

Supplementary Table 1. Selected articles for the rapid review of literature on impacts of COVID-19 pandemic on tuberculosis preventive services and their recovery strategies

No	Title	Author	Year	Publication type	Study setting	Estimate of effect	Key findings/conclusions	Policy recommendations (if any)
1	Impact of COVID-19 on TB care: experiences of a treatment centre in Nigeria	Adewole OO	2020	Letter (research)	Nigeria	<ul style="list-style-type: none"> • a reduction of 35% and 34% in the number of presumptive TB and active TB cases detected respectively compared with the same period in 2019. 	<ul style="list-style-type: none"> • notification of presumptive TB and active TB cases decreased 	N/A
2	Impact of COVID-19 pandemic on TB prevention and care in Addis Ababa, Ethiopia: a retrospective database study	Arega B	2022	Original article (research)	Ethiopia	<ul style="list-style-type: none"> • Compared with the pre-COVID-19 era, the total TB detection, bacteriologically confirmed TB, latent TB infection treatment and community health workers' engagement in TB detection decreased, respectively, by 11%, 11.8%, 44.7% and 77.2% during the COVID-19 period. 	N/A	N/A
3	The impact of the COVID-19 pandemic and associated suppression measures on the burden of tuberculosis in India	Arentz M	2022	Original article (research)	India	<ul style="list-style-type: none"> • 63.3% of expected TB cases not reported 	<ul style="list-style-type: none"> • large difference between reported TB cases and those expected in the absence of the pandemic. 	N/A
4	COVID-19 and resilience of healthcare systems in ten countries	Arsenault C	2022	Original article (research)	Multiple	<ul style="list-style-type: none"> • Mexico had a 95% decline in Bacille Calmette-Guérin (BCG) vaccination • TB services (screening, detection or treatment initiation) were reported by Ghana, Nepal and South Africa and declined by 25–65% in these three countries 	<ul style="list-style-type: none"> • disruptions of varying magnitude and duration were found in every country • TB screening and detection and HIV testing was one of the most affected 	N/A
5	Impact of the COVID-19 pandemic on tuberculosis management in Spain	Aznar ML	2021	Original article (research)	Spain	<ul style="list-style-type: none"> • The number of healthcare workers was reduced due to the COVID-19 pandemic in 3/10 (30%) of the TB units and 7 (70%) reported changes in the usual operations of the TB team, mainly due to cancellation of meetings or substitution of face-to-face meetings for online/telephone meetings. • Delays in performance of laboratory tests were reported by 3 (23.1%) centres and 11 (84.6%) reported difficulties in accessing other complementary exams, such as radiology exams or minimally invasive procedures • Follow up visits were either cancelled or delayed in 10 (76.9%) centres due to the pandemic. • Changes in household contacts screening programs were described by 7 (53.8%) centres • a higher percentage of LTBI and active TB among children who were household contacts of patients diagnosed in 2020 compared with patients diagnosed in 2019 (57.7% vs 5.3%, $P < 0.001$). 	<ul style="list-style-type: none"> • The increase in latent TB infection and active TB in children of patient households could reflect increased household transmission due to anti-COVID-19 measures. 	<ul style="list-style-type: none"> • opportunities to implement new approaches to ensure TB programs remain successful and apply lessons learned from this emergency • Rapid restoration of TB services is essential to prevent long-term negative impacts, but we can also scale up successful initiatives such as the use of digital tools to cope with a TB epidemic.
6	One hundred years of BCG vaccine	Barcat JA	2021	Review	Global	N/A	<ul style="list-style-type: none"> • Child vaccination coverage, including BCG, was also affected for operational reasons • COVID-19 pandemic has contributed to valuing vaccination as a basic infection control strategy. • positive effect on the development of new vaccines against TB and other endemic diseases. 	N/A

7	Tuberculosis, COVID-19, and the End Tuberculosis strategy in India	Behera D	2020	Editorial	India	<ul style="list-style-type: none"> Weekly counts of reported cases dropped by 75% in the 3 weeks following 22 March (average 11,367 weekly cases), when a strict nationwide lockdown was imposed, compared to an average of 45,875 weekly cases during the previous weeks of 2020. 	<ul style="list-style-type: none"> TB control programs will be under severe strain due to diversion of resources, loss of focus with increased attention of COVID-19 care, constraints due to overutilization of laboratories meant for TB work, issues related to availability of TB care workers, restriction of movements of patients and contacts etc., with DR-TB centers being diverted for COVID related work because of change in the priorities of health-care delivery. 	<ul style="list-style-type: none"> ensure the continuity of TB diagnostic, notification, treatment, and prevention services during the lockdown period and undertake a massive catch-up effort to actively diagnose, trace, treat and prevent. secure the human and financial resources needed for seamless continuation of TB services amid the COVID-19 response. educate people on infection control practices for vulnerable populations and how to care for the sick Protection of health-care workers is an important issue and by all means they should be protected to continue providing TB care as front-line warriors. Support for uninterrupted TB preventive treatment and treatment of TB disease support special vulnerable population group because these populations are at greater risk of TB, because of living conditions, working environment or because of other socioeconomic factors that result in barriers to accessing health services.
