

Breath of Resilience: A Decade of Global Interventions for Pulmonary Tuberculosis (2015-2025)

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ABSTRACT

Background: Tuberculosis (TB), caused by *Mycobacterium tuberculosis*, remains the world's second most deadly infectious disease. The WHO End TB Strategy (2015) sets ambitious goals for an 80% reduction in incidence and 90% reduction in deaths by 2030. This review assesses global progress and challenges during the 2015–2025 period.

Methods: This literature and data review synthesized information on global TB incidence, mortality, and key intervention strategies.

Results: The period saw a global decline in incidence and mortality, with high-burden countries like India achieving a notable 21% reduction in incidence since 2015. However, the disease remains a massive public health challenge, with 10.6 million new cases and 1.3 million deaths reported in 2022. Intervention efforts focused on developing shorter drug regimens (with improved success rates for drug-resistant TB, reaching 70–85%) and scaling up rapid molecular diagnostics. Crucial challenges include the persistent rise of drug-resistant TB (DR-TB), the need for simpler point-of-care tests, and the lack of a highly effective new vaccine to replace the BCG vaccine.

Conclusion: While global commitment and targeted interventions have demonstrated resilience and progress, the current pace is insufficient to meet the 2030 elimination targets. A sustained, strengthened global strategy requires the immediate development and deployment of innovative tools—including effective new vaccines and simplified diagnostics—alongside robust political and financial support to overcome the tenacity of DR-TB and ensure the global eradication of TB by 2035.

Keywords- Tuberculosis, End TB Strategy, Drug-Resistant TB, Global Health.

I. INTRODUCTION

A review of literature and data from 2015 to 2025 shows a global decline in pulmonary tuberculosis (TB) incidence and mortality, with notable progress in high-burden countries like India, though challenges remain in meeting global elimination targets. Research has focused heavily on improving diagnostics, shortening treatment regimens, and addressing comorbidities and socioeconomic factors. From the above article we have

understood that Tuberculosis incidence has fallen in India by 21% since 2015; as it shows 2.68% of reduction per year.¹

Tuberculosis (TB) is an airborne infectious disease caused by the organisms *Mycobacterium tuberculosis*. Although primarily a pulmonary pathogen, it can cause disease in almost any part of the body. Infection with *M. tuberculosis* can develop from containment in the host, wherein the bacteria are isolated within granulomas (latent TB infection), to a contagious

state, where the patient express symptoms that may include cough, fever, night sweats and weight loss etc. Only active pulmonary TB is contagious. In many low-income and middle-income countries, TB continues to be a major cause of mortality and morbidity, and drug-resistant TB is a serious issue in various settings. Although several new TB diagnostics have been developed, together with rapid molecular tests, there is a prerequisite for simpler point-of-care tests. Dealing this therapy usually requires a extended course of multiple antimicrobials, stimulating efforts to develop shorter drug regimens. Although the BCG vaccine is used globally, mainly to prevent deadly TB in infants and young children, it has been unsuccessful in controlling the global TB epidemic. Thus, efforts are underway to develop newer vaccines with improved efficacy. New tools as well as improved programme enactment and financial supports are necessary to eradicate the global TB epidemic by 2035.²

Ending TB is not just a public health problem, but a development challenge and opportunity. WHO's post-2015 End TB Strategy, adopted by the World Health Assembly in 2014, aims to end the global TB epidemic as part of the newly adopted Sustainable Development Goals. It serves as a blueprint for countries to reduce TB incidence by 80%, TB deaths by 90%, and to eliminate catastrophic costs for TB-affected households by 2030. The Strategy is not a "one size fits all" approach and its success depend on adaptation for diverse country settings.³

In primary pulmonary focus it is usually in subpleural, rupture into the pleural space with development of a tuberculous pleurisy with effusion. It is usually associated with classic but nonspecific symptoms of pleurisy. The local spread to hilar lymph nodes is a usual happening and from the disease spreads to other body regions.⁴

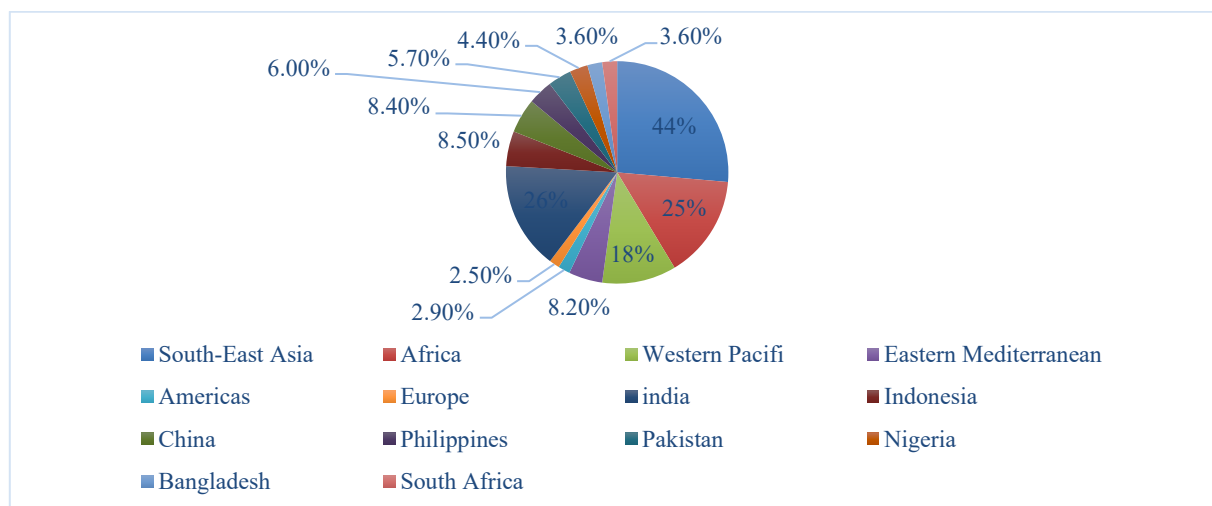
In past 200 years tuberculosis has killed more individuals than all other epidemic infections combined, it still kills around 5000 people per day, greater than all

other infections. Mycobacterium tuberculosis is a highly adapted human pathogen. It necessitates that the host should maintain systemic immunity to prevent the widespread infection caused by large numbers of organisms released from the cavity.⁵

On 460-375BC Hippocrates believes that TB is hereditary and designated the term phthisis for this condition. Aristaeus of Cappadocia a clear picture of symptoms of pulmonary TB under his book "First Book of Chronic Diseases" in 200 BC. As reported by WHO, TB is a second leading cause of death from a single infectious disease agent after Covid. Case rate in the US in 2018 was 2.8 cases per 100,000 population, while the worldwide incidence was 132 cases per 100,000 population at the same time. The HIV infection and AIDS are significant risk factors for developing TB.⁶

As stated by the WHO in 2022, there had been 10.6 million new cases of TB. Estimated at 1.3 million deaths were ascribed to TB include 167,000 cases of TB/HIV co-infection. This makes TB as the world's second most deadly infectious disease following COVID 19. Latter figures show an increase in TB incidence, along with an added 1.1 million cases has been recorded between 2021 and 2022. In 2022 the WHO issued 'Implementing the End TB Strategy: The Essentials 2022 Update, which offers newly updated resources to direct TB control efforts around the world.⁷

Most of the people experienced illness with TB in 2019 lived in the WHO geographic regions of South East Asia (44%), Africa (25%), Western Pacific (18%) less percentages in Eastern Mediterranean (8.2%) Americas (2.9%), the Europe (2.5%). Two thirds of global TB cases originated from just eight countries like India (26%), Indonesia (8.5%), China (8.4%), Philippines (6.0%), Pakistan (5.7%), Nigeria (4.4%), Bangladesh (3.6%), South Africa (3.6%). The WHO European and African regions have shown the greatest reduction in incidence (19% and 16%, respectively) and mortality rate (31% and 19% respectively) since 2015.⁸



Picture.1: Epidemiology of tuberculosis and its progress toward meeting global targets worldwide 2019.

15years trends in efficacy and effectiveness of treatment outcomes in drug-resistant pulmonary TB described improvement in the outcomes of treatment. the success rate of mono-resistant cases has 80-85% initiating around 2015,70% for RR/MDR-TB cases initiating around 2019, 70 to 80% for pre-XDR/XDR-TB in observational and experimental studies initiating around 2019. With respect to the combined RR/MDR and XDR-

TB cases, the figure was 70 and 85% respectively initiating around 2019. ⁹

Application of AI for diagnosis of PTB have significant potential for increasing the accuracy and efficiency. AI plays a major role in image feature extraction and sputum smear diagnosis in the microbiological examination. Besides helping physicians in conducting differential diagnosis and supporting prognosis prediction in PTB. ¹⁰

2015		
AUTHOR	TITLE OF THE ARTICLE	FINDINGS
Zhiliang Duan ¹¹	The diagnostic potential of MPT63-derived HLA-A*0201-restricted CD8+ T-cell epitopes for active pulmonary tuberculosis	MPT63-derived HLA-A*0201-restricted CD8(+) T-cell epitopes would likely contribute to the immunological diagnosis of M.tuberculosis infection and may provide the components for designing an effective TB vaccine.
Jong Gyun Ahn ¹²	Nosocomial exposure to active pulmonary tuberculosis in a neonatal intensive care unit	isoniazid therapy without any adverse events and did not progress to TB disease in the 2 years after exposure.
Rie Kanda ¹³	Factors Affecting Time to Sputum Culture Conversion in Adults with Pulmonary Tuberculosis: A Historical Cohort Study without Censored Cases	High smear grading and smoking prolonged the time to sputum culture conversion in adults with pulmonary TB
Sunita Tripathy ¹⁴	Prevalence of Multidrug Resistant Pulmonary Tuberculosis in North Bihar	The Prevalence of Multi drug resistant pulmonary tuberculosis in North Bihar is 15%. It needs early diagnosis by molecular diagnostic method and prompt treatment to reduce the spread of MDR TB cases.
Charoen Chuchottaworn ¹⁵	Risk Factors for Multidrug-Resistant Tuberculosis among Patients with Pulmonary Tuberculosis at the Central Chest Institute of Thailand	MDR-TB among patients with pulmonary TB may help physicians to provide proper management of cases for prevention of the development and spread of MDR-TB in future.
R J Kosgei ¹⁶	Gender differences in treatment outcomes among 15–49-year-olds with smear-positive pulmonary tuberculosis in Kenya	Females of reproductive age are likely to have poorer treatment outcomes than males.
Cláudia Di Lorenzo Oliveira ¹⁷	Control measures to trace ≤ 15-year-old contacts of index cases of active pulmonary tuberculosis	Automatic Interaction Detector method suggest that health care teams have a biased attitude toward assessing such contacts and underscore the need for training health professionals regarding tuberculosis control programs.
Cuiping Li ¹⁸	Discovery and verification of serum differential expression proteins for pulmonary tuberculosis	iTRAQ in combination with MALDI-TOF-MS technology can efficiently screen differentially expressed proteins in sera from the PTB patients. SHBG is suggested to be a possible and novel serum biomarker for PTB
T O Togun ¹⁹	Contribution of Xpert® MTB/RIF to the diagnosis of pulmonary tuberculosis among TB-exposed children in The Gambia	The sensitivity of Xpert is low in actively traced child contacts, but a combination of Xpert and mycobacterial culture has incremental benefits for the bacteriological confirmation of TB disease.
Amy L Davidow ²⁰	Preventing Infectious Pulmonary Tuberculosis Among Foreign-Born Residents of the United States	Progress toward TB elimination in the United States depends upon expanding opportunities for regular medical care and promotion of LTBI screening and treatment among foreign-born persons

