capacity and genetic variations in

the IFNγ pathway genes impact the magnitude of trained immunity response,

providing insights into the regulation of innate memory responses.

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DOI: 10.1038/s41598-025-16350-5

PMCID: PMC12501311

PMID: 41053310 [Indexed for MEDLINE]

**37. Nat Commun. 2025 Oct 6;16(1):8875. doi: 10.1038/s41467-025-63930-0.**

Mycobacterium tuberculosis-specific T cells restrain anti-cancer drug-induced

neutrophilic lung inflammation in tuberculosis.

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Cancers are a risk factor for active tuberculosis (TB), and anti-cancer drugs

can independently cause TB progression. To understand the underlying mechanisms,

mice infected with Mycobacterium tuberculosis (Mtb) were treated with

gemcitabine (Gem), cisplatin, or paclitaxel. These treatments delay Mtb-specific

T cell responses, increase bacterial loads, and cause hyperinflammation with

permissive neutrophils in the lungs. However, depleting Mtb-permissive

neutrophils reduce bacterial levels and G-CSF production, thereby attenuating

lung immunopathology. Additionally, Mtb-specific T cell responses generated by

BCG vaccination inhibit bacterial growth and neutrophil infiltration even after

Gem treatment. Gem induces granulocyte-biased generation in the bone marrow via

G-CSF signaling, which led to lung neutrophil inflammation. However,

pre-existing Mtb-specific T cell responses from BCG vaccination normalizes

granulopoiesis by restricting G-CSF production. These findings show the

mechanism of anti-cancer drug-induced neutrophilic lung inflammation in TB and

highlight the role of Mtb-specific T cell responses in maintaining balanced

hematopoiesis against Gem-induced TB immunopathogenesis.

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DOI: 10.1038/s41467-025-63930-0

PMCID: PMC12501240

PMID: 41053048 [Indexed for MEDLINE]

**38. PLoS Pathog. 2025 Oct 6;21(10):e1013563. doi: 10.1371/journal.ppat.1013563.**

**eCollection 2025 Oct.**

Dysplastic lung repair fosters a tuberculosis-promoting microenvironment through

maladaptive macrophage polarization.

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Pulmonary TB that develops in immunocompetent adult humans is responsible for

approximately 85% of the disease burden and is central for Mtb transmission.

Most humans contain Mtb infection within primary granulomatous lesions, but in

certain immunocompetent humans, containment fails, leading to hematogenous

spread and active pulmonary disease with the formation of cavities that enable

Mtb transmission via aerosols. To reveal lung-specific microenvironments

conducive for Mtb survival and replication despite systemic immunity, we use

fluorescence multiplex immunohistochemistry and spatial transcriptomic analyses

of heterogenous TB lesions that uniquely form in the lungs of immunocompetent

but TB-susceptible B6.Sst1S mice after hematogenous spread from the primary

lesion. Initially, these secondary lung lesions manifested local adoptive

immunity featuring tertiary lymphoid follicles similar to resistant B6 mice and

contained primarily non- replicating bacilli. Following these early events,

however, the B6.Sst1S mice uniquely demonstrate expansion of myeloid cell

populations with the appearance of alternatively activated macrophages,

dissolution of lymphoid follicles, and the accumulation of de- differentiated

lung epithelial cells. These processes led to bronchogenic expansion, broncho-

occlusion, and necrosuppurative pneumonia closely resembling advanced pulmonary

tuberculosis in humans. To determine whether lung parenchymal cells or lung

oxygenation were necessary for the pulmonary TB progression, we implanted lung

and spleen fragments subcutaneously prior to the infection. The lung implants

uniquely displayed the formation of the characteristic organized granulomas with

necrosis and Mtb replication that paralleled TB progression in native lungs,

demonstrating that the cellular composition of inflamed lung tissue, not

oxygenation, is a critical determinant of pulmonary TB progression. Our data

demonstrate that deleterious bi-directional interactions of aberrantly activated

macrophages with the inflammation-injured lung resident cells determine lung

vulnerability to virulent Mtb in immunocompetent hosts. Because these mechanisms

enable Mtb transmission among humans via aerosols, they are likely evolutionary

conserved and, therefore, represent appealing targets for host-directed TB

therapies.

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original author and source are credited.

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PMCID: PMC12510645

PMID: 41052208 [Indexed for MEDLINE]

**39. Postgrad Med. 2025 Oct 9:1-10. doi: 10.1080/00325481.2025.2571932. Online ahead of print.**

Evaluation of a new mobile application developed for tuberculosis patients: a

prospective observational study from Turkey.

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**OBJECTIVE:** A new mobile application for video directly observed treatment (vDOT)

was developed and implemented for tuberculosis (TB) patients in Turkey in 2023.

This study evaluated its features and analyzed one-year user data.

**METHODS:** A prospective observational study was conducted between 1 February

2023, and 31 January 2024, with 115 voluntary TB patients who met the inclusion

criteria. Additionally, a satisfaction/adherence questionnaire prepared by the

researchers was administered via telephone to 95 individuals who voluntarily

used vDOT through the mobile application.

**FINDINGS:** During the study period, a total of 12,839 videos were approved, with

an average of 111.6 videos uploaded per patient. The average duration of vDOT

use was 15.7 weeks. The median number of vDOT use days was 23.0, and in the last

six months of the study, the number of vDOT use days was equal to or above the

median. According to the satisfaction/adherence questionnaire, 72.6% of patients

perceived the mobile application to be easy to use, and 94.7% stated that vDOT

protected their privacy better than face-to-face monitoring. Patients with

higher education levels, those living in city centers, and those owning a

personal smartphone were significantly more likely to find the mobile

application easy to use (p < 0.05).

**CONCLUSION:** This study revealed high usage rates for the mobile application,

which was developed for vDOT and implemented as a telemedicine solution for the

first time in Turkey. Additionally, the results on ease of use and

satisfaction/adherence suggest that the mobile application can be used

positively by the majority of patients.

DOI: 10.1080/00325481.2025.2571932

PMID: 41051033

**40. BMJ Open. 2025 Oct 5;15(10):e100882. doi: 10.1136/bmjopen-2025-100882.**

Barriers to treatment adherence among patients with tuberculosis: a qualitative

study of Pakistani nationals and Afghan refugees.

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Rasool S(2), Butt M(4), Naeem F(5), Khan MF(2), Sheikh S(6), Kibria Z(2),

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**OBJECTIVES:** Non-adherence to tuberculosis (TB) treatment remains a major

challenge in high-burden regions. However, few studies have qualitatively

examined the sociocultural and emotional barriers to adherence, particularly

among Afghan refugees in Pakistan. This study explores the patient-related,

sociocultural and treatment-related barriers to treatment adherence among

patients with TB of Pakistani and Afghan origin living in Pakistan.

**DESIGN:** We conducted an exploratory qualitative study consisting of

semistructured focus group discussions (FGDs) and in-depth interviews (IDIs)

with purposively selected multisectoral stakeholders. The data were analysed

thematically using a combination of inductive and deductive approaches.

**SETTINGS:** We employed a qualitative study design in the TB DOTS (Directly

Observed Treatment Short course) centres in the Haripur and Peshawar districts

of Khyber Pakhtunkhwa province, Pakistan.

**PARTICIPANTS:** We conducted IDIs (n=29) and FGDs (n=11) with three categories of

participants: TB healthcare providers, patients with TB and their carers.

**RESULTS:** We identified several contributors to lower treatment adherence. These

included patient-related barriers (eg, lack of awareness about TB and its

treatment), sociocultural barriers (eg, stigma, refugee status of Afghan

patients, gender roles and reliance on traditional and spiritual healing) and

treatment-related barriers (eg, demanding treatment regimen and TB-induced

depression).

**CONCLUSION:** Several personal, sociocultural and treatment-related barriers

contribute to lower treatment adherence in patients with TB. A significant

contributing factor to treatment non-adherence in patients is the high

prevalence of anxiety and depression related to TB and its treatment, for which

there is no treatment or counselling available at the DOTS level in Pakistan,

warranting the need for mental health interventions that could improve adherence

and treatment outcomes for both TB and depression.

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**41. Int J Infect Dis. 2025 Oct 3:108099. doi: 10.1016/j.ijid.2025.108099. Online**

**ahead of print.**

Epidemiology, Outcomes, and Factors Associated with Mortality in Pediatric

Tuberculosis in Thailand: A National Health Security Office Data Analysis From

2015-2023.

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**BACKGROUND AND OBJECTIVES:** Pediatric tuberculosis (TB) remains a major

public-health concern in low- and middle-income settings. This study described

national epidemiology, trends, and factors associated with in-hospital mortality

among children and adolescents with TB in Thailand.

**METHODS:** A nationwide retrospective cohort was built from the National Health

Security Office database for admissions under the Universal Coverage Scheme

(2015-2023). Children aged 1 month to 18 years with TB (ICD-10-TM A15-A19) were

included. Annual prevalence was calculated per 100,000 NHSO-covered population.

Multivariable logistic regression identified factors associated with death.

**RESULTS:** Among 14,080 admissions, national prevalence declined from 13.5 to 10.8

per 100,000 population, and in-hospital mortality fell from 3.5% (2015) to 2.9%

(2023). Older adolescents (15-18 years) had the greatest admission burden and

higher odds of death than children <5 years (AOR 1.86; 95% CI 1.31-2.65).

Relative to the capital, Bangkok, admissions in non-capital regions-particularly

the Central region-had higher mortality (AOR 2.13; 95% CI 1.43-3.18; p<0.001).

Independent associations with death included HIV co-infection (AOR 3.79; 95% CI

2.93-4.90; p<0.001), congenital heart disease (AOR 3.50; 95% CI 1.45-8.45;

p=0.005), malnutrition (AOR 2.06; 95% CI 1.32-3.23; p=0.001), and TB of the

nervous system (AOR 2.12; 95% CI 1.47-3.05; p<0.001). Organ dysfunction showed

the strongest associations: septic shock (AOR 25.87; 95% CI 18.24-36.71), acute

liver failure (AOR 46.74; 95% CI 17.99-121.38), and encephalopathy (AOR 17.43;

95% CI 7.84-38.74) (all p<0.001).

**CONCLUSION:** National prevalence and in-hospital mortality declined modestly, yet

deaths clustered in adolescents and in children with comorbidities,

central-nervous-system disease, and acute organ failure. Active case-finding and

targeted clinical pathways for these vulnerable groups are needed to further

reduce mortality.

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PMID: 41046928

**42. Prostate. 2025 Oct 5. doi: 10.1002/pros.70072. Online ahead of print.**

Mycobacterium Tuberculosis: The Hidden Bacteria in Chronic Prostatitis.