8	Relative Burdens of the COVID-19, Malaria, Tuberculosis, and HIV/AIDS Epidemics in Sub-Saharan Africa	Bell D	2021	Original article (research)	Sub-Saharan African	<ul style="list-style-type: none"> the estimated recorded COVID-19 DALYs lost in 2020 were 3.7% of those for tuberculosis 	<ul style="list-style-type: none"> the relatively low disease burden that COVID-19 is exerting on sub-Saharan African populations, with the pre-existing epidemics of malaria, tuberculosis, and HIV/AIDS all greatly dominating in life-years impacted, and with mortality dominating in all except the elderly resource diversion to COVID-19 poses a high risk of increasing the overall disease burden and causing net harm, thereby further increasing global inequities in health and life expectancy. 	N/A
9	The impact of COVID-19 on the tuberculosis control activities in Addis Ababa	Beyene NW	2021	Short communication (research)	Ethiopia	<ul style="list-style-type: none"> 69% decline in the number of presumptive TB patients eligible for testing in both Q2 and Q3. This 	<ul style="list-style-type: none"> Series of measures, state of emergency proclamation and government directives issued to counter the spread of COVID-19 and the public response to these markedly affected the TB control activities 	<ul style="list-style-type: none"> informing the public (through different media) that essential health services are still available and open to everyone in need of these services simultaneous screening of TB and COVID-19
10	The potential impact of the COVID-19 response related lockdown on TB incidence and mortality in India	Bhargava A	2020	Review	India	<ul style="list-style-type: none"> 59% decrease in TB case detection over a period of eight weeks of lockdown 	<ul style="list-style-type: none"> decrease in TB case detection during lockdown 	<ul style="list-style-type: none"> restore TB health services
11	Mitigating the impact of the COVID-19 pandemic on progress towards ending tuberculosis in the WHO South-East Asia Region	Bhatia V	2020	Perspective	South-East Asia Region	N/A	<ul style="list-style-type: none"> in the countries most affected there has been targeted diversion and repurposing of tuberculosis services, health-care workers and diagnostic equipment. attempts to ensure continuity of services and civil society nongovernmental organizations have instituted a range of innovative mechanisms to support national programmes. 	<ul style="list-style-type: none"> a comprehensive approach – including scaling up successful initiatives, empowering community leadership, harnessing digital tools, and implementing easily accessible cash transfers and nutrition support “catch-up plans” to deploy supplementary measures to address the increased tuberculosis burden.
12	COVID-19 effects on tuberculosis care in Sierra Leone	Buonsenso D	2021	Letter (research)	Sierra Leone	<ul style="list-style-type: none"> Confirmed TB case dropped from 15(April, 2019) to 5(April, 2020) 	<ul style="list-style-type: none"> a significant drop of confirmed TB cases no DOTs were administered in April 2020 	N/A
13	Impact of the COVID-19 pandemic on tuberculosis in Peru: Are we forgetting anyone?	Cardenas-Escalante J	2022	Letter (research)	Peru	<ul style="list-style-type: none"> Percentage and number of TB cases diagnosed 66% (lower than the goal of 90%) in 2020 	<ul style="list-style-type: none"> Underdiagnosis of TB cases in 2020 	<ul style="list-style-type: none"> To mitigate underdiagnosis, a telemedicine system based on health promotion and community monitoring could be implemented, allowing the necessary services to be brought as close as possible to TB patients.
14	Adapting active case-finding for TB during the COVID-19 pandemic in Yogyakarta, Indonesia	Chan G	2021	Perspective	Indonesia	N/A	N/A	<ul style="list-style-type: none"> revised prioritisation of target populations focusing on household contacts reducing case-finding throughput, implementation of additional infection control measures and precautions integration of COVID-19 screening among those being screened for TB.