Xin-Xu Li ²¹	Prevalence and risk factors of intestinal protozoan and helminth infections among pulmonary tuberculosis patients without HIV infection in a rural county in P. R. China	preventing malnutrition, avoiding unprotected contact with reservoirs of protozoa, and improving health education for good hygiene habits, particularly wearing shoes while outdoors, are beneficial in the prevention of intestinal protozoan and helminth infection among patients with PTB.
Mangalakumari Jeyanathan ²²	AdHu5Ag85A Respiratory Mucosal Boost Immunization Enhances Protection against Pulmonary Tuberculosis in BCG-Primed Non-Human Primates	single dose of AdHu5Ag85A boosting vaccine delivered via the respiratory mucosal route in parenteral BCG-primed NHP.
K Prasad ²³	Pulmonary Paragonimiasis Mimicking Tuberculosis	Paragonimiasis is a disease which is frequently misdiagnosed as pulmonary tuberculosis. In the areas where people eat crab/crayfish this disease should be considered in the differential diagnosis to avoid antituberculosis treatment for a non-tubercular condition.
D J Sloan ²⁴	Vitamin D deficiency in Malawian adults with pulmonary tuberculosis: risk factors and treatment outcomes	Adverse metabolic effects of drug treatment may be compensated by the positive impact of clinical recovery preventing exacerbation of vitamin D deficiency during anti-tuberculosis treatment.
Rogelio Hernández-Pando ²⁵	The Role of High Mobility Group Box 1 Protein (HMGB1) in the Immunopathology of Experimental Pulmonary Tuberculosis	HMGB1 is liberated during experimental tuberculosis and promotes or suppress the immune response and inflammation depending on the redox state.
A M Veerakumar ²⁶	Alcohol use disorders among pulmonary tuberculosis patients under RNTCP in urban Pondicherry, India	Though 80% modified alcohol use after TB diagnosis, the rest 20% did not modify. Necessary interventions need to be planned to screen for alcohol use.
A Jayakumar ²⁷	Serum biomarkers of treatment response within a randomized clinical trial for pulmonary tuberculosis	Exploratory post-hoc models including sTNF-R1, CRP, and age, classified 8 week culture status with promising accuracy.
Ruijuan Zheng ²⁸	Epstein-Barr virus-induced gene 3 (EBI3) polymorphisms and expression are associated with susceptibility to pulmonary tuberculosis	EBI3 gene rs4740 polymorphism is closely associated with susceptibility to PTB and the elevation and enrichment of EBI3 in the lung which at least partially derived from macrophages may contribute to the exacerbation of mycobacterial infection.
A Tavares e Castro ²⁹	Diagnostic yield of sputum microbiological analysis in the diagnosis of pulmonary tuberculosis in a period of 10 years	incremental yield with more than one sputum sample. However, overall sensitivity remained low, suggesting a need for new diagnostic strategies and novel and better diagnostic tools.
Derek J Sloan ³⁰	Pharmacodynamic Modeling of Bacillary Elimination Rates and Detection of Bacterial Lipid Bodies in Sputum to Predict and Understand Outcomes in Treatment of Pulmonary Tuberculosis	Modeling BERs predicts final outcome, and high %LB + AFB counts 3-4 weeks into therapy may identify a persister bacterial phenotype. These methods deserve further evaluation as surrogate endpoints for clinical trials.
Daniela Damjanovic ³¹	Age at Mycobacterium bovis BCG Priming Has Limited Impact on Anti-Tuberculosis Immunity Boosted by Respiratory Mucosal AdHu5Ag85A Immunization in a Murine Model	age at parenteral BCG priming has limited impact on the efficacy of BCG prime-AdHu5Ag85A respiratory mucosal boost immunization-enhanced protection.
Kelemework Adane ³²	Prevalence and drug resistance profile of Mycobacterium tuberculosis isolated from pulmonary tuberculosis patients attending two public hospitals in East Gojjam zone, northwest Ethiopia	rifampicin resistance was high, which could suggest the potential for a rise in the incidence of MDR

Yu Ji Lai ³³	Human Immunodeficiency Virus Infection-Associated Mortality during Pulmonary Tuberculosis Treatment in Six Provinces of China	Infection with HIV was independently associated with increased mortality during TB treatment. Offering HIV testing at the time of diagnosis with TB, early TB diagnosis among HIV/acquired immunodeficiency syndrome patients, and the timely provision of ART were identified as the key approaches that could reduce the number of HIV-associated TB deaths.
Jiun-Ting Wu ³⁴	Comparison of the safety and efficacy of a fixed-dose combination regimen and separate formulations for pulmonary tuberculosis treatment	In this randomized study, transient higher serum bilirubin levels were noted for the fixed-dose combination regimen compared with the separate formulations during treatment.
Rocky Lai ³⁵	Mucosal immunity and novel tuberculosis vaccine strategies: route of immunisation-determined T-cell homing to restricted lung mucosal compartments	Respiratory mucosal immunisation empowers T-cells to home to both the lung interstitium and the airway lumen, whereas intramuscular immunisation-activated T-cells are largely trapped within the pulmonary vasculature, unable to populate the lung interstitium and airway.
Luciano Cardinale ³⁶	Response to: The imaging spectrum of pulmonary tuberculosis: a critical appraisal. Acta Radiol 2015;56:NP1-NP2	speaking about “thickness” is suggestive but inaccurate, while irregularity and nodularity of the pleura are useful ultrasound signs, often initially detected in neoplastic pleural disease or accurate chronic signs of pulmonary fibrosis.
Tolu Oni ³⁷	Complicated silicotuberculosis in a South African gold miner: A case report	the need to understand the interaction of silicosis and tuberculosis in this setting, the importance of maintaining continuity of care in the management of these conditions in miners and former miners, and control of silica dust exposure as a primary form of prevention of tuberculosis.
M S Munn ³⁸	Analysis of risk factors for tuberculous infection following exposure at a homeless shelter	Birthplace and duration of exposure were significant risk factors for tuberculous infection, underscoring the importance of this information when prioritizing contact investigations after TB exposure in congregate settings
Sandra Manca ³⁹	Unusual clinical presentation of thoracic tuberculosis: the need for a better knowledge of illness	diagnosis and proper treatment can be delayed, with severe complications for the patient. Pulmonary TB remains a real diagnostic challenge: a normal chest radiograph and nonspecific symptoms do not allow us to exclude this persistent infectious disease.
Brian J Baker ⁴⁰	Additional benefits of GeneXpert MTB/RIF assay for the evaluation of pulmonary tuberculosis among inpatients	Xpert had “similar sensitivity” to sputum microscopy in their study population.
Chen Yuan Chiang ⁴¹	The influence of diabetes, glycemic control, and diabetes-related comorbidities on pulmonary tuberculosis	Poor glycemic control is associated with poor TB treatment outcome and improved glycemic control may reduce the influence of diabetes on TB.
Jin Gu ⁴²	An open-label, randomized and multi-center clinical trial to evaluate the efficacy of Silibinin in preventing drug-induced liver injury	Preventive hepatoprotective therapy in the general population may reduce drug discontinuation rate, improve patient's compliance and outcomes of anti-TB treatment.
Kulatunga, Pramitha Prabhashini Kumarihamy ⁴³	A rare complication of pulmonary tuberculosis: a case report	ATT itself improves haemostatic disturbances, achieving target INR is difficult due to drug interactions.

Alejandro Gómez-Gómez ⁴⁴	Diabetes and Other Risk Factors for Multi-Drug-Resistant Tuberculosis in a Mexican Population with Pulmonary Tuberculosis: Case Control Study	Cost-feasible strategies must be implemented in the treatment of DM-TB in order to prevent the selection of MDR-TB.
Beth A Choby ⁴⁵	Respiratory infections: pulmonary tuberculosis	Multidrug-resistant TB requires second-line antibiotics (eg, fluoroquinolones, linezolid) in individualized regimens lasting 2 years.
Sibongile Walaza ⁴⁶	Influenza virus infection is associated with increased risk of death amongst patients hospitalized with confirmed pulmonary tuberculosis in South Africa, 2010-2011	Tuberculosis and influenza co-infection compared to tuberculosis single infection was associated with increased risk of death in individuals with symptoms ≥ 7 days.
Amol S Aiwal ⁴⁷	Isoniazid induced convulsions at therapeutic dose in an alcoholic and smoker patient	Use of isoniazid in alcoholic and smoker patient required a caution for prevention of neurological adverse reactions. Pyridoxine should always be prescribed to such patients for the prevention of such adverse reaction.
Selma Ates Guler ⁴⁸	Evaluation of pulmonary and extrapulmonary tuberculosis in immunocompetent adults: a retrospective case series analysis	Early diagnosis of EPTB is crucial for treatment, and atypical presentations of TB should be kept in mind for immunocompetent patients living in endemic areas.
Gaetano Rea ⁴⁹	The imaging spectrum of pulmonary tuberculosis: a critical appraisal	minority of patients with tuberculosis are referred erroneously to further investigation for cancer or to intervention procedures; and this is true not only for a specialized institution like we are, but also for the referral from non-specialized institutions or outpatients' clinics, as confirmed in more recent reviews
C Hongguang ⁵⁰	Impact of diabetes on clinical presentation and treatment outcome of pulmonary tuberculosis in Beijing	early bi-directional screening programmes for PTB and DM in Beijing, and to improve care of patients with concomitant DM and PTB, especially those aged >45 years.

2016		
AUTHOR	TITLE OF THE ARTICLE	FINDINGS
Gianna Peralta ⁵¹	Use of Nucleic Acid Amplification Tests in Tuberculosis Patients in California, 2010-2013	Increased use of NAATs in the diagnosis of pulmonary TB could decrease time-to-treatment initiation for the patient and transmission in the community.
B Velayutham ⁵²	Factors associated with sputum culture conversion in multidrug-resistant pulmonary tuberculosis	Low BMI is associated with poor sputum culture conversion in MDR-/RMP-resistant TB patients. Lack of culture conversion can impact successful treatment outcome
Yanely Tirado ⁵³	Mycobacterium smegmatis proteoliposome induce protection in a murine progressive pulmonary tuberculosis model	The protective effect of the administration of PLMs in mice supports its future evaluation as experimental vaccine candidate against Mtb.
Robert W Aldridge ⁵⁴	Tuberculosis in migrants moving from high-incidence to low-incidence countries: a population-based cohort study of 519 955 migrants screened before entry to England, Wales, and Northern Ireland	several evidence-based improvements to pre-entry screening of migrants, which, if implemented, will contribute to the target of tuberculosis elimination in low-incidence countries and improving the health of migrants.
Alejandro Álvaro-Meca ⁵⁵	Environmental Factors Related to Pulmonary Tuberculosis in HIV-Infected Patients in the Combined Antiretroviral Therapy (cART) Era	Seasonal variation in hospital admissions of HIV-infected patients with a PTB diagnosis; a link to short-term exposure to environmental risk factors, such as temperature and ambient NO ₂ and SO ₂

Samuel Schumacher ⁵⁶	G	Diagnostic Test Accuracy in Childhood Pulmonary Tuberculosis: A Bayesian Latent Class Analysis	The numbers of children with a positive estimated CPTB status missed by Xpert (approximately 50%) and microscopy (approximately 77%) are larger.
Yan Liang ⁵⁷		Evaluation of a whole-blood chemiluminescent immunoassay of IFN- γ , IP-10, and MCP-1 for diagnosis of active pulmonary tuberculosis and tuberculous pleurisy patients	high sensitivity and specificity of MCP-1 as novel biomarkers for the diagnosis of active pulmonary tuberculosis and tuberculous pleurisy.
P Mencarini ⁵⁸		Pulmonary tuberculosis followed by sarcoidosis in an HIV-infected patient: A case report and a simplified diagnostic flowchart for diagnosis and treatment of sarcoidosis	lymphocytosis and an elevated CD4/CD8 ratio in BAL fluid may strongly suggest sarcoidosis, it is so necessary that the diagnosis is finally proven by biopsy of affected tissues
Narendran Gopalan ⁵⁹		Current trends and intricacies in the management of HIV-associated pulmonary tuberculosis	HIV-associated pulmonary TB mandates a committed approach that encompasses both effective as well as enduring therapy originating from newer drug combinations,
Chandy Sara ⁶⁰		Clinical Correlates and Drug Resistance in HIV-Infected and -Uninfected Pulmonary Tuberculosis Patients in South India	Very high rate of isoniazid resistance found in this and other studies across India [23] [31]–[35] might preclude its use as prophylaxis for latent TB in HIV infected individuals.
Mahshid Aryanpur ⁶¹		A randomized controlled trial of smoking cessation methods in patients newly-diagnosed with pulmonary tuberculosis	The prevalence and importance of TB and the substantial influence of these preventive measures on controlling tobacco use, application of such programs is recommended
Ni Wang ⁶²		Risk of Treatment Failure in Patients with Drug-susceptible Pulmonary Tuberculosis in China	These risk factors should be monitored during treatment and interventions carried out to reduce or prevent treatment failure and optimize treatment success.
Veerakumar Arumugam Mariappan ⁶³		Smoked and smokeless tobacco use among pulmonary tuberculosis patients under RNTCP in urban Puducherry, India	Health programme needs to concentrate on PTB patients who continue to use smoked or smokeless tobacco during their treatment; necessary interventions need to be planned.
Peierdun Mijiti ⁶⁴		Prevalence of pulmonary tuberculosis in western China in 2010-11: a population-based, cross-sectional survey	Very low PDR suggests poor access to diagnosis and care.
Chidubem Ogbudebe ⁶⁵	L	Magnitude and treatment outcomes of pulmonary tuberculosis patients in a poor urban slum of Abia State, Nigeria	High proportion of PTB, mostly smear-positive TB with HIV-associated outcomes and underlines the need to ensure early TB diagnosis and improved access to HIV care for HIV co-infected patients in this setting.
Ketema Tafess ⁶⁶		Determining treatment outcome of smear-positive pulmonary tuberculosis cases in Afar Regional State, Ethiopia: A retrospective facility-based study	The implementation for the DOTS strategy in the area improved the CDR of smear-positive TB, although it is unacceptably lower than the recommended WHO target of 70%
Shunsuke Sakai ⁶⁷		CD4 T Cell-Derived IFN- γ Plays a Minimal Role in Control of Pulmonary Mycobacterium tuberculosis Infection and Must Be Actively Repressed by PD-1 to Prevent Lethal Disease	Increasing the per capita production of IFN- γ by CD4 T cells leads to the early death of the host.
Carmen R Gallardo ⁶⁸		Fixed-dose combinations of drugs versus single-drug formulations for treating pulmonary tuberculosis	Similar efficacy in relation to treatment failure, death, and sputum smear or culture conversion with the use of FDCs compared with single-drug formulations.
A O Kehinde ⁶⁹		Drug resistance profiles of new- and previously treated patients with pulmonary tuberculosis in Ibadan, Nigeria	MDR-TB in Ibadan already demonstrates resistance to second line anti-TB drugs hence management of MDR-TB patients should be strengthened to prevent emergence of extensively drug-resistant TB (XDR-TB).