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DOI: 10.1002/pros.70072

PMID: 41046455

**43. Chronic Obstr Pulm Dis. 2025 Oct 3. doi: 10.15326/jcopdf.2025.0622. Online ahead of print.**

Sex-Associated Radiographic and Clinical Differences in Nontuberculous

Mycobacteria Pulmonary Disease.

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The incidence of infections caused by nontuberculous mycobacteria (NTM) are

steadily increasing worldwide and the most common site of infection is the lung.

Clinical characteristics of individuals with NTM pulmonary disease (NTM-PD)

demonstrate pronounced geographical heterogeneity. In the United States, NTM-PD

has an affinity for post-menopausal Caucasian females, many of whom are

never-smokers, whereas in Asia NTM-PD is more common in males with

post-tuberculosis lung disease. While these geographical differences are known

on the global scale, it remains unclear whether radiographic sex-associated

differences in NTM-PD are present within the US cohort. In this single center

cross-sectional retrospective study of our patient registry, we sought to assess

this knowledge gap by comparing radiographic and clinical features of

individuals with NTM-PD by sex. We observed a significant preponderance of

cavitary disease in men, while women commonly presented with bilateral apical

fibrosis, increased nodules and tree-in-bud patterns in the lower lobes, and an

increased risk of refractory disease and concomitant co-infection. Results from

this study demonstrate several sex-associated differences in the radiographic

phenotype of NTM-PD, and may be the result of differences in pre-existing risk

factors that contribute to the development of NTM-PD. Future studies will be

required to better assess the broad applicability of these findings to centers

from other geographic regions where the underlying etiology of disease may vary.

JCOPDF © 2025.

DOI: 10.15326/jcopdf.2025.0622

PMID: 41046132

**44. Vaccine. 2025 Oct 3;65:127828. doi: 10.1016/j.vaccine.2025.127828. Online ahead of print.**

Safety of intradermal Danish- vs. transcutaneous Tokyo-strain BCG vaccination in

Korean children: A nationwide cohort study.

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**BACKGROUND:** Whether differences in BCG strain and administration (intradermal

Danish-1331 vs transcutaneous Tokyo-172) translate into meaningful variation in

safety remains uncertain. South Korea's dual BCG policy enables a head-to-head

comparison.

**METHODS:** We conducted a nationwide retrospective cohort of all children born

2014-2018 who received BCG in infancy (N = 1,217,695; Danish/intradermal

n = 457,063; Tokyo/transcutaneous n = 760,632). National immunization,

tuberculosis surveillance, claims registries were deterministically linked.

Children were followed from vaccination until outcome or 31 December 2023.

Incidence rates (IRs) were calculated, and Cox models adjusted for birth year,

sex, socio-economic status, and region estimated adjusted hazard ratios (aHRs).

**RESULTS:** The study cohort comprised 1,217,690 infants born between 2014 and 2018

who received BCG vaccination in infancy. Of these, 457,063 (37.5 %) received

intradermal BCG (Danish 1331 strain) and 760,632 (62.5 %) received

transcutaneous BCG (Tokyo 172 strain). Lymphadenitis occurred more often after

intradermal BCG (42,385/457,063; 9.27 %) than after transcutaneous BCG

(67,466/760,632; 8.87 %) (p < 0.001), with an adjusted hazard ratio of 1.00

(95 % CI, 0.99-1.02). Osteitis was rare in both groups (142 vs. 209 cases;

∼0.03 % each; aHR = 1.01; 95 % CI, 0.80-1.26).

**CONCLUSIONS:** In this large real-world cohort, intradermal BCG (Danish-1331) and

transcutaneous BCG (Tokyo-172) provided equivalent protection against pediatric

tuberculosis. Intradermal vaccination was associated with only a very small

increase in lymphadenitis, while serious adverse events were uncommon with both

methods. These findings support programmatic flexibility in BCG vaccination

policy: both methods are safe and effective, so selection can be guided by

vaccine supply, delivery logistics, and local preferences rather than expected

differences in outcomes.

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PMID: 41045632

**45. Infection. 2025 Oct 4. doi: 10.1007/s15010-025-02655-0. Online ahead of print.**

Tuberculosis outbreak in a German daycare center.

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**PURPOSE:** Young children who are exposed to people with infectious

tuberculosis (TB) have an increased risk of developing TB disease following

infection. The risk of infection and disease progression can be minimized by

prompt identification of TB-exposed individuals and initiation of prophylactic

or preventive treatment.

**METHODS:** We report on a TB outbreak in a daycare center in Berlin, Germany

following a delayed diagnosis of cavitary pulmonary TB in a childhood educator.

We describe contact investigation, diagnostic, prophylactic, preventive and

therapeutic measures in 62 TB-exposed children (median age 3.9 years), including

30 with prolonged TB exposure.

**RESULTS:** The initial examination took place 5-16 days after the index patient

was diagnosed with TB. Ten of the 30 children with intensive contact became

infected, six (median age 2.7 years) developed pulmonary TB. Three of these

children had a concurrent influenza infection, which may have contributed to

disease progression. No child without prolonged exposure to the index patient

developed disease.

**CONCLUSION:** Early diagnosis of TB in adult patients, especially those with

persistent cough, is crucial to prevent TB in vulnerable infants. Close

collaboration between public health departments and specialized facilities is

essential for the effective control of TB outbreaks.

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DOI: 10.1007/s15010-025-02655-0

PMID: 41045348

**46. Front Vet Sci. 2025 Sep 24;12:1638459. doi: 10.3389/fvets.2025.1638459.**

**eCollection 2025.**

Histological and immunohistochemical characterization of granulomas in alpacas

(Vicugna pacos) naturally infected with tuberculosis.

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Tuberculosis (TB), caused by the Mycobacterium tuberculosis complex (MTBC), is a

chronic zoonotic disease of increasing concern in alpacas (Vicugna pacos), a

species highly susceptible to the disease. Given the growing alpaca population

in Europe and zoonotic potential, understanding TB pathology in alpacas is

crucial. This study provides the first comprehensive histopathological and

immunohistochemical characterization of TB lesions in naturally infected

alpacas. Granulomas from the lungs (n = 175), liver (n = 241), and lymph nodes

(n = 55), were classified into four developmental stages (I, II, III and IV)

based on their morphology, necrosis, fibrosis, cellular composition, and

presence of acid-fast bacilli (AFBs). Advanced granulomas (stages III and IV)

predominated in all tissues, indicating chronic infection. High numbers of AFBs

were observed in lung and lymph node granulomas across all stages, with very

rare presence of multinucleated giant cells (MNGCs). This pattern in the lung,

with extensive necrosis and lack of fibrous encapsulation, together with the

presence of abundant AFBs, suggests deficient immune control and significant

transmission risk. In contrast, liver granulomas, particularly encapsulated

stage IV lesions, showed fewer detectable AFBs, implying better mycobacterial

control in this organ. Immunohistochemistry in selected granulomas revealed

ionized calcium-binding adaptor protecin (IBA1) immunopositive macrophages were

most prevalent cells in early stages (stage I and II), while T (CD3+) and B

lymphocytes (B-cell specific activator protecin+) increased in advanced (stage

III and IV) granulomas, forming peripheral lymphoid follicle-like structures.

Neutrophils (immunopositive to myeloperoxidase) were less abundant, but more

prominent in advanced lesions showing extensive necrosis. The high incidence of

liver lesions suggests high dissemination of pathogenic mycobacteria and

generalized tuberculosis in this species. This research fills knowledge gaps

about tuberculous granulomas in camelids and highlights alpacas as potential

sources of mycobacterial excretion, posing a transmission risk to domestic

animals, wildlife, and humans.

Copyright © 2025 Agulló-Ros, Ruedas-Torres, Hunter, Bird, Whitehead and

Salguero.

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PMCID: PMC12506088

PMID: 41070382

**47. Pak J Med Sci. 2025 Sep;41(9):2491-2498. doi: 10.12669/pjms.41.9.11726.**

Exploring the Socio-cultural Dynamics of Treatment Adherence amongst Females

living with Pulmonary Tuberculosis in Karachi, Pakistan.

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(3)Lubna Ansari Baig, Ph.D. Program Professor, Director, University College of

Medicine and Dentistry, The University of Lahore, Lahore Pakistan.

**OBJECTIVE:** To explore socio-cultural and grassroots factors influencing

treatment non-adherence amongst females living with Pulmonary Tuberculosis (TB).

**METHODOLOGY:** A qualitative Phenomenological design was adopted. Twelve in-depth

interviews were conducted at a TB Clinic in Karachi (The Behbud Health Clinic)

from February, 2020 to May, 2020 with participants including (i) females living

with Pulmonary TB and (ii) healthcare providers engaged in TB service-provision.

Interviews were semi-structured and conducted in-person. Data was analyzed

inductively using thematic analysis.

**RESULTS:** Three themes contributing to treatment non-adherence emerged, which

are: i) the burden of home-making with sub-themes of a culture of matriarchy,

traditional household norms, and intended non-disclosure of TB status; ii) the

journey of pursing treatment with subthemes of challenges in accessing

diagnostic services, barriers in treatment adherence/continuation, unique

treatment-related misconceptions; and iii) TB myths with subthemes emphasizing

local rumors and an inherent lack of trust in public healthcare services.

**CONCLUSION:** This study reveals important grassroots, socio-cultural and physical

barriers to treatment adherence among women, including gender, social norms and

treatment demands. Addressing these requires a holistic approach prioritizing

community awareness with a focus on understanding day-to-day lived experiences

of TB and building healthcare provider capacity to provide treatment services

that are responsive and sensitive to these barriers.

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DOI: 10.12669/pjms.41.9.11726

PMCID: PMC12505931

PMID: 41070318

**48. Cureus. 2025 Sep 8;17(9):e91825. doi: 10.7759/cureus.91825. eCollection 2025**

**Sep.**

Evaluation of Xpert MTB/RIF and GenoType MTBDRplus for the Detection of

Rifampicin-Resistant Tuberculosis: A Cross-Sectional Diagnostic Accuracy Study

at a Tertiary Care Center in India.

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**Background** Accurate and timely detection of Mycobacterium tuberculosis (MTB) and

associated drug resistance is vital for effective tuberculosis (TB) control,

especially in high-burden countries like India. In recent years, molecular

assays have significantly improved TB diagnostics. This study evaluates and

compares the diagnostic accuracy of the Xpert MTB/RIF assay and the GenoType

MTBDRplus version 2.0 line probe assay (LPA) in identifying MTB and rifampicin

resistance in both pulmonary and extrapulmonary clinical specimens. **Methodology**

Over an 18-month period, 500 clinical specimens, comprising 257 pulmonary and

243 extrapulmonary samples, were analyzed using Ziehl-Neelsen staining,

Lowenstein-Jensen culture, and the Xpert MTB/RIF assay. All samples positive for

MTB by either culture or Xpert (n = 124) were further assessed using LPA. Cases

with discordant rifampicin resistance findings between molecular assays were

validated using phenotypic drug susceptibility testing (DST) using the MGIT 960

SIRE system. **Results** Among the 124 MTB-positive cases, pulmonary samples

accounted for 90 (72.6%), and extrapulmonary samples accounted for 34 (27.4%).