15	Impact of COVID-19 pandemic response on uptake of routine immunizations in Sindh, Pakistan: An analysis of provincial electronic immunization registry data	Chandir S	2020	Original article (research)	Pakistan	• Decline in BCG immunization (40.6%)	• BCG showed the highest decline among routine vaccination during lockdown	• Safe immunization service delivery • maternal education • early enrollment into immunization programs
16	Insight into the impact of the COVID-19 epidemic on tuberculosis burden in China	Chen H	2020	Correspondence (research)	China	• compared the actual epidemic data on TB released monthly by the China National Health Commission from January to May of 2019 and 2020 • In 2020, the numbers of newly registered patients with TB nationwide from January to May were 67682, 44933, 73427, 85684 and 83385 with a decrease of 24%, 39%, 25%, 15% and 13%, respectively compared to the same periods in the previous year	• provides experience in fighting against TB. • People of all walks of life have learned and practised the intervention programmes related to respiratory infectious diseases, i.e. personal hygiene and protection, including wearing masks in particular. • the government is also taking this opportunity to further improve the public health infrastructure.	N/A
17	The impact of COVID-19 and the restoration of tuberculosis services in the Western Pacific Region	Chiang CY	2020	Comment	China, Malaysia, Philippines	N/A	N/A	• Development of new standards of clinical consultations • Establishment of affordable online consultations for individuals with presumptive TB • Strengthening of specimen transportation using innovative approaches • Development of algorithm for dual TB and COVID-19 testing among individuals with respiratory symptoms • Application of digital platform and connectivity solutions for rapid delivery of test results • Strengthening of contact examinations during community quarantine for detection of active TB and management of latent TB infection
18	Impact of COVID-19 on TB epidemiology in South Korea	Choi H	2021	Original article (research)	Korea	• During the pandemic, the number of patients visits declined by 15% from the previous 4- year average, and the number of patients diagnosed with TB decreased by 17%.	N/A	N/A
19	The potential impact of the COVID-19 pandemic on the tuberculosis epidemic a modelling analysis	Cilloni L	2020	Original article (research)	India, Kenya, Ukraine	• A modeling study reveals 3-month suspension of TB services, followed by 10 months to restore to normal, would cause, over the next 5 years, an additional 1.19 million cases and 361,000 deaths in India, 24,700 TB cases and 12,500 deaths in Kenya, and 4,350 cases and 1,340 deaths in Ukraine	• Even short COVID-related lockdowns can generate long-lasting setbacks in TB control, with high incidence and mortality	• Long-term impact of these disruptions could be averted through focused efforts to address the problem of undetected TB (supplementary measures would involve some form of active case-finding, including contact tracing with longitudinal follow-up)
20	Effects of COVID-19 prevention procedures on other common infections: a systematic review	Dadras O	2021	Review	Global	N/A	• adherence to health protocols to prevent COVID-19 could help to reduce the incidence of TB • The impact of the COVID-19 pandemic and the prevention measures on other respiratory infections could be attributed to an increase in positive testing, reduction in the patients with these infectious diseases, or in some cases, it might be due to the increased mortality of these diseases.	N/A
21	25 years of surveillance of drug-resistant tuberculosis: achievements, challenges, and way forward	Dean AS	2022	Personal view	Global	N/A	• The number of people diagnosed with drug-resistant tuberculosis has dropped by 22% since before the pandemic	• investment in research and development of new diagnostic tools and their rollout, expansion of sample transport systems, and the implementation of data connectivity solutions.
22	Tuberculosis — United States, 2020	Deutsch-Feldman M	2021	Article (research)	US	• A total of 7,163 TB cases were reported during 2020 (2.2 cases per 100,000 persons), 20% fewer than during 2019 (2.7 cases per 100,000 persons).	• In the United States, reported tuberculosis (TB) disease diagnoses fell 20% in 2020 and remained 13% lower in 2021 than TB disease diagnoses made prior to the COVID-19 pandemic	N/A
23	Tuberculosis vaccines in the era of Covid-19 - what is taking us so long?	Dockrell HM	2022	Personal view	Global	N/A	• No new licensed TB vaccine • There is a pipeline of TB vaccine candidates, despite slow progress • Funding gap exists	• More funding, long-term commitment, multi-disciplinary coordination are needed

24	Has the COVID-19 pandemic increased tuberculosis mortality?	Dowdy DW	2022	Correspondence	Global	N/A	<ul style="list-style-type: none"> • although it is likely (if not proven) that the COVID-19 pandemic has substantially increased tuberculosis mortality, it is also possible that tuberculosis incidence has genuinely declined • strengthen systems for finding, treating, and preventing tuberculosis 	N/A
25	Highlighting the forgotten: Tuberculosis amidst the humanitarian crisis and COVID-19 in Afghanistan	Essar MY	2022	Correspondence (research)	Afghanistan	N/A	N/A	<ul style="list-style-type: none"> • The National Tuberculosis (TB) Control Program (NTP) should continue monitoring the situation. • remaining healthcare workers are suitably trained and given resources on how to differentiate between COVID-19 and tuberculosis. • health promotion programs for the general public, including at-risk population, can help to improve earlier reporting to a health facility and reductions in stigma. • The public health infrastructure needs support in improving the tuberculosis epidemiology and surveillance programs.