Anne F Luetkemeyer ⁷⁰	Evaluation of Xpert MTB/RIF Versus AFB Smear and Culture to Identify Pulmonary Tuberculosis in Patients with Suspected Tuberculosis from Low and Higher Prevalence Settings	Xpert assay is a valuable addition to the tuberculosis armamentarium in the United States
C-C Lai ⁷¹	A pulmonary tuberculosis outbreak in a long-term care facility	LTBI treatment for elderly contacts who have positive TST or positive IGRA results should be considered if there is acceptable treatment tolerance in elderly populations with high comorbidity.
Jingjing Ma ⁷²	Predictive Role of Serum Tumor Markers in Diagnosis of Pulmonary Tuberculosis	The serum CA125 has potential good diagnostic performance for PTB.
Bektaş Kısa ⁷³	Tuberculosis screening and efficacy of prophylaxis in contacts of patients with pulmonary tuberculosis	High risk of being infected and diseased in smear positive contacts along with efficacy of prophylactic therapy among contacts not only in the childhood but also in adults, particularly in contacts aged 16-35 years
Augustine O Ebonyi ⁷⁴	Prevalence of and risk factors for pulmonary tuberculosis among newly diagnosed HIV-1 infected Nigerian children	The burden of PTB was high among newly diagnosed HIV-infected children, and late WHO HIV clinical stage and severe immunosuppression were associated with PTB-HIV co-infection
Zheyuan Wu ⁷⁵	Diabetes mellitus in patients with pulmonary tuberculosis in an aging population in Shanghai, China: Prevalence, clinical characteristics and outcomes	High prevalence, severe clinical characteristics and poor outcomes of pulmonary tuberculosis patients with diabetes mellitus highlight the necessity of early bi-directional screening and co-management of these two diseases in Shanghai, China.
Kelemework Adane ⁷⁶	Half of Pulmonary Tuberculosis Cases Were Left Undiagnosed in Prisons of the Tigray Region of Ethiopia: Implications for Tuberculosis Control	undiagnosed TB in the study prisons was more than two folds higher than in the general population of Tigray.
Stacey Singer-Leshinsky ⁷⁷	Pulmonary tuberculosis: Improving diagnosis and management	drug-sensitive and drug-resistant forms. A better understanding of TB will help clinicians identify the disease early, reduce transmission, and provide treatment to prevent complications and reduce patient morbidity and mortality.
Wooil Kim ⁷⁸	CT and microbiologic follow-up in primary multidrug-resistant pulmonary tuberculosis	pMDR-TB, two most frequent abnormal CT patterns are tree-in-bud sign and acinar nodule
Fei Huang ⁷⁹	Use of anti-tuberculosis drugs among newly diagnosed pulmonary tuberculosis inpatients in China: a retrospective study	treated with irrational regimens, and the use of SLD was more appropriately dispensed in city-level hospitals than in county-level hospitals may help to improve the rational use of anti-TB drugs.
David A Rodríguez ⁸⁰	Monitoring delays in diagnosis of pulmonary tuberculosis in eight cities in Colombia	The NTP should focus not only on the number of cases detected but also on how long it takes to detect them
Mahshid Aryanpur ⁸¹	Intention to Quit Smoking and Associated Factors in Smokers Newly Diagnosed with Pulmonary Tuberculosis	smoking cessation interventions should be started at the time of TB diagnosis.
J Romaszko ⁸²	Active Case Finding Among Homeless People as a Means of Reducing the Incidence of Pulmonary Tuberculosis in General Population	decline in TB incidence within 1 year of completion of each active case finding program
C-C Lai ⁸³	A pulmonary tuberculosis outbreak in a long-term care facility	LTBI treatment for elderly contacts who have positive TST or positive IGRA results should be considered if there is acceptable treatment

		tolerance in elderly populations with high comorbidity.
Zheyuan Wu ⁸⁴	Diabetes mellitus in patients with pulmonary tuberculosis in an aging population in Shanghai, China: Prevalence, clinical characteristics and outcomes	High prevalence, severe clinical characteristics and poor outcomes of pulmonary tuberculosis patients with diabetes mellitus highlight the necessity of early bi-directional screening and co-management of these two diseases in Shanghai, China.
Wooil Kim ⁸⁵	CT and microbiologic follow-up in primary multidrug-resistant pulmonary tuberculosis	CT score also shows decrease in extent after TB chemotherapy.

2017		
AUTHOR	TITLE OF THE ARTICLE	FINDINGS
Stephen K Field ⁸⁶	Cough Due to TB and Other Chronic Infections: CHEST Guideline and Expert Panel Report	prevalence of cough in these conditions varied widely likely because of differences in disease severity and the presence of underlying lung disease.
Lisa Kawatsu ⁸⁷	Pulmonary tuberculosis and non-recent immigrants in Japan - some issues for post-entry interventions	increase the opportunities for and simultaneously improve the take-up rate of community-based screening for non-recent immigrants.
Fentabil Getnet ⁸⁸	Delay in diagnosis of pulmonary tuberculosis in low-and middle-income settings: systematic review and meta-analysis	Delay in diagnosis is still a major challenge of tuberculosis control and prevention programs in low- and middle- income settings.
Tao Wang ⁸⁹	Left extensive infection in the forearm caused by whitlow infected by mycobacterium tuberculosis: A case report	recurrent whitlow is dangerous. Attention must be paid to recurrent whitlow. If necessary, amputation should be considered.
P Y Khan ⁹⁰	Does antiretroviral treatment increase the infectiousness of smear-positive pulmonary tuberculosis?	frequent contact of HIV-positive individuals on ART with the health services, leading to prompt diagnosis of TB, may mitigate the effects of any increase in infectiousness.
Saber Yezli ⁹¹	Undiagnosed Active Pulmonary Tuberculosis among Pilgrims during the 2015 Hajj Mass Gathering: A Prospective Cross-sectional Study	Hajj pilgrims have undiagnosed and untreated active TB which may represent an important source of transmission.
Jason P Rice ⁹²	Performance of the Xpert MTB/RIF assay for the diagnosis of pulmonary tuberculosis and rifampin resistance in a low-incidence, high-resource setting	low TB-incidence setting and under routine practice conditions the Xpert MTB/RIF assay is able to accurately detect MTBC and RIF resistance in clinical sputum specimens,
Gulrayz Ahmed ⁹³	Pulmonary Tuberculosis Versus Recurrent Chemotherapy-Induced Pneumonitis: A Clinical Dilemma	chemotherapy and TB and TB should be included in the differential diagnosis of unexplained pulmonary findings in a patient with the history of LTBI.
D E O' Connor ⁹⁴	Pulmonary tuberculosis diagnostic practices among people living with the human immunodeficiency virus in Lesotho	Treat strategy in Lesotho holds promise to prevent TB and reduce TB-related morbidity and mortality among PLHIV;
Y Jiang ⁹⁵	Comprehensive understanding of health-seeking behaviour among pulmonary tuberculosis patients in China	Patients with suspicion of PTB were more likely to visit low-level facilities than dispensaries. Repeated visits resulted in both overall delay and high risk of PTB transmission. These findings suggest that a shift in government policy for PTB is required.
Xianzhi Zheng ⁹⁶	Genetic polymorphisms of the P2X7 gene associated with susceptibility to and prognosis of pulmonary tuberculosis	genetic variations of the P2X7 gene might be involved in the risk and prognosis of human tuberculosis.

Lauren Philips ⁹⁷	The association between tuberculosis and the development of insulin resistance in adults with pulmonary tuberculosis in the Western sub-district of the Cape Metropole region, South Africa: a combined cross-sectional, cohort study	younger and more vulnerable TB population, in order to facilitate a possible reversal of IR and prevent future IR-related complications.
Pedro Pallangyo ⁹⁸	Bilateral multiple pulmonary artery aneurysms associated with cavitary pulmonary tuberculosis: a case report	presence of intractable hemoptysis among TB patients even after completion of an anti-TB course should raise an index of suspicion for PAA.
Zheng Qi ⁹⁹	Epidemiological analysis of pulmonary tuberculosis in Heilongjiang province China from 2008 to 2015	TB incidence was higher among the elderly, males and farmers, so it is important to promote the scientific knowledge about the prevention and treatment of TB.
Luisa Fernanda Imbachí Yunda ¹⁰⁰	Pulmonary tuberculosis in a Pediatric Reference Hospital in Bogotá, Colombia	Improving monitoring and follow-up activities in children with pulmonary TB, as well as promoting actions for adequate prevention and treatment is highly necessary.
X-M Wang ¹⁰¹	Risk factors for the treatment outcome of retreated pulmonary tuberculosis patients in China: an optimized prediction model	Optimized Framingham risk model built with those risk factors was proven to be effective in predicting the treatment failure, which could improve early diagnosis of treatment failure in retreated PTB patients using risk scores
Yaoju Tan ¹⁰²	Evaluation of the MTBDRplus 2.0 assay for the detection of multidrug resistance among persons with presumptive pulmonary TB in China	this assay is an accurate rapid test in terms of increased sensitivity for detecting smear-negative TB patients
Belay Tessema ¹⁰³	Vitamin D deficiency among smear positive pulmonary tuberculosis patients and their tuberculosis negative household contacts in Northwest Ethiopia: a case-control study	vitamin D supplementation can have a role in the prevention and treatment of tuberculosis in high TB burden countries like Ethiopia.
Mi Hyun Joo ¹⁰⁴	Vitamin D Deficiency among Adults with History of Pulmonary Tuberculosis in Korea Based on a Nationwide Survey	Vitamin D deficiency was highly prevalent in the TB group, and the prevalence was similar to that among the non-TB controls in Korea
Xavier A Kayigire ¹⁰⁵	Acquisition of Rifampin Resistance in Pulmonary Tuberculosis	directly measure the augmentation of RIF resistance clinically, but it would be unethical to expose patients to the risk of acquisition of resistance to RIF to validate this in the field
Khadija Said ¹⁰⁶	Diagnostic delay and associated factors among patients with pulmonary tuberculosis in Dar es Salaam, Tanzania	TB diagnostic delay was common in urban Tanzania, possibly due to passive case detection practice.
Fentabil Getnet ¹⁰⁷	Low contribution of health extension workers in identification of persons with presumptive pulmonary tuberculosis in Ethiopian Somali Region pastoralists	HEWs to improve their knowledge and skills on TB services and to influence HEWs to put emphasis on tuberculosis.
Sabrina Hermosilla ¹⁰⁸	Identifying risk factors associated with smear positivity of pulmonary tuberculosis in Kazakhstan	TB screening and treatment services with other established health services, like diabetes care, alcohol rehabilitation services, or prisons could greatly improve TB detection rates and treatment adherence and outcomes
M R Mas jedi ¹⁰⁹	The effects of smoking on treatment outcome in patients newly diagnosed with pulmonary tuberculosis	Cure rates in patients newly diagnosed with pulmonary TB were higher in non-smokers and quitters at 2 months than in smokers. Smoking cessation advice should be included in TB control programmes.
Eskild Petersen ¹¹⁰	De-isolation of patients with pulmonary tuberculosis after start of treatment - clear, unequivocal guidelines are missing	De-isolation should be based on the length of effective treatment and not on bacteriological endpoints.