Xpert MTB/RIF detected MTB in 121 cases, showing a sensitivity of 95.3% and

specificity of 86.9% compared to culture. Culture positivity was 48 (53.3%) in

pulmonary and 16 (44.4%) in extrapulmonary specimens. Valid LPA results were

obtained in 119 samples, with MTB detected in 86 cases, yielding an overall

sensitivity of 72.3%. Detection rates were higher in smear-positive (48, 92.3%)

compared to smear-negative samples (38, 52.7%). Rifampicin resistance was

identified by Xpert in 28 (22.5%) cases, with 7 (8.1%) instances of discordance

between Xpert and LPA results. Of these, five were concordant with LPA and two

with Xpert upon phenotypic DST. **Conclusions** The Xpert MTB/RIF assay demonstrated

excellent sensitivity, particularly in smear-negative and extrapulmonary

samples. LPA showed better concordance with phenotypic DST for rifampicin

resistance but was less effective in smear-negative cases. These findings

highlight the complementary roles of molecular and phenotypic methods in

enhancing the diagnosis of TB and detecting resistance.

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PMCID: PMC12505803

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**49. Cureus. 2025 Sep 8;17(9):e91815. doi: 10.7759/cureus.91815. eCollection 2025**

**Sep.**

Spinal Tuberculosis Mimicking Metastatic Lung Cancer: A Case of Misdiagnosis.

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Misdiagnosis of spinal tuberculosis (TB), otherwise known as Pott's disease, can

lead to inappropriate treatments and prolonged morbidity. Spinal TB may mimic

malignant lesions on imaging, and, in addition, its chronic course, weight loss,

and constitutional symptoms can further contribute to misdiagnosis, occasionally

resulting in inappropriate chemotherapy or radiotherapy before the correct

diagnosis is established. A 44-year-old woman presented with progressive

thoracic spine pain, lower limb radiation, weight loss, and intermittent

low-grade fever. She was initially misdiagnosed with a lung neoplasm with spinal

metastases based on imaging and received chemotherapy and radiotherapy without

improvement. Definitive diagnosis was made via thoracoscopic biopsy of lung and

spinal lesions, revealing rifampicin- and isoniazid-resistant TB. Imaging

confirmed destructive thoracic vertebral lesions with prevertebral and epidural

extension, consistent with spinal TB with large cold abscesses. The patient was

treated with a tailored multidrug-resistant TB regimen, including bedaquiline,

linezolid, levofloxacin, clofazimine, and cycloserine, alongside supportive

therapy. She tolerated the treatment well without significant adverse effects.

This case highlights the diagnostic challenge of spinal TB mimicking malignancy

and underscores the importance of biopsy for accurate diagnosis and the timely

initiation of appropriate therapy.

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DOI: 10.7759/cureus.91815

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**50. Cureus. 2025 Sep 8;17(9):e91852. doi: 10.7759/cureus.91852. eCollection 2025**

**Sep.**

Oral Amyloidosis Secondary to Tuberculosis in an Adult Patient: A Report of a

Rare Case.

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Oral amyloidosis involving the lateral border of the tongue secondary to

tuberculosis is a rare clinical finding. We present the case of a 35-year-old

woman with presumed amyloidosis secondary to tuberculosis after increased tongue

volume and irregularly shaped lateral edges were noticed. The present study was

motivated by the correlation between tuberculosis and its involvement as a

trigger in the appearance of amyloidosis, which, in this case, presents with

oral manifestations. This retrospective case report describes a patient whose

incisional biopsy confirmed oral amyloidosis secondary to tuberculosis. The

patient had a history of infectious diseases such as toxoplasmosis,

histoplasmosis, cytomegalovirus, Epstein-Barr virus, and tuberculosis. The

latter influenced the development of the amyloidosis process, suggesting an

underlying immunological compromise that was not evaluated. The amyloidosis

treatment begins with identifying the amyloid protein involved; since this is a

serum amyloid A (SAA) protein, this finding is then related to the presence of

an underlying chronic infectious inflammatory pathology.

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**51. Tuberculosis (Edinb). 2025 Sep 27;155:102694. doi: 10.1016/j.tube.2025.102694.**

**Online ahead of print.**

Analysis of tuberculosis infection dynamics using Caputo fractional-order models

with diagnosis and treatment interventions.

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This paper develops and analyzes a Caputo fractional-order mathematical model

for tuberculosis (TB) transmission that incorporates testing, therapy,

isolation, and treatment interventions. The model divides the population into

five compartments-susceptible, exposed, infectious, isolated, and recovered-and

its qualitative properties, including positivity, boundedness, existence, and

uniqueness of solutions, are established. The basic reproduction number R0 is

derived, and sensitivity analysis identifies transmission, progression, testing,

and treatment rates as critical drivers of TB dynamics. Using the

Laplace-Adomian decomposition method (LADM), numerical simulations are performed

to assess the impact of fractional-order derivatives on disease spread and

control. The results show that increasing the order of the fractional derivative

enhances the accuracy of the model and reveals memory effects in TB dynamics.

Moreover, early diagnosis, therapy, and isolation significantly reduce infection

levels and improve recovery outcomes. These findings highlight the advantages of

fractional-order models over classical approaches and provide valuable insights

for designing effective TB control strategies.

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**52. Open Forum Infect Dis. 2025 Sep 19;12(10):ofaf587. doi: 10.1093/ofid/ofaf587.**

**eCollection 2025 Oct.**

Clinical Outcome of Rifabutin-based Treatment for Pulmonary Tuberculosis in

Solid Organ Transplant Recipients.

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**BACKGROUNDS:** Rifabutin is often used instead of rifampin to treat tuberculosis

(TB) in solid organ transplant recipients (SOTRs) due to fewer drug interactions

with immunosuppressants. However, data on its efficacy are limited.

**METHODS:** A retrospective, case-control study was conducted at a tertiary care

center in Korea. SOTRs aged ≥18 years with culture-positive pulmonary TB treated

with isoniazid and rifabutin for >80% of the treatment duration were included.

Those with rifampin-resistant TB or who discontinued immunosuppressants prior to

TB diagnosis were excluded. Each SOTR was matched to three non-SOTR controls

treated with rifampin-based regimens. The primary outcome was treatment

completion without early relapse. Logistic regression with and without overlap

weighting was used for analysis.

**RESULTS:** Forty SOTRs and 120 non-SOTRs were analyzed. Baseline TB severity

markers (cavitary lesions, smear/culture-positivity) were comparable, but

extrapulmonary TB and isoniazid resistance were more common in SOTRs. Treatment

duration was longer in SOTRs (median 272 vs 187 days, P < .001). The primary

outcome occurred in 90% of SOTRs and 96.7% of controls (P = .108). Treatment

completion was lower in SOTRs (92.5% vs 100%, P = .015). No significant

differences were observed in TB recurrence or 1-year mortality. TB-attributable

deaths were absent in both groups. After overlap weighting, no significant

difference was found in the primary outcome (aOR 0.36; 95% confidence interval,

0.01-10.41). Allograft rejection and failure occurred in 10% and 12.5% of SOTRs,

respectively.

**CONCLUSIONS:** Rifabutin-based therapy in SOTRs achieved treatment outcomes

comparable to rifampin-based regimens in non-SOTRs, supporting its use in this

population.

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Infectious Diseases Society of America.

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**53. Open Forum Infect Dis. 2025 Sep 22;12(10):ofaf582. doi: 10.1093/ofid/ofaf582.**

**eCollection 2025 Oct.**

The Role of Electronic Medical Record Automation in Latent Tuberculosis

Screening and Treatment in a Large Health System.

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USA.

After an electronic medical record tool was implemented in primary care,

tuberculosis screening increased from 6202 to 16 394 patients. There was an

absolute increase in, but not a higher percentage of, patients starting and

completing preventative treatment. This low-cost intervention highlights the

electronic medical record's potential to enhance tuberculosis prevention.

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Infectious Diseases Society of America.

DOI: 10.1093/ofid/ofaf582

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PMID: 41064693

**54. Front Microbiol. 2025 Sep 23;16:1643900. doi: 10.3389/fmicb.2025.1643900.**

**eCollection 2025.**

The gut and lung microbiome across the TB disease spectrum.

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Sciences, University of KwaZulu-Natal, Durban, South Africa.

Tuberculosis (TB) remains a major global health challenge, affecting

approximately 10 million people annually. Susceptibility to infection by

Mycobacterium tuberculosis, progression to TB, response to antimycobacterial

chemotherapy, and the propensity to develop post-infectious sequelae have all

been linked to a complex interplay of host and pathogen factors. Studies have

revealed that communities of microorganisms colonize the human respiratory and

gastrointestinal tracts and regulate regional immunity, with consequent effects

on TB acquisition, progression, and resolution. An in-depth understanding of the

multifaceted determinants of host susceptibility to TB, including the cross-talk

between the host immune system and gut and lung microbiomes, could provide new

insights into TB pathogenesis, treatment response, sequelae, and recurrence

dynamics. This review explores the role of the gut-lung microbiome axis across

the spectrum of TB pathogenesis, including microbial changes during and beyond

TB treatment, and assesses their potential effect on treatment outcomes and the

risk of TB recurrence.

Copyright © 2025 Perumal, Somboro, Tulsi, Ngcapu and Naidoo.

DOI: 10.3389/fmicb.2025.1643900

PMCID: PMC12500654

PMID: 41064256

**55. Cureus. 2025 Sep 7;17(9):e91779. doi: 10.7759/cureus.91779. eCollection 2025**

**Sep.**

Clinical and Radiological Profile of Extrapulmonary Tuberculosis in Elderly

People Attending a Tertiary Care Hospital: A Prospective Cohort Study.

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Extrapulmonary tuberculosis (EPTB) poses distinct diagnostic and therapeutic

challenges in the elderly due to subtle clinical signs, weakened immunity, and

multiple coexisting health conditions. This observational study, conducted over

15 months at a tertiary care hospital in Chennai, India, included 120 patients

aged 60 and above diagnosed with EPTB. The research examined clinical features,

laboratory findings, comorbidities, and treatment history to identify patterns

and risk factors. Disseminated tuberculosis (TB) was the most frequent form,

with common symptoms including altered mental status and reduced functional

capacity. The findings underscore the importance of age-adapted diagnostic

approaches and comprehensive care strategies to enhance outcomes in older

adults. In this study, the most frequently observed laboratory abnormalities

among elderly patients with EPTB were hyponatremia, hypoalbuminemia, and anemia.