26	Building better tuberculosis control systems in a post-COVID world: learning from Pakistan during the COVID-19 pandemic	Fatima R	2021	Article (research)	Pakistan	<ul style="list-style-type: none"> • Between February and April 2020, there were substantial declines in the case notification of drug-susceptible TB by 45% and of drug-resistant TB by 35%. 	N/A	<ul style="list-style-type: none"> • remote treatment support using telemedicine • collaborating with private healthcare providers • establishing community medicine collection points.
27	The impact of the COVID-19 epidemic on tuberculosis control in China	Fei H	2020	Original article (research)	China	<ul style="list-style-type: none"> • percentage of TB notifications and TB patients who had a sputum examination within one week after 2 months treatment decreased from 53.2% to 51.3% and 68.8% to 60.2%, respectively 	<ul style="list-style-type: none"> • COVID-19 epidemic mostly affected TB notification and follow up examinations, which may lead to a surge of demand for TB services in the near future. 	<ul style="list-style-type: none"> • To cope with surge in cases, an emergency response mechanism should be established, including increased human resources, scale up of laboratory testing, active case finding activities, household contact management, enhanced anti-TB drug delivery, etc.
28	Tuberculosis — United States, 2021	Filardo TD	2022	Article (research)	US	<ul style="list-style-type: none"> • From 2020 to 2021, TB incidence (cases per 100,000 population) rose 9.4%, from 2.16 to 2.37, but remained 12.6% lower than during 2019 (2.71). 	N/A	N/A
29	Epidemiology of Tuberculosis and Progress Toward Meeting Global Targets - Worldwide, 2019	Fukunaga R	2021	Article (research)	Global	N/A	<ul style="list-style-type: none"> • With an estimated 10 million incident TB cases and 1.4 million TB deaths in 2019, the world is not on track to achieve • Global targets. Further, the COVID-19 pandemic has hampered TB-related service delivery in many countries. 	<ul style="list-style-type: none"> • Innovations and adaptations in TB diagnosis, care, and treatment
30	Impact of COVID-19 on Tuberculosis Prevention and Treatment in Canada: A Multicenter Analysis of 10833 Patients	Geric C	2022	Brief report (research)	Canada	<ul style="list-style-type: none"> • reductions in latent tuberculosis infection treatment initiation rates ranged from 30% to 66%. 	<ul style="list-style-type: none"> • during and immediately after the first wave of COVID-19 in Quebec and Ontario, all 3 centers experienced major reductions in the initiation of treatment for latent tuberculosis infection, 	<ul style="list-style-type: none"> • call on federal and provincial governments to mobilize resources to ensure tuberculosis clinics across Canada can continue to operate at full capacity regardless of the local epidemiology of COVID-19.
31	The impact of COVID-19 on the TB response: data from the field	Gigante AR	2021	Letter (research)	Portugal	<ul style="list-style-type: none"> • more individuals with LTBI (93.2% vs. 87.9%) and fewer cases of active TB (6.8% vs. 12.1%) were detected among the contacts screened during the pandemic 	<ul style="list-style-type: none"> • reduction in the number of newly diagnosed active PTB cases during the pandemic. • the number of contacts screened and the time from diagnosis until first contact screening did not differ between the two periods. This indicates that cooperation with public health authorities was not affected, 	<ul style="list-style-type: none"> • This predominance of contacts in the family circle, due to an easier identification for screening, enables the detection of LTBI among contacts and allows for preventive treatment.