Young Soon Yoon ¹¹¹	The effect of diabetes control status on treatment response in pulmonary tuberculosis: a prospective study	Uncontrolled diabetes is an independent risk factor for poor treatment response in PTB.
Christopher Sudfeld ¹¹²	R Efficacy of vitamin D3 supplementation in reducing incidence of pulmonary tuberculosis and mortality among HIV-infected Tanzanian adults initiating antiretroviral therapy: study protocol for a randomized controlled trial	larger vitamin D ₃ supplementation trials for the prevention of TB in HIV-uninfected populations should be pursued.
Sarah H Alfaraj ¹¹³	Middle East Respiratory Syndrome Coronavirus and Pulmonary Tuberculosis Coinfection: Implications for Infection Control	both patients initially had pulmonary TB as they had prolonged symptoms, and they subsequently developed MERS-CoV infection.
Getinet Shewaseged Adenager ¹¹⁴	Factors Associated with Treatment Delay among Pulmonary Tuberculosis Patients in Public and Private Health Facilities in Addis Ababa, Ethiopia	Distance more than 2.5 km from TB treatment facility and high TB-associated stigma were found to be risk factors for prolonged patient delay.
Ernest Afu Ochang ¹¹⁵	Evaluation of pulmonary tuberculosis case detection improvement with the deployment of XpertMTB/Rif in the tuberculosis control program of cross River State, Nigeria	The use of XpertMTB/Rif has significantly increased TB case detection and data in Cross River State. Scale-up of additional strategies such as culture is still required to improve TB detection in HIV patients.
Vijay G Mammen ¹¹⁶	Hospitalization for Culture-confirmed Pulmonary Tuberculosis in the Era of Childhood Pneumococcal Conjugate Vaccine Immunization	before the implementation of PCV and further declines in the PCV era could not be attributed to childhood immunization with PCV.
M G Ribeiro ¹¹⁷	Pre-Multidrug-Resistant Mycobacterium tuberculosis Infection Causing Fatal Enteric Disease in a Dog from a Family with History of Human Tuberculosis	first report of PMD M. tuberculosis infection in a dog presenting mainly enteric manifestation, confirmed as S lineage by molecular methods, owned by a family in which TB has spread in the household for generations.
Alimuddin Zumla ¹¹⁸	Learning from epidemiological, clinical, and immunological studies on Mycobacterium africanum for improving current understanding of host-pathogen interactions, and for the development and evaluation of diagnostics, host-directed therapies, and vaccines for tuberculosis	investments into molecular, epidemiological, clinical, diagnostic, and immunological studies across the African continent are required to enable further understanding of host– <i>M. africanum</i> interactions, leading to the development of more specific diagnostics, biomarkers, host-directed therapies, and vaccines for TB.
Young Soon Yoon ¹¹⁹	The effect of diabetes control status on treatment response in pulmonary tuberculosis: a prospective study	Uncontrolled diabetes is an independent risk factor for poor treatment response in PTB.

2018		
AUTHOR	TITLE OF ARTICLE	FINDINGS
Cristina Gordillo-Marroquín ¹²⁰	Magnetic Nanoparticle-Based Biosensing Assay Quantitatively Enhances Acid-Fast Bacilli Count in Paucibacillary Pulmonary Tuberculosis	NCBA technique has significant potential application in improving the diagnosis of paucibacillary TB cases. Due to its ability to concentrate AFB, NCBA could improve one grade higher, making an initial case at 1+ to become 2+ with the assay, or go from “scant” to become 1+
W Zhang ¹²¹	Characteristics and factors associated with treatment delay in pleural tuberculosis	MDR-TB, pulmonary TB and empyema were significant risk factors for treatment delay, while fever and high pleural protein were protective factors

Karuna D Sagili ¹²²	Cost-effectiveness of GeneXpert and LED-FM for diagnosis of pulmonary tuberculosis: A systematic review	cost effectiveness of LED-FM and GeneXpert in different countries with diverse context of socio-economic condition, HIV burden and geographical distribution
Aklilu Abrham Roba ¹²³	Tuberculosis patients are physically challenged and socially isolated: A mixed methods case-control study of Health-Related Quality of Life in Eastern Ethiopia	Individuals with MDR-TB reported statistically worse general health but less bodily pain than individuals with DSTB
Simone E Barry ¹²⁴	Identification of a plasma microRNA profile in untreated pulmonary tuberculosis patients that is modulated by anti-mycobacterial therapy	A 5-miRNA signature shows potential for development as a novel biomarker for TB disease with potential to predict response to treatment. The failure of all miRNA to return to baseline levels may reflect ongoing remodelling in the lung parenchyma that continues after completion of anti-TB therapy.
Nafees Ahmad ¹²⁵	Treatment correlates of successful outcomes in pulmonary multidrug-resistant tuberculosis: an individual patient data meta-analysis	capreomycin, kanamycin, ethionamide, or proton amide, and para-aminosalicylic acid—are of uncertain benefit and their use should be reassessed.
Daizo Yaguchi ¹²⁶	Sudden Death from Cardiopulmonary Arrest on Arrival of a Patient with Pulmonary Tuberculosis: A Case Diagnosed by Postmortem CT and Autopsy	massive airway hemorrhage occurs in a patient in whom tuberculosis has not been confirmed and a blood is not apparent externally on the face/body, it is difficult to immediately identify the cause of death as airway obstruction by tuberculous bleeding in the airway.
K du Preez ¹²⁷	Burden, spectrum and outcomes of children with tuberculosis diagnosed at a district-level hospital in South Africa	Children with TB managed at this district-level hospital were young, and frequently had acute symptoms and substantial comorbidities. Missed opportunities for TB prevention were identified. Linkage to care support resulted in excellent continuation of TB care; however, treatment outcomes could be further improved.
Liang Chen ¹²⁸	Cost-effectiveness Analysis of Two Therapeutic Regimens for Newly Diagnosed Smear-negative Pulmonary Tuberculosis	selecting clinical therapeutic regimens in a rational manner, which can increase the effectiveness of TB treatments while controlling the costs, for the eventual control of TB worldwide.
Padmapriyadarsini Chandrasekaran ¹²⁹	Tuberculin skin test and QuantiFERON-Gold In Tube assay for diagnosis of latent TB infection among household contacts of pulmonary TB patients in high TB burden setting	the value of using both tests in combination needs further study particularly in TB endemic countries like India, that are scaling-up TB preventive therapy under programme settings.
Xue-Juan Bai ¹³⁰	Cytokine and soluble adhesion molecule profiles and biomarkers for treatment monitoring in Re-treated smear-positive patients with pulmonary tuberculosis	After effective re-therapy, Th1 responses were elevated, but Th2 and Th17 responses were reduced in most Re-treated PTB patients.
Yanfeng Zhao ¹³¹	IP-10 and RANTES as biomarkers for pulmonary tuberculosis diagnosis and monitoring	combination of IP-10 and RANTES could be potentially used as diagnostic and monitoring biomarker in PTB management.
Shahab E Saqib ¹³²	Treatment Delay among Pulmonary Tuberculosis Patients within the Pakistan National Tuberculosis Control Program	active case detection strategy should be adopted to screen family members and the community by involving local village leaders and lady health workers. I
Chih-Hung Cheng ¹³³	Empiric anti-tuberculosis treatment is not always a right way in patients who had have poorly controlled diabetes mellitus and presented with pulmonary cavities over upper lungs in tuberculosis endemic countries	pulmonary TB with cavities always has higher contagious characteristic because of high burden of M. tuberculosis, especially in DM cases

Sho Nishiguchi ¹³⁴	Delayed isolation of smear-positive pulmonary tuberculosis patients in a Japanese acute care hospital	physicians need to have a heightened awareness of active pulmonary TB, especially among elderly patients; this may prevent spread of infection within the hospital.
Francine Mwayuma Birungi ¹³⁵	Xpert MTB/RIF assay did not improve diagnosis of pulmonary tuberculosis among child contacts in Rwanda	low sensitivity of Xpert MTB/RIF assay in contacts may also suggest likely reflection of paucibacillary disease because of early case detection.
Husain Poonawala ¹³⁶	Use of a Single Xpert MTB/RIF Assay to Determine the Duration of Airborne Isolation in Hospitalized Patients With Suspected Pulmonary Tuberculosis	A single negative Xpert result can reduce AII duration compared to the AFB smear microscopy technique under multiple theoretical scenarios.
Bhoomika Bajaj Bhalla ¹³⁷	Knowledge of private practitioners of Bangalore city in diagnosis, treatment of pulmonary tuberculosis and compliance with case notification	need for upgrading knowledge of PPs in TB diagnosis, treatment and notification.
E F Onyoh ¹³⁸	Pre-treatment loss to follow-up of pulmonary tuberculosis patients in two regions of Cameroon	PLTFU among TB patients remains a significant issue despite the availability of free anti-tuberculosis treatment in Cameroon. Diagnosed patients should be promptly and carefully linked to a treatment unit for treatment initiation.
Pia Steigler ¹³⁹	BCG vaccination drives accumulation and effector function of innate lymphoid cells in murine lungs	t BCG vaccination activates ILCs, paving the way for future research to elucidate the protective potential of ILCs against mycobacterial infection.
Yong-Jia Ji ¹⁴⁰	Risk factors affecting the mortality of HIV-infected patients with pulmonary tuberculosis in the cART era: a retrospective cohort study in China	older age, a diagnosis delay, complication with bacterial pneumonia, serious disease manifestations and the timing of cART initiation, could be challenges to improving the survival outcome in HIV/PTB co-infected populations.
Liping Yan ¹⁴¹	Short-course Regimen for Subsequent Treatment of Pulmonary Tuberculosis: A Prospective, Randomized, Controlled Multicenter Clinical Trial in China	The moxifloxacin, pasiniazid, rifabutin, ethambutol, and pyrazinamide test regimen yielded higher success and lower recurrence rates than the currently recommended isoniazid, rifampicin, and streptomycin regimen, but the rate of adverse effects was higher.
Xinji Gong ¹⁴²	Treatment adherence among sputum smear-positive pulmonary tuberculosis patients in Xinjiang, China: a prospective study	Smear-positive patients had a higher proportion of non-adherence.
Laura Jayne Bonnett ¹⁴³	Quality of reporting of outcomes in phase III studies of pulmonary tuberculosis: a systematic review	patient data could facilitate appropriate re-analysis and combination of similar outcomes wherever possible thus enabling and reducing heterogeneity in future meta-analyses.
Karun Sandeep Veesa ¹⁴⁴	Diagnostic pathways and direct medical costs incurred by new adult pulmonary tuberculosis patients prior to anti-tuberculosis treatment - Tamil Nadu, India	larger proportion of rural TB patients in the study site visited private sector practitioners prior to DOTS under RNTCP than visited public health facilities.
Eloise Williams ¹⁴⁵	Delays in presentation and diagnosis of pulmonary tuberculosis: a retrospective study of a tertiary health service in Western Melbourne, 2014	low-incidence, high-resource setting, patient delays contribute most to total delay in PTB diagnosis.
Xianhua Wang ¹⁴⁶	T Cell Profile was Altered in Pulmonary Tuberculosis Patients with Type 2 Diabetes	complex immunological interaction between T2D and TB in TB development.

Carlos Acuña-Villaorduña ¹⁴⁷	Intensity of exposure to pulmonary tuberculosis determines risk of tuberculosis infection and disease	close contacts of pulmonary TB cases, more intense exposures are associated with improved TST+/IGRA+ concordance and higher risk of progression to TB disease,
Marcin Skowroński ¹⁴⁸	Pulmonary tuberculosis in a male with silicosis	value of thorough screening for tuberculosis in silicotic patients. The clinical management of these patients may be challenging due to frequent overlapping radiological features and uncertain results of TB treatment.

2019		
AUTHOR`	TITLE OF ARTICLE	FINDINGS
J A Santos ¹⁴⁹	Host factors associated to false negative and indeterminate results in an interferon- γ release assay in patients with active tuberculosis	Inflammatory diseases and pulmonary TB were independent risk factors for false negative IGRA results in patients with active TB.
Mayu Hikone ¹⁵⁰	Clinical characteristics of elderly pulmonary tuberculosis in an acute-care general hospital in Tokyo, Japan: A 12-year retrospective study	elderly population tends to present as atypical cases lacking respiratory complaints, thereby being at a risk of misdiagnosis.
Larissa Otero ¹⁵¹	Contact evaluation and isoniazid preventive therapy among close and household contacts of tuberculosis patients in Lima, Peru: an analysis of routine data	Contact, index case and health facility-related factors associated to IPT start and completion that can guide the TB program in increasing coverage and quality of this fundamental activity.
A Lopes ¹⁵²	Prospective study comparing the conventional and same-day strategies to diagnose pulmonary tuberculosis	low TB burden country to show good concordance between the same-day sputum strategy and the conventional sputum strategy regarding smears and cultures.
Jim E Banta ¹⁵³	Pulmonary vs. extra-pulmonary tuberculosis hospitalizations in the US [1998-2014]	EPTB is becoming relatively more common and is more costly compared to pulmonary TB. Screening methods that focus on identification of ETB contrary to current practice guidelines are needed to aid ETB case finding.
Tita Husnitawati Madjid ¹⁵⁴	Correlation of Clinical Features, Laboratory Finding, and Pelvic Ultrasonography of Pulmonary Tuberculosis Women with Infertility	endometrial synechia and ultrasound imaging such as hydrosalpinx and endometritis encountered in pulmonary and extrapulmonary tuberculosis patients with infertility can be used as a basis for the diagnosis of alleged genital TB.
Dione Benjumea-Bedoya ¹⁵⁵	Risk of infection and disease progression in children exposed to tuberculosis at home, Colombia	tracing tuberculosis contacts and the application of measures such as the isoniazid preventive therapy or other regimens, especially in children <5 years of age, given that a large part of these children become infected in their homes.
Chandra Kumar Dolla ¹⁵⁶	Age-specific prevalence of TB infection among household contacts of pulmonary TB: Is it time for TB preventive therapy?	awareness of coughing etiquette and general hygiene, expanding access to TB preventive therapy to all HHCs, including older children, may be beneficial to achieve TB elimination by 2035.
James Chancellor ¹⁵⁷	Infectious pulmonary tuberculosis in a New Zealand cancer centre	public health response to TB in a cancer centre and potential preventative strategies for the future.
Guy B Marks ¹⁵⁸	Community-wide Screening for Tuberculosis in a High-Prevalence Setting	annual community-wide screening for tuberculosis in an area in which tuberculosis is endemic was more effective than standard