This elevated occurrence suggests a need for further investigation through

larger studies to determine the underlying cause. Comorbidities were present in

71.6% of cases, with diabetes mellitus being the most commonly seen in 56.7% of

patients. Furthermore, 31.6% had multiple coexisting conditions, most frequently

a combination of diabetes and hypertension (22.5%). These comorbidities may

influence disease progression and complicate treatment response, underscoring

the need for routine screening and appropriate management of associated health

conditions in all TB patients.

Copyright © 2025, Prakaash et al.

DOI: 10.7759/cureus.91779

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**56. Cureus. 2025 Sep 7;17(9):e91774. doi: 10.7759/cureus.91774. eCollection 2025**

**Sep.**

Blastomycosis Masquerading as Tuberculosis: A Diagnostic Challenge in a Patient

With Diabetes.

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Blastomycosis is an endemic fungal infection caused by Blastomyces dermatitidis.

Immunosuppressed individuals, as well as those with diabetes mellitus or

obesity, are more likely to develop severe disease. It is often referred to as

"the great imitator" because it can closely mimic tuberculosis. Early diagnosis

is critical to prevent delays in appropriate treatment and avoid complications.

We present the case of a 51-year-old Haitian immigrant with poorly controlled

diabetes mellitus who was initially diagnosed and treated for tuberculosis based

on a positive interferon-gamma release assay (IGRA). Despite receiving RIPE

(rifampin, isoniazid, pyrazinamide, and ethambutol) therapy, his symptoms failed

to improve. Further comprehensive evaluation ultimately revealed disseminated

blastomycosis with pulmonary and cutaneous involvement. He was successfully

treated with liposomal amphotericin B, followed by itraconazole. This case

underscores the diagnostic challenges of blastomycosis, particularly in

immunocompromised individuals. In endemic areas, a high index of clinical

suspicion and appropriate diagnostic testing are crucial to avoid misdiagnosis

and to ensure timely and effective treatment.

Copyright © 2025, Acharya et al.

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PMID: 41063898

**57. Case Rep Ophthalmol. 2025 Jul 28;16(1):610-614. doi: 10.1159/000547671.**

**eCollection 2025 Jan-Dec.**

Ocular Involvement in Disseminated Tuberculosis: A Case of Neuro-Retinitis.

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**INTRODUCTION:** Neuro-retinitis is a rare ocular manifestation of disseminated

tuberculosis (TB), often presenting with optic disc swelling and a macular star.

Early diagnosis is essential to prevent permanent visual impairment, especially

in TB-endemic areas where such presentations may be overlooked.

**CASE PRESENTATION:** We report a case of a 38-year-old male who presented with a

2-week history of progressive, painless vision loss in the left eye. Fundoscopy

revealed optic disc swelling and a macular star, suggestive of neuro-retinitis.

Systemic evaluation, including chest imaging and immunologic testing, confirmed

disseminated TB. Other potential infectious and autoimmune causes were excluded.

The patient was initiated on standard anti-TB therapy (isoniazid, rifampicin,

pyrazinamide, and ethambutol) along with oral corticosteroids. At 6-week

follow-up, his visual acuity improved, and optic disc swelling had decreased.

**CONCLUSION: N**euro-retinitis may be the initial presenting feature of

disseminated TB. Clinicians should consider TB in the differential diagnosis of

neuro-retinitis, particularly in high-prevalence settings. Early systemic

evaluation and prompt initiation of anti-TB therapy can lead to favorable visual

and systemic outcomes.

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PMCID: PMC12503600

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**58. RSC Med Chem. 2025 Sep 25. doi: 10.1039/d5md00637f. Online ahead of print.**

Tanshinones target drug-resistant tuberculosis: efficacy, selectivity, and

potential mechanism of action.

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Institute of Biological Sciences, University of Brasília Brasília DF Brazil.

This study evaluates the antimycobacterial potential of tanshinone I (TI),

tanshinone IIA (TIIA), and cryptotanshinone (CPT), natural compounds isolated

from Salvia miltiorrhiza, against Mycobacterium tuberculosis, the primary

etiological agent of tuberculosis. Given the global challenge posed by

antimicrobial resistance and the complexity of current treatment regimens, we

aimed to identify effective and safe alternative therapies. The compounds' in

vitro activity was initially assessed via minimum inhibitory concentration

(MIC90) and cytotoxicity index (CI50) determinations, yielding MIC90 values of

1.03, 0.38, and 1.21 μg mL-1 for TI, TIIA, and CPT, respectively, with low

toxicity and high selectivity indices. A narrow antimicrobial spectrum was

observed upon testing against representative bacteria, fungi, and

non-tuberculous mycobacteria (NTM). Combination assays with rifampicin revealed

synergism for TI and indifference for TIIA and CPT, as determined by the

fractional inhibitory concentration index (FICI). Scanning electron microscopy

(SEM) revealed morphological alterations in the bacilli's cell wall, suggesting

it as a possible target of the compounds' mechanism of action. Whole genome

sequencing (WGS) of resistant strains identified mutations predominantly in

PE\_PGRS family genes, supporting the hypothesis that tanshinones modulate cell

wall structure. Finally, efficacy was confirmed against multidrug-resistant

clinical isolates, with MIC90 values near 1 μg mL-1. These findings position TI,

TIIA, and CPT as promising candidates for developing new therapies against

drug-resistant tuberculosis.

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DOI: 10.1039/d5md00637f

PMCID: PMC12503125

PMID: 41063792

**59. Comput Biol Chem. 2025 Sep 30;120(Pt 2):108705. doi:**

**10.1016/j.compbiolchem.2025.108705. Online ahead of print.**

Machine learning approaches to predict drug resistance in tuberculosis.

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Tuberculosis (TB) remains a global health crisis, with 10.8 million cases and

1.25 million deaths in 2023. The rise of drug-resistant TB has complicated

treatment, while traditional diagnostic methods face limitations in speed, cost,

and accuracy. This study explores machine learning (ML) models to predict drug

resistance from genomic variants, offering a faster and more comprehensive

solution. We compiled a comprehensive dataset of variations and mutations

associated with resistance phenotypes from databases such as TBDReaMDB, GMTV,

WHO, and CARD. For each mutation, both sequence-based features (e.g.,

physicochemical property changes, Provean scores) and structure-based features

(e.g., hydrophobicity, flexibility, accessible surface area) were derived.

Ensemble ML models (Stacking, Bagging and Voting Classifiers) were evaluated for

their ability to predict resistance to key anti-TB drugs: Fluoroquinolones,

Rifampicin, Isoniazid, and Pyrazinamide. Results achieved indicated that the

model behaved differently on six TB resistance genes (gyrA, gyrB, inhA, katG,

rpoB, pncA), with accuracy varying from 66 % (gyrA Stacking) to 91.37% (pncA

Voting) and ROC scores varying from 0.69 (gyrA Bagging) to 0.92 (pncA Stacking).

The Bagging model performed best for gyrA, gyrB and rpoB with strong

classification, while the Stacking classifier performed well for inhA. Voting

classifier proved to be the top-performing classifier for katG and pncA gene.

The top-performing model for both genes was chosen, emphasizing a gene-specific

strategy to maximize resistance prediction. This study demonstrates that

gene-specific ensemble models, supported by a comprehensive feature set, can

provide valuable predictions of drug resistance in M. tuberculosis. While

promising, the findings remain a proof-of-concept and require further validation

on larger and more diverse clinical datasets before clinical application.

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PMID: 41061443

**60. J Infect Dev Ctries. 2025 Sep 30;19(9):1314-1321. doi: 10.3855/jidc.21045.**

Impact of the COVID-19 pandemic on the temporal trend of indicators for access

to tuberculosis diagnosis: A systematic review.

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Lopes L(2), Fransiscon Naves E(1), Oliveira Bonfim R(1), Mendes da Silva DH(1),

Marques Valença AB(1), Roberto Bollela V(3), Perón Rujula MJ(4), Alexandre

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**INTRODUCTION:** The COVID-19 pandemic influenced the behaviour of numerous

diseases, overloading health systems and weakening public health infrastructure

and access.

**METHODOLOGY:** This study aimed to analyse the repercussions of the COVID-19

pandemic on tuberculosis diagnosis indicators. A systematic review was

conducted, examining studies published between 2020 and 2024 in Portuguese,

English, or Spanish across five databases and Google Scholar. The search,

performed in March 2024, led to the identification of 6,378 studies, of which 23

were included after an independent review of titles, abstracts, and full texts.

Data were extracted and narratively synthesized following a methodological

quality assessment.

**RESULTS:** The review revealed significant declines in TB incidence, detection,

notification, and diagnosis during the pandemic, alongside reduced etiological

confirmation of cases.

**CONCLUSIONS:** The findings highlight a need to reorganize and enhance health

service responses to address the disruptions caused by the pandemic.

Strengthening these services is crucial to recover missed TB cases and improve

indicators, supporting the goal of eliminating TB by 2030.

Copyright (c) 2025 Mariana Gaspar Botelho Funari de Faria, Rubia Laine de Paula

Andrade Gonçalves, Livia Maria Lopes, Elisangela Fransiscon Naves, Rafaele

Oliveira Bonfim, Diogo Henrique Mendes da Silva, Ana Beatriz Marques Valença,

Valdes Roberto Bollela, Maria Josefa Perón Rujula, Ricardo Alexandre Arcêncio,

Ione Carvalho Pinto, Pedro Fredemir Palha, Jaqueline Garcia de Almeida

Balestero, Dulce Gomes, Zhiting Guo, Jason Farley, Nancy Reynolds, Aline

Aparecida Monroe.

DOI: 10.3855/jidc.21045

PMID: 41060732 [Indexed for MEDLINE]

**61. Biomedica. 2025 Sep 22;45(4):511-520. doi: 10.7705/biomedica.7685.**

Spinal tuberculosis, pathophysiology and radiological presentation, three case

reports.

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Prompt diagnosis and treatment of spinal tuberculosis are key in preventing its

neurological and physical sequelae. This affection, also known as Pott's

disease, should be considered a differential diagnosis in patients presenting

with unexplained back pain that can lead to neurological symptoms and eventually

paraplegia. Mycobacterium tuberculosis, the etiological agent of tuberculosis,

spreads from the lungs to the spine via venous or arterial pathways, causing

lesions apparent upon imaging. Radiological findings include osseous

destruction, disk collapse, abscess formation, and spinal deformity. While

magnetic resonance is considered the most sensitive and specific imaging

modality to establish a diagnosis, plain radiographs and computed tomography can

provide useful information. This manuscript discusses three Colombian cases of

spinal tuberculosis with the goal of increasing familiarity regarding the

pathophysiology, clinical and radiological manifestations, and differential

diagnosis of this rare but potentially devastating disease.

DOI: 10.7705/biomedica.7685

PMID: 41060162 [Indexed for MEDLINE]

**62. F1000Res. 2025 Sep 30;14:511. doi: 10.12688/f1000research.164097.2. eCollection 2025.**

Factors predicting outcome in cervical lymph node tuberculosis: insights from a

Tunisian case series.

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**BACKGROUND:** Tuberculosis remains a significant public health issue in Tunisia.

This study aimed to describe the epidemiological, clinical, and therapeutic

characteristics of cervical lymph node tuberculosis and identify factors

influencing outcomes.

**METHODS:** A retrospective study was conducted over a 3-year period in the ENT

department at La Rabta Hospital, Tunis. Diagnosis was based on histopathological

evidence, and disease progression was categorized as favorable (treatment <9

months, no additional surgery) or unfavorable (treatment >9 months and/or

supplementary surgery).The study population was divided into two groups based on

the outcome nature, and analytical analysis was performed to assess factors

influencing outcomes.

**RESULTS:** The study included 102 patients (32 men and 70 women), with a median

age of 34.5 years (range: 8-83 years). Most patients (78.4%) had no significant

medical history or known HIV infection. Thirty-nine patients (38.2%) had a

history of consuming raw milk. In 65 cases (63.7%), lymph node size exceeded 3

cm. Hypoechogenicity (53.9%) and necrosis (40.1%) were the most common findings

on ultrasound and CT scan, respectively. The initial diagnostic approach

included adenectomy (56.8%), lymph node dissection (8.9%), and drainage of cold

abscesses (34.3%). All patients received an initial four-drug antituberculosis

regimen. Ethambutol treatment was extended beyond 2 months in 65 cases (63.7%).

Fifty-six patients (54.9%) had a favorable outcome.Factors associated with a

favorable outcome included intact skin, complete initial lymph node dissection,

favorable progress at 2 months, and prolonged ethambutol therapy.

**CONCLUSIONS:** The management of lymph node tuberculosis remains challenging,

especially with insufficient bacteriological confirmation. Regional

epidemiological factors should be considered. The role of surgery is crucial;

however, further standardization is needed to optimize patient outcomes.

Copyright: © 2025 Lajhouri M et al.

DOI: 10.12688/f1000research.164097.2

PMCID: PMC12498516

PMID: 41059128 [Indexed for MEDLINE]

**63. Clin Cosmet Investig Dermatol. 2025 Oct 2;18:2561-2567. doi:**

**10.2147/CCID.S548020. eCollection 2025.**

A Rare Paradoxical Reaction in Cutaneous Tuberculosis: Insight from a Case of

Lupus Vulgaris.

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**INTRODUCTION:** Lupus vulgaris (LV) is the most common form of paucibacillary

cutaneous tuberculosis (TB), which is treatable with antituberculosis treatment

(ATT). Otherwise, paradoxical reaction (PR) is an adverse clinical consequence

of restoring the specific antigen immune response elicited by ATT.

**CASE PRESENTATION:** We report a case of PR in a 20-year-old female patient with

LV, who had previously completed treatment for meningitis and lymphadenitis TB

and had a history of juvenile idiopathic arthritis (JIA). Initially, the patient

presented with reddish papules on the neck, which appeared four months before

consultation. The skin lesions progressively enlarged and failed to heal

completely despite treatment, accompanied by knee joint pain. Physical

examination revealed well-defined reddish-brown plaques measuring 1.5×1×0.1 cm

on the neck and 5×3×0.5 cm beneath the right chin with gyrate borders. Diascopy

tests revealed an "apple jelly" sign, while dermoscopy demonstrated

yellowish-white globules on a pinkish-red background. Histopathological

examination revealed tuberculoid granulomas, Langhans giant cells, and

epithelioid cells with caseous necrosis. Based on these findings, a diagnosis of

LV was established. However, bacteriological culture and polymerase chain

reaction (PCR) testing showed no evidence of Mycobacterium tuberculosis. After

three weeks of category I ATT, the skin lesions worsened and enlarged,

suggesting the development of PR. The lesions subsequently improved two weeks

after initiating additional therapy with 8 mg methylprednisolone twice daily and

showed significant improvement following the addition of 200 mg

hydroxychloroquine once a day.

**CONCLUSION:** Although PR is rare, it should be considered in patients who

demonstrate clinical deterioration after ATT. Clinicians should be aware of its

occurrence in cutaneous TB, particularly LV, to ensure timely recognition and

appropriate management.

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DOI: 10.2147/CCID.S548020

PMCID: PMC12499580

PMID: 41059071

**64. Front Cell Infect Microbiol. 2025 Sep 22;15:1692516. doi:**

**10.3389/fcimb.2025.1692516. eCollection 2025.**

Editorial: Mechanisms driving drug resistance in tuberculosis and malaria:

genetic, environmental, and evolutionary insights.

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Comment on

Editorial on the Research Topic Mechanisms driving drug resistance in

tuberculosis and malaria: genetic, environmental, and evolutionary insights.

DOI: 10.3389/fcimb.2025.1692516

PMCID: PMC12497692

PMID: 41059045

**65. Afr J Thorac Crit Care Med. 2025 Jun 4;31(2):e2346. doi:**

**10.7196/AJTCCM.2025.v31i2.2346. eCollection 2025.**

Perinatal transmission and cure of extensively drug-resistant tuberculosis in an

infant.

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We describe a rare case of perinatally acquired extensively drug-resistant

tuberculosis in an infant. The infant was successfully treated with an

individualised all-oral multidrug regimen containing delamanid, a drug rarely

described in the treatment of perinatal tuberculosis. What the study adds. This

brief report offers insight into a clinical case of perinatally acquired

extensively drug-resistant tuberculosis (XDR-TB), and outlines the

individualised treatment plan that led to a successful treatment outcome.

Implications of the findings. The report highlights the need for evidence-based

guidance on XDR-TB in this paediatric population, as well as further research on

preventive strategies for mitigating mother-to-child transmission of TB.

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**66. Microb Drug Resist. 2025 Oct;31(10):303-308. doi: 10.1177/10766294251375421.**

**Epub 2025 Sep 3.**

Molecular Epidemiology of Non-Tuberculous Mycobacteria Among

Tuberculosis-Suspected Patients in Iran: Species Distribution and Drug

Resistance.

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In high-burden tuberculosis (TB) settings such as Iran, non-tuberculous

mycobacteria (NTM) are increasingly identified among presumptive TB cases.

However, their epidemiology and drug resistance patterns remain inadequately

described. This study investigated the prevalence, species distribution, and

antimicrobial susceptibility of NTM isolates from 3,000 clinical specimens

collected from patients with presumptive TB at the Pasteur Institute of Iran

between March 2022 and March 2023. Identification was performed through culture

and sequencing of the 16S rDNA, rpoB, and hsp65 genes. Drug susceptibility

testing (DST) was conducted using the broth microdilution method in accordance

with Clinical and Laboratory Standards Institute guidelines. Among 145 acid-fast

bacilli-positive cultures, 45 (31%) were identified as NTM. The predominant

species were Mycobacterium fortuitum (51.1%) and M. simiae (40.0%), followed by

less common isolates of M. abscessus, M. kansasii, and M. flavescens. The

majority of NTM isolates (86.7%) originated from respiratory specimens.

Phenotypic analyses revealed high resistance rates to first-line anti-TB drugs

such as isoniazid and rifampicin, while susceptibility varied across

fluoroquinolones, aminoglycosides, and sulfonamides. These findings underscore

the importance of species-level identification and DST-guided therapy to improve

the clinical management of NTM infections in TB-endemic regions.

DOI: 10.1177/10766294251375421

PMID: 41055382 [Indexed for MEDLINE]

**67. Afr J Prim Health Care Fam Med. 2025 Oct 1;17(1):e1-e7. doi:**

**10.4102/phcfm.v17i1.4953.**

Predictors of drug-resistant TB outcomes: Body mass index, HIV, and

comorbidities.

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**BACKGROUND:**The success rates for treating drug-resistant tuberculosis (DR-TB)

in programmatic settings have been unsatisfactory. By identifying the factors

that predict treatment outcomes, we can implement effective corrective measures

that will significantly enhance patient management and improve results for those

with DR-TB.

**AIM:**  This study aimed to investigate predictive factors influencing treatment

outcomes among DR-TB patients, focusing on the combined effects of body mass

index (BMI), human immunodeficiency virus (HIV) status, comorbidities,

socioeconomic factors, substance use and DR-TB type.

**SETTING:**  The study was conducted in rural Eastern Cape, South Africa.

**METHODS:**This retrospective cohort study was designed to utilise logistic

regression models on data from 200 patient medical records. We examined

variables including BMI, HIV co-infection, comorbidities (e.g. diabetes,

hypertension), income, substance use and DR-TB classifications

(multidrug-resistant, rifampicin-resistant, pre-extensively drug-resistant,

extensively drug-resistant).

**RESULTS:**  Key findings indicate a weak association between lower BMI and reduced

treatment success (odds ratio [OR]: 0.92, 95% confidence interval [CI]:

0.81-1.05). HIV-positive status was marginally associated with lower treatment

success (OR: 0.89, 95% CI: 0.75-1.12), while income level and substance use

emerged as stronger predictors (e.g. substance use OR: 0.72, 95% CI: 0.60-0.88).

Among DR-TB types, extensively drug-resistant tuberculosis patients exhibited

the poorest outcomes (OR: 0.55, 95% CI: 0.40-0.75). The multivariate model

achieved an accuracy of 63.1%, suggesting limited predictive power of BMI and

HIV alone and highlighting the significant influence of comorbidities,

socioeconomic status and behavioural factors.

**CONCLUSION:**  These findings underscore the importance of a multidimensional

approach in improving DR-TB treatment outcomes through tailored clinical and

social interventions.Contribution: The study noted limited connections between

DR-TB and various comorbidities. It highlights the necessity of managing

coexisting conditions in DR-TB patients because of their significant impact on

treatment outcomes. Customised interventions are essential for those with severe

or complex comorbidities.

DOI: 10.4102/phcfm.v17i1.4953

PMID: 41055190 [Indexed for MEDLINE]

**68. S Afr J Surg. 2025 Jun;63(2):55-61. doi: 10.36303/SAJS.00978.**

Breast tuberculosis - a review and diagnostic pathway.

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Breast tuberculosis (TB) is a rare form of extrapulmonary tuberculosis,

accounting for 0.1% of all breast conditions globally, with a higher incidence

in endemic regions such as India, East Asia, and sub-Saharan Africa. It can

mimic breast carcinoma, complicating timely diagnosis. Early recognition and

proper treatment are crucial for favourable outcomes in breast TB. This review

offers a detailed examination of breast TB, and presents a diagnostic pathway

designed to improve the diagnosis and management of the disease. This literature

review considers the epidemiology, pathophysiology, clinical features, and

diagnostic approaches, highlighting the need for a high level of clinical

suspicion, particularly in TB-endemic areas. By providing a structured

diagnostic framework, this paper aims to improve prompt and accurate diagnosis

of breast TB, enhancing patient care and outcomes.