		passive case detection alone in reducing the prevalence of tuberculosis in the population.
Srivathsan Thiruvengadam ¹⁵⁹	Pulmonary tuberculosis: An analysis of isolation practices and clinical risk factors in a tertiary hospital	There are delays with isolation and diagnosis of subjects with a high probability of tuberculosis. Clinical and radiological probability were more significant in predicting sputum positivity than country of birth.
Fatehi E Elzein ¹⁶⁰	Isolation and deisolation of patients admitted with presumptive pulmonary tuberculosis. Can it be shortened?	A single Xpert MTB/resistance to rifampicin test detected all smear-positive patients, whereas the third smear did not significantly contribute to MTB isolation.
Inge K Holden ¹⁶¹	Predictors for Pulmonary Tuberculosis Treatment Outcome in Denmark 2009-2014	TB treatment success rate has been increasing in Denmark during the study period, reaching the WHO target for new culture confirmed PTB in the last part of the period.
Kazuhiko Morikawa ¹⁶²	A case of pulmonary tuberculosis with multiple nodules mimicking lung metastases	cavitation or the tree-in-bud sign, pulmonary TB should be considered in the differential diagnosis to prevent delays in treatment
Giri Prasad Polu ¹⁶³	Analysis of drug resistance mutations in pulmonary Mycobacterium tuberculosis isolates in the Southern coastal region of Andhra Pradesh, India	Specific mutations found by the MTBDRplus assay may help in empiric choice of an anti-TB treatment regimen. Continued surveillance through traditional culture and DST methods will remain important to individualize and customize treatment regimens for drug-resistant MTB.
Chih-Wei Wu ¹⁶⁴	Impact of nucleic acid amplification test on pulmonary tuberculosis notifications and treatments in Taiwan: a 7-year single-center cohort study	Use of NAAT(Gen-Probe) led to decrease in the rate of error notification of suspected PTB cases to the CDC, avoidance of unnecessary use of anti-TB treatments, and accelerated initiation of appropriate treatments.
K R Patel ¹⁶⁵	Risk Factors for Sputum Positive Pulmonary Tuberculosis Retreatment Cases and Factors Responsible for Treatment Outcome	new country specific strategies are required to identify and address risk factor for retreatment cases and factors responsible for poor outcome of these cases
Thuli Mthiyane ¹⁶⁶	Urine lipoarabinomannan (LAM) and antimicrobial usage in seriously-ill HIV-infected patients with sputum smear-negative pulmonary tuberculosis	urine LAM testing in sputum smear-negative severely ill HIV-infected hospitalized patients with suspected TB and advanced immunosuppression offers the potential to start ATT early and to decrease the number and duration of antibiotics used
Emily A Kendall ¹⁶⁷	Empiric treatment of pulmonary TB in the Xpert era: Correspondence of sputum culture, Xpert MTB/RIF, and clinical diagnoses	clinicians may need to adjust their threshold for empiric treatment; by continuing to treat Xpert-negative patients whose clinical presentations are most suggestive of TB, but by also more strongly pursuing possible alternative diagnoses in most Xpert-negative patients.
E Bogdanova ¹⁶⁸	Mass screening for active case finding of pulmonary tuberculosis in the Russian Federation: how to save costs	Mass CXR screening (excluding HIV-positive, migrant and homeless populations) has low yield and high cost per TB case detected. It should be stopped and resources should instead be used to strengthen the screening of targeted high-risk groups, contacts and passive case finding.
Netsanet Awoke ¹⁶⁹	Total Delay in Treatment of Tuberculosis and Associated Factors among New Pulmonary TB Patients in Selected Health Facilities of Gedeo Zone, Southern Ethiopia, 2017/18	having poor knowledge of TB & having antibiotic treatment before the current TB diagnosis were identified as independent

		associated factors for unacceptable total delay in treatment of TB
B Li ¹⁷⁰	Prevalence of pulmonary tuberculosis in Tibet Autonomous Region, China, 2014	TB prevalence and a low rate of bacteriologically positive cases among all active patients. The low proportion of known cases in the survey reflected possible under detection by the National TB Programme.
Srivathsan Thiruvengadam ¹⁷¹	Pulmonary tuberculosis: An analysis of isolation practices and clinical risk factors in a tertiary hospital	Clinical and radiological probability were more significant in predicting sputum positivity than country of birth.

2020		
Author	TITLE OF THE ARTICLE	FINDINGS
Qiao Liu ¹⁷²	Combined tests with Xpert MTB/RIF assay with bronchoalveolar lavage fluid increasing the diagnostic performance of smear-negative pulmonary tuberculosis in Eastern China	Xpert MTB/RIF in BALF had a better performance in detecting MTB of smear-negative patients than conventional tests.
Srabani Banerjee ¹⁷³	Rapid and Simultaneous Tuberculosis and Antibiotic Susceptibility Testing for the Diagnosis of Pulmonary Tuberculosis and Rifampicin Resistance: A Review of Diagnostic Accuracy	cost-effectiveness rapid and simultaneous tuberculosis and antibiotic susceptibility testing for the diagnosis of pulmonary tuberculosis and rifampicin resistance.
Jinsoo Min ¹⁷⁴	Clinical profiles of subclinical disease among pulmonary tuberculosis patients: a prospective cohort study in South Korea	Despite its milder clinical presentation and lower level of inflammatory markers, the treatment outcomes of subclinical TB were not significantly different from that of active disease.
Jain M ¹⁷⁵	Using artificial intelligence for pulmonary TB prevention, diagnosis, and treatment	adopt the new technology will determine the benefits we reap.
Jasmine M Olvany ¹⁷⁶	CLEC4E (Mincle) genetic variation associates with pulmonary tuberculosis in Guinea-Bissau (West Africa)	Mtb strain-specificity can have an impact on the significance of Mincle, because the level of TDM PAMP on the cell wall varies from strain to strain
Banurekha Velayutham ¹⁷⁷	Tuberculosis screening in household contacts of pulmonary tuberculosis patients in an urban setting	“Household contact card and register” is a useful tool for HCWs for TB screening in HHC of PTB patients. Reasons for non-adherence to contact screening needs to be addressed.
M Ziaul Islam ¹⁷⁸	Patient factors related to pre-treatment delay of pulmonary tuberculosis: A retrospective cohort study in Bangladesh	Reduction in pre-treatment delay may be achieved through changes in awareness of patients and ensuring early diagnosis and prompt treatment of PTB under DOTS programme.
Vijaiyalakshimi Praveen ¹⁷⁹	Prevalence of LTBI among household contacts of sputum positive TB patients receiving DOTS chemotherapy	High prevalence of latent TB infection among household contacts of sputum positive patients receiving DOTS and so RNTCP should include them in IPT along with under 6 children.
Yongfeng Hu ¹⁸⁰	Distinct lung microbial community states in patients with pulmonary tuberculosis	Distinct features of airway microbiota could be identified between samples from patients with and without MTB.
Zhiheng Xing ¹⁸¹	Machine Learning-Based Differentiation of Nontuberculous Mycobacteria Lung Disease and Pulmonary Tuberculosis Using CT Images	The built machine learning model makes early and quick diagnosis of NTM-LD possible, and it could further facilitate disease management and treatment planning and improve patients' life quality.
Patrick D M C Katoto ¹⁸²	A miner with No left lung: Extensive pulmonary destruction in delayed effective Multi-Drug-Resistant Tuberculosis treatment	PDMCK and PM wrote the original draft of the manuscript and obtained the images

Ayush Lohiya ¹⁸³	Prevalence and patterns of drug-resistant pulmonary tuberculosis in India-A systematic review and meta-analysis	Implementation of universal drug susceptibility testing in all districts and continuous DR-TB surveillance is crucial to ensure programmatic success.
Mustafa Hamidullah Türkkan ¹⁸⁴	Determination of related factors about diagnostic and treatment delays in patients with smear-positive pulmonary tuberculosis in Turkey	Determined that there was an improvement in the patient delay; however, the improvement in the diagnosis delay was still not acceptable as an ideal duration.
Qinglin Cheng ¹⁸⁵	Nomogram for individualized prediction of incident multidrug-resistant tuberculosis after completing pulmonary tuberculosis treatment	High mortality and medical cost of MDR-TB cases, individuals with CPTBT are in urgent need of the early identifying of at-risk individuals and early intervening before the onset of MDR-TB.
Benjamin Patterson ¹⁸⁶	Bioaerosol sampling of patients with suspected pulmonary tuberculosis: a study protocol	High rates of successful bioaerosol Mtb detection across groups of TB clinic attendees would support the future development of bioaerosol sampling methods to inform TB control strategies.
Christopher R Sudfeld ¹⁸⁷	Efficacy of vitamin D3 supplementation for the prevention of pulmonary tuberculosis and mortality in HIV: a randomised, double-blind, placebo-controlled trial	No overall effect of vitamin D3 supplementation on pulmonary TB or death.
Sanchita Das ¹⁸⁸	Performance and Utilization of a Laboratory-Developed Nucleic Acid Amplification Test (NAAT) for the Diagnosis of Pulmonary and Extrapulmonary Tuberculosis in a Low-Prevalence Area	TBPCR performance was optimum but significantly underused. Guidelines are proposed for mandated use of TBPCR that capture patients with clinically suspected PTB.
Iader Rodríguez-Márquez ¹⁸⁹	Delays in diagnosing pulmonary tuberculosis within a context of medium incidence, Medellín, Colombia, 2017: operational research	Data from epidemiological surveillance allowed locating risk groups with delays in TB diagnosis which requires the prioritisation of the local TB control program to promote early detection and prevention of adverse outcomes.
Sarang Deo ¹⁹⁰	Predicting the impact of patient and private provider behavior on diagnostic delay for pulmonary tuberculosis patients in India: A simulation modeling study	Encouraging private providers to order definitive TB diagnostic tests earlier during patient consultation may have substantial impact on reducing diagnostic delay in these urban Indian settings
A M Sinyavskaya ¹⁹¹	Location of Pulmonary Mycobacteria Tuberculosis and Effectiveness of Various Dexamethasone Compositions in Treatment of Mice with BCG-Induced Granulomatosis	The antimycobacterial effect of dexamethasone is an important factor preventing the destructive processes in granulomas and organs via a decrease in the prodestructive potential of lysosomes in macrophages realized after their migration from granulomas.
James H England ¹⁹²	Use of airborne infection isolation in potential cases of pulmonary tuberculosis	The low number of pulmonary TB cases indicated AII overuse, especially in PLWH, and more judicious use of AII is warranted. High-risk groups, including those born outside the United States and those with prior positive TB testing, should be considered for AII in the appropriate clinical setting.
Tahziba Hussain ¹⁹³	Prevalence, risk factors and health seeking behaviour of pulmonary tuberculosis in four tribal dominated districts of Odisha: Comparison with studies in other regions of India	TB control programs need further strengthening in the tribal dominated regions. This study is the first of its kind in this State.
Ye Ji ¹⁹⁴	Screening for pulmonary tuberculosis in high-risk groups of diabetic patients	Screening for TB using regular chest X-ray examinations is feasible but not economical in areas with a low incidence of TB. It is

		recommended that diabetic patients with a low BMI, high FBG, and low triglycerides are selected as subjects for TB screening.
Samah Sidahmed M S Elsafi ¹⁹⁵	Vitamin D level and its association with the severity of pulmonary tuberculosis in patients attended to Kosti Teaching Hospital, Sudan	Vitamin D supplementation can have a role in the prevention and treatment of tuberculosis.
M Ben Jmaa ¹⁹⁶	The ongoing challenge of Pulmonary Tuberculosis in Southern Tunisia: A review of a 22-year period	Decline in the global PTB incidence reported worldwide and in the neighboring countries, our study revealed no significant change in the PTB rates from 1995 to 2016.
Mayu Hikone ¹⁹⁷	Clinical characteristics of elderly pulmonary tuberculosis in an acute-care general hospital in Tokyo, Japan: A 12-year retrospective study	Elderly population tends to present as atypical cases lacking respiratory complaints, thereby being at a risk of misdiagnosis.
Reshma Ayiraveetil ¹⁹⁸	Household food insecurity among patients with pulmonary tuberculosis and its associated factors in South India: a cross-sectional analysis	A high level of food insecurity was seen in households with TB cases. Additional food or cash assistance for this subgroup might improve food insecurity and thereby nutritional status.
Zheyuan Wu ¹⁹⁹	Effect of the Xpert MTB/RIF on the detection of pulmonary tuberculosis cases and rifampicin resistance in Shanghai, China	Integrating Xpert with smear, culture and culture-based DST in a routine setting significantly increased bacteriological confirmation, DST coverage and RR-TB detection with a dramatic reduction in the time to RR-TB diagnosis
Qin Yang ²⁰⁰	Delays in care seeking, diagnosis and treatment of patients with pulmonary tuberculosis in Hubei, China	Improvements in the capability and accessibility of health care services are imperative to reduce delays and expedite TB diagnosis and treatment.
Abdullellah M Almohaya ²⁰¹	Delayed inpatient diagnosis and isolation of active pulmonary tuberculosis patients, a large tertiary care academic hospital experience in Riyadh, Saudi Arabia. What are we missing?	A careful review of the initial chest x-ray might help to overcome missing cases of PTB.
A Lopes ²⁰²	Prospective study comparing the conventional and same-day strategies to diagnose pulmonary tuberculosis	The same-day strategy seems to be a good alternative to the conventional strategy.
Jim E Banta ²⁰³	Pulmonary vs. extra-pulmonary tuberculosis hospitalizations in the US [1998-2014]	Screening methods that focus on identification of EPTB contrary to current practice guidelines are needed to aid ETB case finding.