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PMID: 41054989 [Indexed for MEDLINE]

**69. Clinicoecon Outcomes Res. 2025 Oct 1;17:661-671. doi: 10.2147/CEOR.S541923.**

**eCollection 2025.**

Economic Evaluation of Molecular Testing for Pulmonary Tuberculosis Diagnosis: A

Systematic Review.

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K(4)(5), Mahasirimongkol S(6), Chaikledkaew U(2)(7).

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**PURPOSE:** Rapid molecular assays such as Xpert MTB/RIF and TB-LAMP accelerate

pulmonary tuberculosis (TB) diagnosis but are more expensive than smear

microscopy. This study provided an updated economic synthesis for presumptive

adult pulmonary TB in high-burden settings, broadening the evidence from Xpert

MTB/RIF to other WHO endorsed tests compared to conventional strategies.

**METHODS:** Medline, Embase and Scopus were searched through March 2025. The

strategy combined search terms related to molecular diagnostic tests, pulmonary

tuberculosis, and economic evaluation study designs. Full economic evaluations

comparing molecular tests with smear microscopy, culture or passive case-finding

were eligible. Two reviewers independently screened articles, extracted data,

and adjusted costs to 2025 US dollars (USD) using average exchange rates.

Reporting quality was appraised using the Consolidated Health Economic

Evaluation Reporting Standards (CHEERS) 2022 checklist. Due to heterogeneity in

evaluation criteria, model structures, time horizons, and outcome measures,

meta-analysis were not feasible. Therefore, results were synthesized

narratively, and incremental cost-effectiveness ratios (ICERs) were

contextualized against country-specific cost-effectiveness thresholds to enable

meaningful cross-study interpretation.

**RESULTS:** Eight studies conducted in low- and middle-income countries with high

TB burdens were included. All evaluated Xpert MTB/RIF and the Thai studies also

examined TB-LAMP. Five studies reported cost per disability-adjusted life years

(DALYs) averted or quality-adjusted life years (QALYs) gained, while three used

TB cases detected or years of life saved (YLS). CHEERS reporting quality was

high (median is 23/28 items). Reported ICERs for molecular testing were either

cost-saving or highly cost-effective compared with country-specific thresholds.

Probabilistic sensitivity analyses (five studies) indicated ≥90% probability of

cost-effectiveness in four studies and 6% in one.

**CONCLUSION:** Recent evidence supports the cost-effectiveness and cost-saving of

Xpert MTB/RIF and TB-LAMP for diagnosing adult pulmonary TB. Policymakers should

prioritize reducing cartridge costs and implementing models that capture

patient-level benefits to maximize economic benefits.

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PMCID: PMC12497363

PMID: 41054770

**70. Radiol Case Rep. 2025 Sep 22;20(12):6106-6111. doi: 10.1016/j.radcr.2025.08.093. eCollection 2025 Dec.**

Rasmussen aneurysm presenting with massive hemoptysis in a tuberculosis

survivor: Diagnosis with CT pulmonary angiography.

Lam LV(1), Thuong TM(1), Thang TQ(1), Linh NN(1), Trong ND(1), Ha PTT(1), Hang

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Pulmonary artery pseudoaneurysm (PAP) is a rare but potentially fatal cause of

hemoptysis, most commonly associated with tuberculosis or chronic cavitary lung

disease. Prompt recognition through imaging is critical to enable timely

intervention and improve survival. We report the case of a 57-year-old male with

a history of poorly controlled type 2 diabetes mellitus and hypertension who

presented with massive hemoptysis. Computed tomography pulmonary angiography

(CTPA) revealed a pseudoaneurysm arising from a segmental branch of the left

lower pulmonary artery, located within a residual post-tuberculous cavity

containing heterogeneous hyperdense fluid suggestive of recent hemorrhage.

Digital subtraction angiography (DSA) confirmed the diagnosis, although images

were not archived, and the patient underwent successful endovascular

embolization. However, he later developed septic shock, hyperosmolar

hyperglycemic state, and ultimately suffered cardiac arrest despite supportive

care. This case highlights the importance of early diagnosis of PAP using CTPA

in patients presenting with hemoptysis, especially those with a history of

pulmonary tuberculosis. Despite appropriate endovascular treatment, systemic

complications may lead to poor outcomes. Early recognition, aggressive

management, and interdisciplinary care are critical to improve prognosis,

particularly in patients with comorbidities.

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PMID: 41050895

**71. Front Immunol. 2025 Sep 18;16:1612709. doi: 10.3389/fimmu.2025.1612709.**

**eCollection 2025.**

Impact of cytomegalovirus exposure on disease severity, bacterial burden, immune

responses and treatment outcomes in tuberculosis.

Dasan B(1), Munisankar S(1), Kumar NP(2), Moideen K(1), Pandiarajan AN(1), Nott

S(3), Viswanathan V(4), Shanmugam S(2), Hissar S(2), Thiruvengadam K(5),

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**INTRODUCTION:** Tuberculosis (TB) continues to be one of the leading causes of

global mortality. Recent evidence highlights human cytomegalovirus (CMV) as a

risk factor for TB. However, the impact of CMV exposure on disease severity,

bacterial burden, and TB treatment outcomes remain poorly understood.

**METHODS:** Serostatus of CMV was determined by assaying IgG titers in plasma

samples by ELISA. Chest X-rays were employed to assess bilateral lung lesions

and cavitary diseases, and sputum smear grades to measure bacterial loads in TB

subjects. Treatment outcomes were defined as favorable or unfavorable. Cytokine

profiles were measured using multiplex ELISA.

**RESULTS:** The study revealed that TB patients with CMV seopositivity had

significantly higher bacterial loads (adjusted PR [aPR], 4·14; 95% CI,

2·21-7·16; p<0·001), bilateral lung lesions (aPR, 2·97; 95% CI, 1·71-5·17;

P<0·001), cavitary lung lesions (aPR, 4·21; 95% CI, 1·98-6·24; p<0·001) and

unfavorable treatment outcomes (aPR, 1·48; 95% CI, 1·08-2·69; p=0·05). Our data also show that TB is associated with significantly lower levels of IFNγ, IL-2, TNFα, IL-1α, and IL-1β but significantly higher levels of IL-10, IFNα, IFNβ, G-CSF, and VEGF in CMV exposed individuals compared to CMV non exposed

individuals.

**CONCLUSION:** Our findings reveal that CMV exposure worsens the severity of TB,

increases bacterial burden, and leads to poorer treatment outcomes. The

modulation of cytokine responses in TB patients with CMV exposure suggests a

potential mechanism by which CMV may exacerbate TB pathogenesis.

Copyright © 2025 Dasan, Munisankar, Kumar, Moideen, Pandiarajan, Nott,

Viswanathan, Shanmugam, Hissar, Thiruvengadam, Kornfeld and Babu.

DOI: 10.3389/fimmu.2025.1612709

PMCID: PMC12488557

PMID: 41050688 [Indexed for MEDLINE]

**72. J Brown Hosp Med. 2025 Oct 1;4(4):144595. doi: 10.56305/001c.144595. eCollection 2025.**

A Case of Granulomatosis with Polyangiitis Masquerading as Tuberculosis.

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Granulomatosis with polyangiitis (GPA) is a medium- and small-vessel necrotizing

vasculitis that affects the upper and lower respiratory tracts, resulting in

symptomatic and radiographic similarities with pulmonary tuberculosis (TB). We

discuss the case of a 45-year-old previously healthy male who recently

immigrated from India that presented after three weeks of rifampin, isoniazid,

pyrazinamide, and ethambutol (RIPE) therapy for presumed TB prior to receiving

the GPA diagnosis. Previous admission to a community hospital yielded negative

Mycobacterium tuberculosis polymerase chain reaction (MTB PCR) and acid-fast

bacillus (AFB) sputum cultures, prompting repeat testing and broad

autoimmune/infectious workup. Chest computed tomography redemonstrated cavitary

lesions with interval enlargement. Dermatopathology of bilateral lower extremity

palpable purpura that erupted during admission demonstrated findings consistent

with small-vessel vasculitis. Cytoplasmic-antineutrophil cytoplasmic antibodies

was positive (1:80), and serine proteinase-3 IgG was 546 AU/mL (ref<19 AU/mL).

Bronchoalveolar lavage samples produced a negative MTB PCR and AFB culture. This

case highlights the importance of differentiating clinically similar diseases

that can be symptomatically detrimental and require potentially competing

therapeutics. Some evidence, including in vitro studies and acute care patients,

suggests low risk of harm to initiate GPA treatment with possible concomitant

TB. We hope this case informs providers to avoid diagnostic bias and consider

early steroid treatment for patients suspicious of GPA in the absence of an

unequivocal TB diagnosis.

DOI: 10.56305/001c.144595

PMCID: PMC12493756

PMID: 41050488

**73. J Brown Hosp Med. 2025 Oct 2;4(4):144012. doi: 10.56305/001c.144012. eCollection 2025.**

Post-Colonoscopy Cecal Perforation Presenting as Soft Tissue Emphysema in

Ileocecal Tuberculosis: A Case Report.

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Colonic perforation is an uncommon but serious complication of colonoscopy,

which can be extraperitoneal, intraperitoneal, or a combination of both. We

present a case of combined colonic perforation in a young woman with ileocecal

tuberculosis who experienced colicky pain in the right iliac fossa. She

underwent an emergency right hemicolectomy, with no signs of peritonitis

observed during surgery. Postoperatively, she was started on antituberculosis

therapy and is currently doing well. This case is notable because a thorough

review of recent literature identified only three reported instances of

post-colonoscopy retroperitoneal cecal perforation.

DOI: 10.56305/001c.144012

PMCID: PMC12493739

PMID: 41050483

**74. Access Microbiol. 2025 Oct 1;7(10):001023.v3. doi: 10.1099/acmi.0.001023.v3.**

**eCollection 2025.**

Articular flare-up of systemic scleroderma revealing a rare form of tuberculosis

of the shoulder and extensor tendons: a case report and literature review.

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Rabat, Morocco.

Tuberculosis remains a major public health concern, particularly in countries

where it is still endemic. Tuberculous bursitis and tenosynovitis are rare

extrapulmonary manifestations, and their association with systemic autoimmune

diseases such as scleroderma is seldom reported in the literature. We report the

case of a 61-year-old patient with systemic scleroderma, complicated by diffuse

interstitial lung disease and treated with mycophenolate mofetil, who developed

tuberculous shoulder bursitis and wrist extensor tenosynovitis. The

microbiological diagnosis was confirmed by ultrasound-guided aspiration of the

subacromial-subdeltoid bursa, revealing the presence of Mycobacterium

tuberculosis, detected by Ziehl-Neelsen staining, GeneXpert PCR and culture.