2021		
AUTHOR	TITLE OF THE ARTICLE	FINDINGS
Theophilus Afum ²⁰⁴	Diagnosis of tuberculosis among COVID-19 suspected cases in Ghana	latent TB infection progressed to active TB with COVID-19 infection or a relapse of a previous TB infection upon COVID-19 infection and the impact of co-infection on treatment outcome
Pawan Kumar ²⁰⁵	A Perspective on the Success and Failure of BCG	Differential efficacy of BCG against childhood and adult TB is explained by taking into account the heterogeneity of TB, mechanisms of TB pathogenesis, and the effect of EMb on anti- <i>Mtb</i> immunity.
Janet Bamidele ²⁰⁶	Tuberculosis/HIV Prevalence and Treatment Success among Children Receiving Care in Two Tertiary Health Facilities within Ogun State, Nigeria	The high HIV rate among children with TB is of concern and strategies should be put in place to prevent HIV transmission to children.

Jian Du ²⁰⁷	Distinguishing Relapse from Reinfection with Whole-Genome Sequencing in Recurrent Pulmonary TB: A Retrospective Cohort Study in Beijing	Levofloxacin resistance is the most frequently observed drug resistance among second episodes
Wan-Mei Song ²⁰⁸	Association between body mass index and newly diagnosed drug-resistant pulmonary tuberculosis in Shandong, China from 2004 to 2019	Study of the interaction between host metabolic activity and infection of DR-TB may contribute more to novel treatment options or preventive measures, and accelerate the implementation of the STOP TB strategy.
J Peter Cegielski ²⁰⁹	Aminoglycosides and Capreomycin in the Treatment of Multidrug-resistant Tuberculosis: Individual Patient Data Meta-analysis of 12 030 Patients From 25 Countries, 2009-2016	the worst aminoglycoside (kanamycin) is the most widely used, and the weakest agent, capreomycin, is often reserved for patients with the worst resistance patterns
Peng Lu ²¹⁰	High rate of transmission in a pulmonary tuberculosis outbreak in a junior high school in China, 2020	IGRA tests on those students with PPD ≥ 5 mm and < 15 mm if there are three or more active tuberculosis patients with an epidemiological link in one class.
Quanquan Song ²¹¹	Identification of immune-related genes and susceptible population of pulmonary tuberculosis by constructing TF-miRNA-mRNA regulatory network	Immuno-heterogeneity exists among TB patients and NFATC1-(miR145)-STAT1 regulatory pathway might be associated with tuberculosis infection, which may be valuable targets for prevention and treatment of tuberculosis.
Tumaini J Nagu ²¹²	Clinical and Imaging Features of Adults with Recurrent Pulmonary Tuberculosis - A Prospective Case-Controlled Study	developing a more holistic approach (Zumla et al., 2020; Harries et al., 2021) for managing PTB patients including host-directed therapies to prevent relapse, recurrent TB and long term sequelae
Yuanyuan Wang ²¹³	Clinical characteristics and chest computed tomography findings related to the infectivity of pulmonary tuberculosis	AFB-positive PTB patients had more frequent performances symptoms of cough, fever, hyperhidrosis and fatigue
V Ngah ²¹⁴	Respiratory presentations to acute services at a tertiary hospital in South Africa	COPD and PTLTD predominated among CRDs, while infections and cancers were common.
Lisa Nkatha Micheni ²¹⁵	Rifampicin and isoniazid drug resistance among patients diagnosed with pulmonary tuberculosis in southwestern Uganda	Drug resistance screening for all TB patients, as well as the strengthening of drug resistance control measures.
Wenpei Shi ²¹⁶	Alterations of gut microbiota in patients with active pulmonary tuberculosis in China: a pilot study	Significant alterations in gut microbiota composition and metabolic pathways of TB patients were observed. Antibiotic exposure could alter the gut microbiota of TB patients, which should be considered in anti-TB treatment.
Zisimangelos Solomos ²¹⁷	Active case finding of pulmonary TB in a European refugee camp: lessons learnt from Oinofyta hosting site in Greece	Exercises should pave the way for adopting a comprehensive, context-specific and evidence-based national strategy on TB in migrants.
Annushkha Sinnathamby ²¹⁸	Low uptake of isoniazid window prophylaxis in patients exposed to a health-care worker with pulmonary tuberculosis in a paediatric ward	Low uptake of isoniazid WP in high-risk children exposed to pulmonary tuberculosis
Fatma Kalaycı Yüksek ²¹⁹	Association between active pulmonary tuberculosis and circulating microRNAs: a preliminary study from Turkey	U6 and miR-93 can be used in combination as references for normalization of serum microRNA expression data.
Takamasa Kan ²²⁰	Comparison of chest computed tomography features between pulmonary tuberculosis patients with culture-positive and culture-negative sputum for non-mycobacteria: A retrospective observational study	Positive culture for non-mycobacteria were significantly older and had lower levels of physical activity and albumin, higher levels of C-reactive protein, and a greater number of respiratory failures

Junfeng Han ²²¹	Transbronchial tuberculosis cavity plugging therapy for pulmonary tuberculosis	TTCP for the treatment of cavity tuberculosis showed good outcomes, with limited side effects and minimal complications.
Kathrin Zürcher ²²²	Mortality from drug-resistant tuberculosis in high-burden countries comparing routine drug susceptibility testing with whole-genome sequencing: a multicentre cohort study	WGS can provide accurate and detailed drug resistance information required to improve the outcomes of drug-resistant tuberculosis in high-burden settings.
Nicole J Boardman ²²³	Pulmonary Tuberculosis Disease Among Immigrant Detainees: Rapid Disease Detection, High Prevalence of Asymptomatic Disease, and Implications for Tuberculosis Prevention	Asymptomatic PTB disease is a significant clinical entity among immigrant detainees and placement in a congregate setting calls for aggressive screening to prevent transmission
Bryan Vonasek ²²⁴	Screening tests for active pulmonary tuberculosis in children	Screening strategies need to be pragmatic to address the persistent gaps in prevention and case detection that exist in resource-limited settings.
Edhyana Sahiratmadja ²²⁵	Acetylase Status Among Newly Diagnosed and Recurrent Tuberculosis Patients from Kupang, Eastern Part of Indonesia	The acetylase status might be relevant as the rationalization in recurrent TB patients to be checked prior to INH therapy to adjust treatment dose to prevent further antimicrobial resistance for successful TB treatment.
Marco Notarfrancesco ²²⁶	'Out of sight, out of mind?' A follow-up on HIV-infected patients with drug-resistant pulmonary tuberculosis in Uganda: A case series	New WHO short regimen without injectables which is now being used in Uganda may lead to a smaller number of lost to follow-up cases by reducing the length of treatment and the number of adverse events
Michel de Jesús Aceves-Sánchez ²²⁷	Vaccination with BCGΔBCG1419c protects against pulmonary and extrapulmonary TB and is safer than BCG	In guinea pigs, BCGΔBCG1419c improved control of <i>M. tuberculosis</i> replication as well as reduced pulmonary and extrapulmonary TB pathology more than its parental BCG strain.
Lovel Corpuz Galamay ²²⁸	Smear-positive pulmonary tuberculosis patients with previously abnormal chest radiographs: missed opportunities for early diagnosis	Increase vigilance and improve our healthcare system such that CXR findings are noted and acted upon in a timely and appropriate manner.
Chitra Veluthat ²²⁹	Case of melioidosis misdiagnosed as pulmonary tuberculosis	On follow-up at 3 months, he had complete symptomatic relief with chest radiograph showing resolution of alveolar opacities with persistent thin-walled cavities in the left upper and midzone
Shaila Kabir ²³⁰	Diagnostic challenges and Gene-Xpert utility in detecting Mycobacterium tuberculosis among suspected cases of Pulmonary tuberculosis	Gene-Xpert MTB/RIF assay can quickly identify possible multidrug-resistant TB (MDR TB), it allows TB patients to start effective treatment much sooner than if they had to wait for results from other types of drug susceptibility testing.
Leah G Jarsberg ²³¹	Nutritional markers and proteome in patients undergoing treatment for pulmonary tuberculosis differ by geographic region	Measures of nutritional status should be included in TB clinical trials, and interventions for enhancing nutrition, in particular macronutrient supplementation and food
Simona Ștefănescu ²³²	Evaluation of prognostic significance of hematological profiles after the intensive phase treatment in pulmonary tuberculosis patients from Romania	Changes at day 60 of antitubercular therapy in some of the haematological parameters and ratios that reverted as a response to TB treatment.
Xiaolu Sun ²³³	Diagnostic value of microRNA-125b in peripheral blood mononuclear cells for pulmonary tuberculosis	miR-125b served an important role in the occurrence and development of TB by decreasing the levels of IL-6, TNF- α , NF- κ B and IFN- γ via the inhibition of RAF1.
Shi-Jin Li ²³⁴	Population aging and trends of pulmonary tuberculosis incidence in the elderly	Development of rapid and accurate diagnostic methods for clinically diagnosed PTB is vitally important for further TB control.

Kalthoum Yousif ²³⁵	The effect of an educational intervention on awareness of various aspects of pulmonary tuberculosis in patients with the disease	Educational role of the health care providers in the management, control and prevention of TB
Graham Bothamley ²³⁶	Male Sex Bias in Immune Biomarkers for Tuberculosis	Male predominance in the latter might be due to immune dysregulation, with poorer IFN γ responses in those who go on to develop active disease.
Sakarn Charoensakulchai ²³⁷	Six-year trend and risk factors of unsuccessful pulmonary tuberculosis treatment outcomes in Thai Community Hospital	Incidence and risk factors of unsuccessful pulmonary TB treatment outcomes in Thai community hospital setting.
Jill K Gersh ²³⁸	Pulmonary tuberculosis screening in anti-retroviral treated adults living with HIV in Kenya	IPT-uptake and reported adherence was high, understanding patients' reasons for not initiating TB preventive therapy and interventions to increase acceptance and completion of preventive regimens will be important to improve outcomes across the TB prevention continuum.
Sahoko Kamejima ²³⁹	Hypercalcemia caused by comorbid parathyroid adenoma and pulmonary tuberculosis	. The treatment of pulmonary TB before a parathyroidectomy should prevent the spread of TB.
Jayalakshmy Ramakrishnan ²⁴⁰	Risk factors for death during treatment in pulmonary tuberculosis patients in South India: A cohort study	deaths during TB treatment was not very high, early recognition of risk groups and targeted interventions are required to achieve zero TB deaths.
Vyshnavi Vasantham ²⁴¹	Codetection of pulmonary tuberculosis and toxoplasmosis in a pediatric bronchoalveolar lavage specimen: A cytologist's assistance to clinical management	A diligent screening of cytosmears for a possible coinfection in a TB-positive sample is essential for the cytopathologists to detect coexisting toxoplasmosis, which is a rare but treatable disease.
R Singla ²⁴²	Risk factors for early mortality in patients with pulmonary tuberculosis admitted to the emergency room	parameters, easily measurable in peripheral health institutions of any setting would allow early referral of such patients to specialised centres to reduce mortality, improve success rates, minimise the need for pulmonary rehabilitation and prevent post-treatment sequelae.
Lovel Corpuz Galamay ²⁴³	Smear-positive pulmonary tuberculosis patients with previously abnormal chest radiographs: missed opportunities for early diagnosis	PTB patients may be asymptomatic or have chronic indolent disease and remain undiagnosed for years.
Sahoko Kamejima ²⁴⁴	Hypercalcemia caused by comorbid parathyroid adenoma and pulmonary tuberculosis	PHPT and TB as a cause of hypercalcemia.
Jayalakshmy Ramakrishnan ²⁴⁵	Risk factors for death during treatment in pulmonary tuberculosis patients in South India: A cohort study	Though deaths during TB treatment was not very high, early recognition of risk groups and targeted interventions are required to achieve zero TB deaths.
Vyshnavi Vasantham ²⁴⁶	Codetection of pulmonary tuberculosis and toxoplasmosis in a pediatric bronchoalveolar lavage specimen: A cytologist's assistance to clinical management	A diligent screening of cytosmears for a possible coinfection in a TB-positive sample is essential for the cytopathologists to detect coexisting toxoplasmosis, which is a rare but treatable disease.
R Singla ²⁴⁷	Risk factors for early mortality in patients with pulmonary tuberculosis admitted to the emergency room	higher level to reduce mortality, improve success rates, minimise the need for pulmonary rehabilitation and prevent post-treatment sequelae.