Histological analysis of synovial tissue fragments demonstrated epithelioid

granulomas with caseous necrosis, confirming the tuberculous origin.

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DOI: 10.1099/acmi.0.001023.v3

PMCID: PMC12488386

PMID: 41050453

**75. Case Rep Womens Health. 2025 Sep 15;48:e00749. doi: 10.1016/j.crwh.2025.e00749. eCollection 2025 Dec.**

Female genital tuberculosis in an infertility patient resulting in destruction

of ovarian tissue: A case report.

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Female genital tuberculosis is an important cause of infertility in endemic

regions; it most often affects the fallopian tubes and uterine endometrium,

though involvement of the ovaries, cervix, and vagina/vulva have also been

reported. This report concerns the case of a 30-year-old nulligravid woman who

presented for evaluation following discovery of a right adnexal mass in the

setting of right-sided abdominal pain. On initial evaluation, the patient also

reported a history of secondary amenorrhea and the inability to conceive for six

months. Laparoscopic and hysteroscopic findings were concerning for extensive

adhesive disease resulting in loss of normal fallopian tube and uterine

architecture, as well as complete obliteration of the right ovary. Ultimately,

the patient's history and surgical findings were highly suggestive of female

genital tuberculosis with sequelae resulting in diffuse pelvic organ disease. An

endometrial biopsy confirmed the diagnosis with a positive tuberculosis PCR and

acid-fast bacillus culture. This case highlights the importance in considering

female genital tuberculosis in the workup of infertility, the obstacles to

definitive diagnosis, and the detrimental impact longstanding disease can have

on pelvic organ function. Additionally, the loss of normal ovarian tissue in

this patient may provide a pathophysiologic basis for the previously established

association between diminished ovarian reserve and female genital tuberculosis.

DOI: 10.1016/j.crwh.2025.e00749

PMCID: PMC12495049

PMID: 41050426

**76. Cureus. 2025 Sep 4;17(9):e91578. doi: 10.7759/cureus.91578. eCollection 2025**

**Sep.**

Concurrent Tuberculous Meningitis and Toxoplasma Encephalitis in an HIV-Positive

Patient: An Exceptionally Rare Case.

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Human immunodeficiency virus (HIV) infection is strongly associated with an

increased risk of opportunistic infections affecting the central nervous system

(CNS). Among these, tuberculous meningitis (TBM) and Toxoplasma encephalitis

(TE) represent two of the most frequent and severe infections seen in

individuals with advanced immunosuppression. Each condition alone is associated

with significant morbidity and mortality, particularly in patients with

profoundly diminished CD4+ T-cell counts. While TBM and TE are common

individually in the context of HIV/AIDS, their concurrent occurrence within the

CNS appears to be exceptionally rare, with only rare or isolated reports in the

literature. The co-existence of these infections poses substantial diagnostic

and therapeutic challenges due to overlapping clinical manifestations,

radiological findings, and the potential for rapid neurological decline. We

report a case of a 46-year-old woman with long-standing HIV/AIDS, non-adherent

to antiretroviral therapy, who presented with fever, headache, confusion,

vomiting, and progressive neurological deficits. Cerebrospinal fluid analysis

revealed lymphocytic pleocytosis with low glucose levels and a positive

GeneXpert test for Mycobacterium tuberculosis. Toxoplasma IgG was markedly

elevated, and brain MRI demonstrated multiple ring-enhancing lesions with

surrounding vasogenic edema. Laboratory investigations confirmed advanced

immunosuppression, with a declining CD4+ T-cell count and high viral load. She

was treated with a combination of anti-tuberculous drugs, corticosteroids, and

anti-Toxoplasma therapy. Despite treatment, her neurological condition

deteriorated, with residual motor and cognitive deficits at discharge.

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PMCID: PMC12495448

PMID: 41050015

**77. Cureus. 2025 Sep 3;17(9):e91532. doi: 10.7759/cureus.91532. eCollection 2025**

**Sep.**

Disseminated Extrapulmonary Tuberculosis and Pulmonary Mycobacterium avium

Complex Co-infection in a Newly Diagnosed HIV Patient: A Case Report.

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Disseminated extrapulmonary tuberculosis (TB) and Mycobacterium avium complex

(MAC) are both serious opportunistic infections (OIs), commonly encountered in

immunocompromised individuals, particularly those with HIV. Co-infection with

both pathogens is rare but can present significant diagnostic and therapeutic

challenges. We report the case of a 45-year-old male who was newly diagnosed

with HIV infection and who developed disseminated extrapulmonary TB alongside

pulmonary MAC, highlighting the complexities of diagnosis, treatment, and

management in the context of dual mycobacterial infections. This case

underscores the importance of early recognition and coordinated care in managing

multi-pathogen infections in immunocompromised patients.

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**78. J Clin Tuberc Other Mycobact Dis. 2025 Sep 17;41:100563. doi:**

**10.1016/j.jctube.2025.100563. eCollection 2025 Dec.**

Curated cases from the TB expert network: Unplugged! Series: Use of plasma

microbial cell-free DNA metagenomic sequencing to diagnose Mycobacterium

tuberculosis.

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United States.

A 52-year-old U.S.-born man with diabetes and a kidney transplant 3 months prior

presented with fever of unknown origin and left-sided weakness. On admission, he

was found to have right internal carotid artery thrombus and cerebral infarct.

He developed respiratory failure and underwent treatment for Pseudomonas

bacteremia. Fevers continued through hospital day 30 and computed tomography

(CT) scans demonstrated an esophageal mass, hepatic lesions, and pulmonary

nodules, which were new compared to pre-transplant imaging 2 years prior. While

awaiting results from acid-fast bacilli (AFB) cultures from sputum and tissue,

plasma microbial cell-free DNA (mcfDNA) metagenomic sequencing was ordered on

day 29 and was positive for Mycobacterium Tuberculosis (Mtb). Based on the

results of mcfDNA sequencing, clinical presentation, and radiographic findings,

a diagnosis of tuberculosis disease was made, and anti-tuberculosis treatment

was initiated. While awaiting results from acid-fast bacilli (AFB) cultures

and molecular studies from sputum and tissue, plasma microbial cell-free DNA

(mcfDNA) metagenomic sequencing was ordered on day 29 and was positive

for Mycobacterium Tuberculosis (Mtb). The patient was discharged on hospital day

60; 27 days after discharge, 58 days after the Mtb PCR resulted positive from

tissue biopsy, and 60 days after the positive mcfDNA, sputum cultures returned

positive for Mycobacterium tuberculosis.

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PMID: 41049022

**79. Adv Ther (Weinh). 2025 Apr;8(4):10.1002/adtp.202400057. doi:**

**10.1002/adtp.202400057. Epub 2024 Jul 5.**

Inhalational Delivery of β-glucan-chitosan-poly(lactic co-glycolic) acid

Nanoparticles Enhance Alveolar Macrophage Rifampin Concentrations for the

Treatment of Tuberculosis.

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Buffalo, Buffalo, NY 14203, USA.

Despite multiple treatments for tuberculosis (TB), there are ≈10 million new

cases and 1.5 million deaths annually, warranting the need for new therapeutics.

Major clinical treatment issues include the length of treatment which is

associated with patient non-compliance; and poor cellular drug penetration

leading to the generation of drug-resistant strains. This study underscores the

potential of β-glucan-chitosan (CS) poly(lactic co-glycolic) acid (PLGA)

nanoparticles as a promising immunostimulatory adjunct for TB treatment. To

facilitate drug delivery to alveolar macrophage, a CS-PLGA nanoparticle is

developed containing rifampin in the core with β-glucan as a surface ligand, to

stimulate the immune system. Mice are administered a single dose of

nanoparticles or free rifampin by oropharyngeal aspiration. Pharmacokinetic

investigations reveal sustained release properties of rifampin in vivo,

extending over a week. Furthermore, comprehensive analysis indicates stimulation

of the innate immune system, as evidenced by cytokine profiling, while

concurrently revealing no detrimental effects on the alveolar epithelium, as

indicated by histological examination and albumin lung leak assessment. These

findings collectively establish a strong foundation for the development of a

novel adjuvant immunotherapy approach for TB.

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**eCollection 2025.**

Defying barriers to fight tuberculosis in West Africa: a model of equitable

partnerships within a research capacity-strengthening network in the subregion.

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Tuberculosis (TB), caused by the Mycobacterium tuberculosis complex (MTBC), is

the leading cause of death from a single infectious disease, despite being

treatable. Global TB control efforts face significant challenges, including

insufficient funding, ineffective vaccines, inadequate diagnostics, and complex

treatments, particularly in resource-limited regions. West Africa has a unique

TB epidemiology, characterized by medium- to high-prevalence rates and a greater

diversity of the MTBC, which further compounds control efforts. In response to

the global call to end TB by 2030, the West African Network of Excellence for

TB, AIDS, and Malaria (WANETAM) has united scientists from 25 institutions

across 12 West African countries to build research capacity and conduct

translational research focused on TB. The multi-country program of WANETAM

focuses on assisting the TB control programs of its member countries through the

supply of essential laboratory equipment and the facilitation of laboratory

accreditation/certification (with three regional laboratories already ISO

accredited and others on track). The program also emphasizes gender-sensitive

training, the retention of critical laboratory and research expertise,

improvements in the diagnosis of TB (including pediatric and drug-resistant

forms), and conducting studies on TB to better understand the molecular

epidemiology of the MTBC in the sub-region, thereby generating the evidence to

inform the policy. To date, WANETAM has trained 13 postdoctoral fellows, 753

laboratory technicians/technologists, and currently supports 7 female PhD

students in the final year of their respective programs. By fostering

collaboration among Francophone, Anglophone, and Lusophone West Africans,

WANETAM is bridging cultural and language barriers to fight TB while also

preparing West Africa for future pandemics.

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WANETAM-TB-Network.

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Telemedicine-assisted Directly Observed Therapy (DOTS) for Tuberculosis: An

Evidence-based Case Report.

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**BACKGROUND:** Tuberculosis is a high-burden infectious disease requiring long-term

treatment. Compliance is the key to cure; however, directly observed therapy

(DOTS) is not always feasible. Telemedicine use in DOTS offers improved

accessibility; however, its effectiveness has not been established. We aimed to

investigate the effectiveness of telemedicine-based DOTS on treatment compliance

in patients with tuberculosis.

**METHODS:** Databases including MEDLINE, Scopus, EMBASE, PubMed, and Cochrane were

searched for studies implementing telemedicine-based DOTS until November 2nd,

2023. Studies were appraised for validity, importance, and applicability using

the Oxford Centre of Evidence-Based Medicine tool, and the outcomes were graded

based on their levels of evidence (LOE).

**RESULTS:** Our search yielded six systematic reviews. Telemedicine-based DOTS

yielded favourable effects in improving adherence (LOE: I), treatment completion

(LOE: II-III), and cure rates (LOE: II-III). Other outcomes, in terms of

bacteriological resolution (LOE: II) and mortality (LOE: IV), were estimated to

be non-inferior to those of DOTS. In terms of the telemedicine mode, the VDOTS

yielded the highest LOE in improving adherence (LOE: I), followed by short

messaging services (LOE: III) and medication monitors (LOE: III), which yielded

similar effects. Results for phone reminders were contradictory, with the

highest evidence suggesting that it might be ineffective for treatment

completion (LOE: I-III) but may increase the cure rate (LOE: III).

**CONCLUSION:** Telemedicine-based DOTS may improve adherence, treatment completion,

and cure rate, and is non-inferior in terms of bacteriological resolution and

mortality. Telemedicine-based DOTS can be considered for implementation;

however, further high-quality studies in limited-resource settings are needed to

strengthen the evidence.

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**ahead of print.**

Single-gene transcripts for subclinical tuberculosis: an individual participant

data meta-analysis.

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**BACKGROUND:** Translation of blood RNA signatures might be accelerated by

identifying biomarkers composed of the minimum number of gene transcripts. We

aimed to test the hypothesis that single-gene transcripts provide similar

accuracy for detection of subclinical tuberculosis to multi-gene signatures and

benchmark their accuracy and clinical utility against interferon-γ release

assays (IGRAs).

**METHODS:** For this individual participant data meta-analysis, we searched PubMed

from database inception to June 10, 2024, using terms for "tuberculosis",

"subclinical", and "RNA" to identify studies in which participants underwent

whole-blood RNA sampling with at least 12 months of follow-up for development of

clinical tuberculosis. We performed a one-stage individual participant data

meta-analysis to compare the accuracy of multi-gene signatures against

single-gene transcripts to discriminate individuals with subclinical

tuberculosis-defined as asymptomatic prevalent or incident tuberculosis

(diagnosed ≥21 days from enrolment, irrespective of symptoms) over a 12-month

interval-from individuals who remained disease free. We performed decision curve

analysis to evaluate the net benefit of using single-gene transcripts and IGRAs,

alone or in combination, to stratify preventive treatment compared with

strategies of treating all or no individuals.

**FINDINGS:** 276 articles were identified in the search; of these, seven met the

eligibility criteria and all had IPD available. We evaluated 80 single-genes and

eight multi-gene signatures in a pooled analysis of four RNA sequencing and

three quantitative PCR datasets, comprising 6544 total samples and including 283

samples from 214 individuals with subclinical tuberculosis. Distributions of

transcript and signature Z scores after standardisation were similar and there

was little heterogeneity between datasets. Five single-gene transcripts (BATF2,

FCGR1A/B, ANKRD22, GBP2, and SERPING1) had equivalent areas under the receiver

operating characteristic curves (0·75 [95% CI 0·71-0·79] to 0·77 [0·73-0·81]) to the best-performing multi-gene signature over 12 months, but none met the WHO minimum target product profile (TPP) for a tuberculosis progression test. IGRAs approximated the TPP in low-burden settings but showed much lower specificity in high-burden settings (74% [95% CI 72-76] vs 32% [30-35]). By contrast, sensitivity (67% [47-82] in high-burden settings vs 78% [67-86] in low-burden settings) and specificity (72% [70-74] vs 67% [64-69]) of the best-performing single-gene transcript was similar across settings. Decision curve analysis showed that in high-burden settings, stratifying preventive treatment using single-gene transcripts had greater net benefit than using IGRAs, which offered little net benefit over treating all individuals. In low-burden settings, IGRAs offered greater net benefit than single-gene transcripts to stratify treatment, but combining both tests provided the highest net benefit for tuberculosis programmes aiming to treat fewer than 50 people to prevent a single case.

**INTERPRETATION:** Single-gene transcripts are equivalent to multi-gene signatures

for detection of subclinical tuberculosis, with consistent performance across

settings. Single-gene transcripts show potential clinical utility to stratify

preventive treatment, particularly when used in combination with IGRAs in

low-burden settings.

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Prevalence of histoplasmosis in Nigerian children with presumptive tuberculosis:

a multicentre study comparing two diagnostic techniques.

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Data from studies conducted on histoplasmosis in Nigeria are mostly from the

adult age group with sparse information about its occurrence in our paediatric

population. Histoplasmosis, often overlooked in tropical paediatric populations,

is a critical differential diagnosis in regions with a high tuberculosis (TB)

burden, especially in low- and middle-income countries (LMIC). In addition, case

series from Nigeria show histoplasmosis is commonly misdiagnosed as TB in

paediatric population. This study investigated Nigerian children with

presumptive TB for histoplasmosis using Histoplasma antigen assay. This was a

descriptive cross-sectional study conducted across paediatric TB clinics in

three sites in Nigeria, namely, Uyo, Ibadan, and Calabar. One hundred

participants were recruited; 73 were unconfirmed cases of TB, 27 were confirmed

TB cases, while 21 were participants with advanced HIV disease. The urine

samples were assayed for the detection of Histoplasma antigen using the

MiraVista lateral flow assay (MVD LFA) and Clarus IMMY ELISA. Of the 100 sampled

participants, two participants tested positive for Histoplasma antigen with MVD

LFA, while none were positive with ELISA. Notably, these individuals were

unconfirmed cases of TB. Paediatric histoplasmosis is not an uncommon finding in

Nigerian children presenting with symptoms mimicking TB. The findings highlight

the urgent need for cost-effective, accessible diagnostics in resource-limited

settings to improve paediatric care, with further research required for the

validation of Histoplasma antigen assay diagnostics in children.

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Empowering Community Health Workers to Increase Detection and Screening of

Childhood Tuberculosis in a Rural Community of India.

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Child Contact Management in Tuberculosis under the National Tuberculosis

Elimination Program in Kalaburagi District of North Karnataka.

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Institute for Population Sciences, Mumbai, Maharashtra, India.

**BACKGROUND:** Tuberculosis (TB) is one of the major causes of mortality among

children globally. Considering the vulnerability of children, India's National

TB Elimination Program (NTEP) recommends screening of all household contacts

aged <6 years for TB and initiates 6-month isoniazid preventive therapy (IPT).

**OBJECTIVES:** The objective of the study was to assess the child contact

management (CCM) in terms of screening and initiation of IPT under NTEP.

**MATERIALS AND METHODS**: This record-based study has included 192 child contacts

and 108 pulmonary TB cases registered from January 2019 to December 2020 from

two randomly selected TB units, one each from rural and urban area. The data

were obtained from TB treatment registers and TB treatment cards from the

district TB office.

**RESULTS:** Most of the children were in the age group of 2-4 years, belonging to

rural area and below poverty line families. Although screening of the child

contacts was good (97.9%), IPT was initiated in only 49.4% of the screened

children. Initiation of IPT was found to be low among males, relatively younger

children, and rural population. Lower rates of initiation of IPT were also noted

among the children with male index cases, those who are aged ≥45 years, and also

among households with more than one child contact. Poor initiation rates were

found among the children for whom the index cases presented with any of the

comorbidity and addiction.

**CONCLUSION:** CCM under NTEP is repeatedly emphasized for decades together.

Although the percentage of screening was good (97.9%), the initiation of IPT was

found, nearly only half of the children which emphasizes the need for the

effective strategies and tools to improve the same under the program.

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**86. Indian J Public Health. 2025 Jul 1;69(3):286-291. doi: 10.4103/ijph.ijph\_414\_23. Epub 2025 Oct 4.**

Delay in the Diagnosis and Treatment of Tuberculosis among Tuberculosis Patients

in South-East Delhi, India.

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**BACKGROUND:** Delay in accessing effective health care plays an important role in

tuberculosis (TB) transmission within the community.

**OBJECTIVES:** The objectives of the study were (1) to estimate the total delays

experienced by the patient before initiation of TB treatment and (2) to

determine the factors associated with delays in the diagnosis and treatment of

such patients.

**MATERIALS AND METHODS:** A cross-sectional study was conducted among TB patients

enrolled in ten randomly selected directly observed treatment short-course

(DOTS) centers in South-East Delhi from January 2019 to March 2020. During this

period, 439 patients were approached, of which 416 consented to participate in

the study. Patient delay, health system delay, and total delay were determined.

The data were collected using questions from the "Tool to estimate patients'

costs" questionnaire.

**RESULTS:** Of the 416 participants, 62.2% were male. The mean age was 40.9 ± 16.33

years. The mean health system delay was 24.2 ± 3.85 days (median: 19 days). The

mean patient delay was 25.27 ± 8.21 days (median: 29 days). Patient delay was

seen in 36.3% of patients while health system delay occurred in 40.6%. The

delays were significantly associated with the gender of the patient, their

educational status, the type of facility first visited, the type of TB, and the

category of TB. The mean time spent on the diagnosis of TB was 35.20 ± 17.5 h.

**CONCLUSION:** In the present study, both patient and health system delays are

associated with several factors. Addressing these barriers and reasons for the

delays will help in the timely diagnosis and treatment of the patients.

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Accelerating Cough-Based Algorithms for Pulmonary Tuberculosis Screening:

Results From the CODA TB DREAM Challenge.

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**BACKGROUND:** Open-access data challenges can accelerate innovation in artificial

intelligence-based tools. In the Cough Diagnostic Algorithm for Tuberculosis

(CODA TB) DREAM Challenge, we developed and independently validated cough

sound-based artificial intelligence algorithms for tuberculosis screening.

**METHODS:** We included data from 2143 adults with ≥2 weeks of cough from

outpatient clinics in India, Madagascar, the Philippines, South Africa,

Tanzania, Uganda, and Vietnam. A standard tuberculosis evaluation was completed,

and ≥3 solicited coughs were recorded using a smartphone. We invited teams to

develop models using training data to classify microbiologically confirmed

tuberculosis disease using (1) cough sound features only and/or (2) cough sound

features with routinely available clinical data. After 4 months, they submitted

the algorithms for independent test set validation. Models were ranked by area

under the receiver operating characteristic curve (AUROC) and partial AUROC

(pAUROC) to achieve at least 80% sensitivity and 60% specificity.

**RESULTS:** Eleven cough models and 6 cough-plus-clinical models were submitted.

AUROCs for cough models ranged from 0.69 to 0.74, and the highest performing

model achieved 55.5% specificity (95% confidence interval, 47.7%-64.2%) at 80%

sensitivity. The addition of clinical data improved AUROCs (range, 0.78-0.83); 5

of the 6 models reached the target pAUROC, and the highest performing model had

73.8% specificity (95% confidence interval, 60.8%-80.0%) at 80% sensitivity. The

AUROC varied by country and was higher among male and human immunodeficiency

virus-negative individuals.

**CONCLUSIONS:** In a short period, an open-access data challenge facilitated the

development of new cough-based tuberculosis algorithms and demonstrated

potential as a tuberculosis screening tool.

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