2022		
Authors	Title of the work	Findings
Devan Jaganath ²⁴⁸	Tuberculosis in Children	the clinical approach to diagnosing and treating latent TB infection and pulmonary and extrapulmonary TB disease in children. Also discussed are emerging diagnostics and therapeutic regimens that aim to improve paediatric TB detection and outcomes.
Leonardo Martinez ²⁴⁹	Infant BCG vaccination and risk of pulmonary and extrapulmonary tuberculosis throughout the life course: a systematic review and individual participant data meta-analysis	that BCG vaccination at birth is effective at preventing tuberculosis in young children but is ineffective in adolescents and adults. Immunoprotecting therefore needs to be boosted in older populations.
Guoqin Zhang ²⁵⁰	Influence of COVID-19 for delaying the diagnosis and treatment of pulmonary tuberculosis-Tianjin, China	The COVID-19 response reduced the number of people who sought and received diagnosis, treatment, and care for TB in Tianjin, China. Integrative programs to ensure access and continuity of TB services should be considered and dual testing for SARS-CoV-2 and M. tuberculosis may facilitate finding cases.
Qiao-Ling Ruang ²⁵¹	Recurrent pulmonary tuberculosis after treatment success: a population-based retrospective study in China	Recurrence remains a problem for successfully treated patients with sputum-smear-positive pulmonary TB, especially those with independent risk factors. Further analysis of prolonged treatment is required.
Jeongha Mok ²⁵²	9 months of delamanid, linezolid, levofloxacin, and pyrazinamide versus conventional therapy for treatment of fluoroquinolone-sensitive multidrug-resistant tuberculosis (MDR-END): a multicentre, randomised, open-label phase 2/3 non-inferiority trial in South Korea	9-month treatment with oral delamanid, linezolid, levofloxacin, and pyrazinamide could represent a new treatment option for participants with fluoroquinolone-sensitive multidrug-resistant tuberculosis.
Feng JY, ²⁵³	Nucleic acid amplification tests reduce delayed diagnosis and misdiagnosis of pulmonary tuberculosis	NAA tests help prevent death before treatment initiation. Frontline NAA tests perform better than add-on NAA and no NAA in avoiding treatment delay in all cases, and misdiagnosis of PTB in smear-positive cases.
An H, ²⁵⁴	Endobronchial Valve Treatment of Tuberculous Cavities in Patients with Multidrug-Resistant Pulmonary Tuberculosis: A Randomized Clinical Study	EBV installation is effective and safe for the treatment of cavities in MDR-PTB patients. The efficacy of EBV treatment may not be affected by age, disease course, or the location of the lung lobe in the cavity.
Bargaje M, ²⁵⁵	Plasma drug concentrations of 4-drug fixed-dose combination regimen and its efficacy for treatment of pulmonary tuberculosis under National Tuberculosis Elimination Programme: A prospective pilot study	All the pulmonary TB patients administering 4-FDC daily regimen under programmatic settings were cured despite the suboptimal levels of isoniazid and rifampicin. All the patients achieved pyrazinamide plasma levels and probably this could be the reason behind favourable outcome
Hulya S. ²⁵⁶	Clinical effects of TB sequelae in patients with COPD	In patients with COPD, TB sequelae are very common and increase the COPD clinic burden. The presence of TB sequelae causes an increase in the use of healthcare services by patients with COPD and, therefore, an increase in the burden of COPD

Tomeny EM ²⁵⁷	TB morbidity estimates overlook the contribution of post-TB disability: evidence from urban Malawi	TB-related DALYs are greatly underestimated by overlooking post-TB disability. The total disability burden of TB is likely undervalued by both GBD estimates and economic evaluations of interventions, particularly those aimed at early diagnosis and prevention.
Sobral L ²⁵⁸	Determinants of losses in the tuberculosis infection cascade of care among children and adolescent contacts of pulmonary tuberculosis cases: A Brazilian multi-centre longitudinal study	Losses in the TBI cascade were the highest among children <5 years, which was the group at highest risk for TB among the four age groups. The findings highlight the need to improve screening, initiation, and completion of TPT of young children
Wang S, ²⁵⁹	Characteristic gut microbiota and metabolic changes in patients with pulmonary tuberculosis	indicate that the gut microbiota and faecal metabolomic profiles can be used as potential preventive and therapeutic targets
Ren Y ²⁶⁰	Trends of Rifampicin Resistance in Patients with Pulmonary Tuberculosis: A Longitudinal Analysis Based on Drug Resistance Screening in Eastern China Between 2015 and 2019	The overall rate of rifampin resistance in patients with tuberculosis in Zhejiang Province in the past five years has shown a decreasing trend, but the rate of resistance to ofloxacin was high.
Ma L ²⁶¹	Analysis on the Risk Factors of Malnutrition in Type 2 Diabetes Mellitus Patients with Pulmonary Tuberculosis	Drinking, divorced, weight <45kg, BMI <18.5kg/m ² , NRS score ≥3, Hb <106g/L, Alb <29.00g/L, PA <48.00μmol/L, serum transferrin <1.37mmol/L, FEV1 ≥67.90% and RV <2.89% may be independent risk factors for PTB-T2DM patients.
Shukla A ²⁶²	Case-control study of vitamin D status and adult multidrug-resistant pulmonary TB	Vitamin D status was independently associated with MDR-TB case status. Research should evaluate the effectiveness of vitamin D supplementation in prevention and adjunctive treatment of MDR-TB
Xu F, ²⁶³	B and T lymphocyte attenuator as a C-reactive protein and IgA associated auxiliary diagnostic marker for pulmonary tuberculosis: a case-control study	BTLA is highly expressed in peripheral blood and specific cell types of patients with PTB and is correlated with specific clinical indicators, which may be an important molecular marker for the auxiliary diagnosis of PTB.
An HR ²⁶⁴	The relationship between absolute counts of lymphocyte subsets and clinical features in patients with pulmonary tuberculosis	In most patients with tuberculosis, immune function is impaired. The absolute counts of peripheral blood lymphocyte subsets are closely related to the aetiological results and lesion severity in patients with PTB; this could be used as evidence for immune intervention and monitoring curative effects.
Ma L ²⁶⁵	Current situation on drug resistance and influencing factors of multidrug-resistance in newly treated pulmonary tuberculosis patients in Gansu province	Compared with the Chinese national baseline level of TB resistance, the total drug resistance rate of new TB patients in Gansu province was low, but the multidrug-resistance rate was high
Li J, Parrott S ²⁶⁶	Cost-utility of cytosine for smoking cessation over and above behavioural support in people with newly diagnosed pulmonary tuberculosis: an economic evaluation of a multicentre randomised controlled trial	Cytosine <i>plus</i> BS for smoking cessation among patients with TB was not cost-effective compared with placebo <i>plus</i> BS.
Bintinee Bilmumad ²⁶⁷	Pulmonary tuberculosis among prisoners in Southern Thailand: prevalence and its association with imprisonment status	The treatment success rate among the PTB prisoners in our study met the national target goals, as suggested in the global recommendations.

Medha Bargaje ²⁶⁸	Plasma drug concentrations of 4-drug fixed-dose combination regimen and its efficacy for treatment of pulmonary tuberculosis under National Tuberculosis Elimination Programme: A prospective pilot study	pyrazinamide plasma levels and probably this could be the reason behind favourable outcome.
Qiao-Ling Ruan ²⁶⁹	Recurrent pulmonary tuberculosis after treatment success: a population-based retrospective study in China	Recurrence remains a problem for successfully treated patients with sputum-smear-positive pulmonary TB, especially those with independent risk factors.
Jie Ma ²⁷⁰	Undiagnosed pleural effusion treated with traditional Chinese medicine: A case report	undiagnosed pleural effusion had been successfully treated with a TCM formula for a year and a half and symptoms greatly improved and the pleural effusion showed significant regression.
Ju Sang Kim ²⁷¹	Early Bactericidal Activity of Delpazolid (LCB01-0371) in Patients with Pulmonary Tuberculosis	delpazolid causes less mitochondrial toxicity and neither substrate or inducer of transporters or CYP enzymes compared with LZD and sutezolid. This decreases the likelihood of drug-drug interactions and decreases the likelihood of the serotonin syndrome observed with other oxazolidinones.
Paul Torpiano ²⁷²	Mesangiocapillary glomerulonephritis complicating pulmonary tuberculosis	Glomerulonephritis should be strongly considered in patients being treated for active tuberculosis who develop renal complications that appear unrelated to the primary focus of tuberculous infection.
Shuting Wang ²⁷³	Characteristic gut microbiota and metabolic changes in patients with pulmonary tuberculosis	faecal microbiome and metabolome can discriminate patients with PTB from healthy individuals

2023		
AUTHOR	TITLE OF THE ARTICLE	FINDINGS
Palak Mahajan ²⁷⁴	Test and Treat Model for Tuberculosis Preventive Treatment among Household Contacts of Pulmonary Tuberculosis Patients in Selected Districts of Maharashtra: A Mixed-Methods Study on Care Cascade, Timeliness, and Early Implementation Challenges	All eligible HHCs were started on TPT, there is a need for systematic follow-up and real-time monitoring/supervision of cascade care delivery followed by prompt corrective actions/interventions to achieve improved outcome at each step of the care cascade.
Guoli Li ²⁷⁵	Long non-coding RNA expression in PBMCs of patients with active pulmonary tuberculosis	Discoveries provide insights into the etiology of immunoregulatory dysfunction in tuberculosis and could reveal potential molecular pathways and therapeutic targets.
Pierre Goussard ²⁷⁶	Interventional bronchoscopy in paediatric pulmonary tuberculosis	Interventional endoscopic procedures are required in the management of complicated TB to prevent parenchymal damage; most of these procedures have limited complications and may avoid the need for open thoracotomy.
Feng Deng ²⁷⁷	Pulmonary tuberculosis biomarker miR-215-5p inhibits autophagosome-lysosome fusion in macrophages	miRNA-215-5p could inhibit the maturation of autophagy by preventing the fusion of autophagosomes with lysosomes in macrophages.
Adam Thorburn Gray ²⁷⁸	Treatment for radiographically active, sputum culture-negative pulmonary tuberculosis: A systematic review and meta-analysis	Multi-drug regimens were associated with significantly reduced risk of progression to TB disease for individuals with radiographically apparent

Juan Yang ²⁷⁹	Accuracy of Nanopore Sequencing as a Diagnostic Assay for Pulmonary Tuberculosis versus Smear, Culture and Xpert MTB/RIF: A Comparison	Sputum, BALF, and pleural fluid) provides excellent PTB diagnostic accuracy is greater than that provided with AFB smear, MTB culture, and Xpert MTB/RIF assays
Jayashree Kalva ²⁸⁰	Predictors of weight loss during the intensive phase of tuberculosis treatment in patients with drug-susceptible pulmonary tuberculosis in South India	Alcohol use emerged as the major predictor for weight loss during intensive phase.
Anurag Bhargava ²⁸¹	Nutritional supplementation to prevent tuberculosis incidence in household contacts of patients with pulmonary tuberculosis in India (RATIONS): a field-based, open-label, cluster-randomised, controlled trial	Biosocial intervention can accelerate reduction in tuberculosis incidence in countries or communities with a tuberculosis
Yating Zhang ²⁸²	Factors associated with diagnostic delay of pulmonary tuberculosis among children and adolescents in Quzhou, China: results from the surveillance data 2011-2021	Schools in rural areas should pay special attention to increasing student awareness of the symptoms of tuberculosis and provide health education on tuberculosis prevention and control to students and staff.
Edinson Dante Meregildo -Rodriguez ²⁸³	Droplet digital PCR vs. quantitative real time-PCR for diagnosis of pulmonary and extrapulmonary tuberculosis: systematic review and meta-analysis	DD -PCR is likely the best diagnostic technic for tuberculosis diagnosis, especially for extrapulmonary tuberculosis. More studies are still needed yet.
Kadar Moideen ²⁸⁴	Plasma Vitamin D levels in correlation with circulatory proteins could be a potential biomarker tool for pulmonary tuberculosis and treatment monitoring	baseline measurement of Vitamin D levels was significantly decreased in the PTB group when compared with IFN γ + and IFN γ - groups showing the importance of Vitamin D as a preventive factor against the TB disease progression
Mingwu Zhang ²⁸⁵	Whole-Genome Sequencing to Predict Mycobacterium tuberculosis Drug Resistance: A Retrospective Observational Study in Eastern China	genetic variants recommended for predicting resistance to other anti-TB drugs require further optimization and improvement.
Umberto Pelosi ²⁸⁶	Pulmonary Tuberculosis in Children: A Forgotten Disease?	drugs used in the treatment of susceptible and resistant TB are the same as those used in adults but doses and combinations are different in the paediatric age.
Takashi Okuma ²⁸⁷	Pulmonary miliary sarcoidosis masquerading the reactivation of tuberculosis 30 years later	miliary sarcoidosis is uncommon, it should be promptly differentiated from miliary tuberculosis associated with high mortality
Meder Kadyrov ²⁸⁸	Contact Tracing and Tuberculosis Preventive Therapy for Household Child Contacts of Pulmonary Tuberculosis Patients in the Kyrgyz Republic: How Well Are We Doing?	healthcare providers should diligently request and record details of child household contacts, adhere to contact tracing timelines and counsel caregivers regarding TPT.
Tadesse Jember ²⁸⁹	Assessment of Family Tuberculosis Contact Screening Practice and its Associated Factors Among Pulmonary Tuberculosis Positive Patients in South Wollo Zone, Amhara Region, Ethiopia	prevalence of family contact screening was low as compared to national and global targets
Saber Yezli ²⁹⁰	Undiagnosed and missed active pulmonary tuberculosis during mass gatherings: a prospective cross-sectional study from the Hajj pilgrimage	undiagnosed active TB among non-hospitalised pilgrims and missed active TB cases among inpatients, including a potentially MDR-TB case.
Letebrhan Weldemhret ²⁹¹	Burden of pulmonary tuberculosis and challenges related to tuberculosis detection in Ethiopia	rapid, accurate and affordable methods for TB management should be considered by policy makers to improve TB detection rate and reduction of TB related deaths in line with the stop TB strategy by 2030 in Ethiopia.

Hajar Charii ²⁹²	Anaphylactic Shock After First-Line Treatment with Antituberculosis Drugs in a Patient with Lupus	Anaphylactic reactions to first-line ATD can occur and may lead to treatment discontinuation and challenges in finding effective alternative treatment option
Jian Zhou ²⁹³	Epidemiological characteristics of pulmonary tuberculosis among students in Guizhou, China: a retrospective study from 2010 to 2020	BCG vaccination and promotion for active screening should be the priority of futural PTB prevention and control. Tuberculosis laboratory capacity should be improved.
Anders Solitander Bohlbro ²⁹	BCG is protective against death in male but not female patients with pulmonary tuberculosis in Guinea-Bissau	BCG protects against death in male but not female patients with TB. More research is needed to determine the mechanisms underpinning these sex differences and whether they are generalizable beyond this setting.
Kenneth S Gunasekera ²⁹⁵	Development of treatment-decision algorithms for children evaluated for pulmonary tuberculosis: an individual participant data meta-analysis	empower health workers in primary health-care settings with high tuberculosis incidence and limited resources to initiate tuberculosis treatment in children to improve access to care and reduce tuberculosis-related mortality.
Jennie Chen ²⁹⁶	Epidemiology of Culture-Negative Pulmonary Tuberculosis-Alameda County, 2010-2019	incidence of culture-negative PTB disproportionately declined compared with culture-positive TB and raises concern for gaps in detection.
Bianca Sossen ²⁹⁷	The natural history of untreated pulmonary tuberculosis in adults: a systematic review and meta-analysis	risk of progression in relation to radiological findings, could improve estimates of the global disease burden and inform the development of clinical guidelines and policies for treatment and prevention.
Sanjeev Sinha ²⁹⁸	Prevention of relapse in drug sensitive pulmonary tuberculosis patients with and without vitamin D3 supplementation: A double blinded randomized control clinical trial	The study reveals that vitamin D supplementation does not seem to have any beneficial effect in the treatment of PTB in terms to the prevention of relapse and time to sputum smear and culture conversion.
Liang Fu ²⁹⁹	A cross-sectional study: a breath omics based pulmonary tuberculosis detection method	simple and non-invasive breath omics-based PTB detection method was demonstrated with high sensitivity and specificity, potentially valuable for clinical PTB screening and diagnosis.
Marie Varughese ³⁰⁰	Time to diagnosis and treatment of pulmonary tuberculosis in indigenous peoples: a systematic review	overall gap in literature important to interrupting transmission and preventing new TB cases among Indigenous peoples.
Mengyao Zhan ³⁰¹	A clinical indicator-based prognostic model predicting treatment outcomes of pulmonary tuberculosis: a prospective cohort study	traditional predictive factors, the clinical indicator-based risk score determined in this study has a good prediction effect on the prognosis of tuberculosis.
En-Cheng Lin ³⁰²	Limited effect of reducing pulmonary tuberculosis incidence amid mandatory facial masking for COVID-19	TB incidence remained high in regions with low COVID-19 incidence. However, the overall decreasing trends of TB incidence and mortality remained unchanged during the pandemic
Qiping Ge ³⁰³	Effect of a modified regimen on drug-sensitive retreated pulmonary tuberculosis: A multicentre study in China	The modified retreatment regimen had more favourable treatment effects, including higher treatment success rate and lower recurrence rate in patients with retreated drug-sensitive PTB.
Thiraporn Kanjanaphan ³⁰⁴	Contact investigation in healthcare personnel exposed to pediatric patients with pulmonary tuberculosis at the pediatric ward, Vajira hospital, Thailand	The LTBI treatment with 3HP showed favorable outcomes and showed minor side effects. Therefore, 3HP was preferred to treat LTBI.
Noppachai Siranart ³⁰⁵	First case series and literature review of (COVID-19) associated pulmonary	reducing the chance of TB transmission demonstrated during COVID-19 pandemic.

	tuberculosis in Southeast Asia: Challenges and opportunities	
Domínguez J ³⁰⁶	Clinical implications of molecular drug resistance testing for Mycobacterium tuberculosis: a 2023 TBnet/RESIST-TB consensus statement	Detection of mutations in clinical isolates has implications for the clinical management of patients with multidrug-resistant or rifampicin-resistant tuberculosis, especially in situations when phenotypic drug susceptibility testing is not available

2024		
AUTHORS	TITLE OF THE WORK	FINDINGS
Yajie You ³⁰⁷	Diagnostic accuracy of metagenomic next-generation sequencing in pulmonary tuberculosis: a systematic review and meta-analysis	mNGS exhibited promising potential in detecting a diverse range of PTB clinical samples. The AUC analysis further corroborated the excellent diagnostic performance of mNGS for BALF.
Sreenivas Reddy ³⁰⁸	Pulmonary thromboembolism presenting with hoarseness of voice	Timely diagnosis and initiation of anticoagulation therapy are crucial to prevent complications and improve outcomes in patients with PTE presenting with unusual manifestations.
Li Zhuang ³⁰⁹	Leveraging computer-aided design and artificial intelligence to develop a next-generation multi-epitope tuberculosis vaccine candidate	Demonstrated the potential of integrating advanced computational methods with immunological insights in the design of next-generation vaccines, more efficient and targeted approaches in vaccine development against challenging pathogens such as MTB.
Haba Churako ³¹⁰	Pulmonary tuberculosis related diffuse cystic lung disease with recurrent pneumothorax mimicking pulmonary lymphangioleiomyomatosis in Ethiopia: A review and case report	Pulmonary tuberculosis-related DCLD can regress, leaving some clinically insignificant sequelae, and the risk of related pneumothorax also decreases with anti-tuberculosis treatment alone
Fusheng Yao ³¹¹	Plasma immune profiling combined with machine learning contributes to diagnosis and prognosis of active pulmonary tuberculosis	Utilizing targeted proteomics and machine learning, we identified a 9 plasma proteins signature that demonstrates significant potential for accurate TB diagnosis and clinical outcome prediction.
Ji Yoon Baek ³¹²	Impact of Mass Screening Using Chest X-Ray on Mortality Reduction and Treatment Adherence Among Pulmonary Tuberculosis Patients	Individuals undergoing CXR screening have a lower risk of both all-cause and TB-specific mortality compared to PCF, but treatment adherence is similar between the two groups
Deliang Kong ³¹³	Prevalence trends, population characteristics and treatment outcomes of tuberculosis combined with diabetes in Southwest China: a register-based retrospective study	Treatment and management factors significantly influence the outcomes for PTB-DM patients, highlighting the need for early screening and standardized treatment to improve patient management and treatment outcomes.
Mahesh Shinde ³¹⁴	Relationship between smoking and pulmonary tuberculosis based on positive sputum smears	Due to the high default rate among smokers, implying compliance or treatment-adherence issues among smokers as a main barrier to treatment success.
Mei Wang ³¹⁵	Clinical effect of MRZE chemotherapy combined with cluster nursing intervention in the treatment of patients with pulmonary tuberculosis and its influence on the levels of inflammatory factors and CT signs	MRZE chemotherapy combined with cluster nursing intervention model for pulmonary tuberculosis patients can effectively improve the treatment compliance and nursing satisfaction of patients, and it is worthy of clinical promotion and application.

Krishna Sarkar ³¹⁶	Correlation of serum Adenosine Deaminase levels with microbiological parameters in Pulmonary Tuberculosis	Correlations between serum adenosine deaminase levels and various microbiological parameters used in diagnosis of TB, which can be further explored and utilised in diagnosis and treatment of pulmonary tuberculosis.
Chuan-Jun Xu ³¹⁷	Chinese expert consensus on imaging diagnosis of drug-resistant pulmonary tuberculosis	Improve the understanding of the imaging changes of DR-TB, as a starting point for timely detection of suspected DR-TB patients, and can effectively improve the efficiency of clinical diagnosis and achieve the purpose of early diagnosis and treatment of DR-TB.

2025		
AUTHORS	TITLE OF THE WORK	FINDINGS
Yinghui chai ³¹⁸	Gut microbiota and tuberculosis infection: interaction and therapeutic potential	Deeper understanding of the diversity and functionality of the gut microbiota and its relationship with host health and disease.
Bibi Razieh Hosseini Farash ³¹⁹	Co-infection of lophomonas blattarum and mycobacterium tuberculosis: Insights from a study in northeastern Iran	Determine the prevalence of L. blattarum co-infection in patients with confirmed pulmonary TB using both microscopic examination and PCR analysis of BAL samples
Hung-Ling Huang ³²⁰	Prevalence and treatment outcomes of latent tuberculosis infection among older patients with chronic obstructive pulmonary disease in an area with intermediate tuberculosis burden	LTBI prevalence in older COPD patients exceeds 23% in an area with intermediate TB burden.
Henan Xin ³²¹	The performance of computer-aided detection for chest radiography in tuberculosis screening: a population-based retrospective cohort study	CAD for CXR reading assisted radiologists in PTB screening by reducing workload and improving case finding.
Jeongha Mok ³²²	Nationwide coverage of molecular drug susceptibility testing in patients with pulmonary multidrug/rifampicin-resistant tuberculosis in South Korea: a retrospective cohort study (2015-2021)	Increase in mDST coverage is encouraging; however, further efforts are needed to achieve nationwide and universal adoption, particularly of the Xpert MTB/RIF assay.
Tao Xin ³²³	Clinical Characteristics and Risk Factors of Tuberculosis in Children and Adolescents in Xinjiang, China: A Retrospective Analysis	Pediatric TB in Xinjiang is characterized by a high burden of EPTB, particularly TBM in young children. Strengthening early diagnosis and improving access to effective diagnostic tools are essential to reduce morbidity and improve outcomes in this vulnerable population.
Zi-Rong Lu ³²⁴	Unveiling a Diagnostic Challenge: Rare Pulmonary Tuberculosis and Subsequent Pleural Tuberculoma Mimicking Relapse of Hodgkin Lymphoma	The importance of considering tuberculosis in the differential diagnosis of pleural masses in patients with immune compromised status and highlights the critical role of histopathological confirmation to prevent misdiagnosis and inappropriate treatment escalation.

II. SUMMARY

The past decade (2015-2025) observed a global decline in pulmonary TB incidence and mortality, primarily driven by progress in high-burden countries like India, which achieved a 21% reduction in incidence since 2015 (2.68% annual reduction). However, TB remains the world's second deadliest infectious disease after COVID-19. In 2022, there were an estimated 10.6 million new

cases and 1.3 million deaths (including TB/HIV co-infection). A significant and complex issue is the rise of drug-resistant TB (DR-TB). The historical impact is profound, with TB having killed more people over the last 200 years than all other epidemic infections combined.

Research and intervention efforts have focused on three main areas like Diagnostics, Treatment and prevention. A strong need remains for simpler, point-of-care tests, despite the development and rollout of rapid

molecular diagnostics. The traditional requirement for extended courses of multiple antimicrobials is being addressed by efforts to develop shorter drug regimens for both drug-sensitive and drug-resistant TB. Treatment success rates for drug-resistant cases have shown improvement, reaching 70-85% for various categories initiated around 2015-2019. The existing BCG vaccine is effective in preventing deadly TB in infants but has failed to control the overall epidemic, necessitating efforts to develop newer, more efficacious vaccines.

The WHO End TB Strategy (2015-2030): The global response is directed by the WHO End TB Approach, which aims for an 80% decline in TB incidence and a 90% decline in TB deaths by 2030. The success of this strategy is contingent upon its adaptation to diverse country settings, recognizing that ending TB is not just a public health issue but also a development challenge and opportunity. The decade from 2015 to 2025 demonstrates a period of significant, though uneven, progress in the global fight against pulmonary tuberculosis. While global interventions, including targeted treatment and diagnostics, have successfully driven down incidence and mortality, resulting in resilience and a assessable decline in high-burden nations like India, the overall pace is insufficient to meet the ambitious global elimination targets set for 2030 and 2035. The tenacious challenge of drug-resistant TB, the necessity for effective new vaccines, and the need for simplified point-of-care diagnostics indicate that a sustained and strengthened global commitment, coupled with innovative tools, improved program execution, and robust financial support, remains absolutely critical to eradicate the global TB epidemic.

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