32	Predicted impact of the COVID-19 pandemic on global tuberculosis deaths in 2020.	Glaziou P	2020	Preprint (research)	Global	<ul style="list-style-type: none"> • A global TB case detection decrease by an average 25% over a period of 3 months (as compared to the level of detection before the pandemic), will lead to a predicted additional 190 000 TB deaths (a 13% increase), bringing the total to 1.66 million TB deaths (13% increase) in 2020, near the global level of TB mortality of the year 2015. 	<ul style="list-style-type: none"> • Decrease in TB detection projects increased mortality 	<ul style="list-style-type: none"> • Enhance TB testing, particularly in high-HIV settings where symptoms of TB and Covid19 disease are more difficult to differentiate clinically, better implementation of infection control measures and more effective contact tracing investigations

33	Impact of the COVID-19 pandemic on contact tracing of patients with pulmonary tuberculosis	Godoy P	2022	Original article (Research)	Spain	<ul style="list-style-type: none"> The proportion of LTBI was 25.3% (1090/4307) in the pre-pandemic period and 29.2% (403/1381) in the pandemic period ($P < 0.01$) The risk of LTBI was higher in the pandemic period (OR 1/4 1.2; 95% CI 1.1–1.4) (aOR 1/4 1.3; 95% CI 1.1–1.5) 	<ul style="list-style-type: none"> in the pandemic period, most contact tracing was concentrated in the family where the transmission is usually higher. 	<ul style="list-style-type: none"> resources for COVID-19 should be real-located to epidemiological surveillance and that TB surveillance and control activities (including contact tracing and screening of at-risk populations) be made a priority. Public health measures for the control of COVID-19 and TB should be assessed globally through the epidemiological surveillance system and be seen as an opportunity to improve the overall control of transmissible diseases.
34	Pediatric TB detection in the era of COVID-19	Golandaj JA	2022	Short communication (research)	India	<ul style="list-style-type: none"> (TB cases)drastic drop was observed during April (-36%) in notified pediatric TB cases after COVID-19 forced lockdown was imposed (BCG)a decline of 15 and 37% were observed during March and April 2020 compared to the same period of 2019. 	<ul style="list-style-type: none"> Significant decrease in pediatric TB notifications during COVID-19 epidemic in India. 	<ul style="list-style-type: none"> Adequate measures to diagnose, control, and prevent TB focusing young children, should be implemented simultaneously with response to COVID-19 pandemic.
35	Insight into the COVID-19 led slow-down in TB notifications in India	Golandaj JA	2021	Correspondence (research)	India	<ul style="list-style-type: none"> In 2020, the national level monthly number of newly registered TB from March to August months decreased by 21%, 63%, 47%, 25%, 38% and 45%, respectively, compared to the same period in the previous year. 	<ul style="list-style-type: none"> COVID-19 outbreak had an impact on reduction in Tuberculosis (TB) detection, which is persisting even after lockdown. 	<ul style="list-style-type: none"> Continuity of essential TB interventions should be implemented simultaneously with response to COVID-19.
36	Retrospective Cohort Study of Effects of the COVID-19 Pandemic on Tuberculosis Notifications, Vietnam, 2020	Hasan T	2022	Original article (research)	Vietnam	<ul style="list-style-type: none"> TB case notifications were 8% lower in 2020 than in 2019 	<ul style="list-style-type: none"> TB cases moderately decreased, owing to the continuity of Tb services 	<ul style="list-style-type: none"> Preparation for rebound of case notifications
37	Potential impact of the COVID-19 pandemic on HIV, tuberculosis, and malaria in low-income and middle-income countries: a modelling study.	Hogan AB	2020	Original article (research)	Global	<ul style="list-style-type: none"> In high-burden settings, deaths due to tuberculosis over 5 years could increase by up to 20%, compared with if there was no COVID-19 pandemic. 	<ul style="list-style-type: none"> For tuberculosis, the greatest impact would be from reductions in timely diagnosis and treatment of new cases, which could result from any prolonged period of COVID-19 suppression interventions. 	N/A
38	Two Pandemics, One Challenge—Leveraging Molecular Test Capacity of Tuberculosis Laboratories for Rapid COVID-19 Case-Finding.	Homolka S	2020	Perspective	Global	N/A	<ul style="list-style-type: none"> Diagnostic infrastructures for TB can in principle be leveraged to scale-up SARS-CoV-2 testing, in particular in resource-poor settings TB research infrastructures also can support sequencing of SARS-CoV-2 to study virus evolution and diversity globally 	<ul style="list-style-type: none"> Continuity of TB diagnostic services must be guaranteed at all times
39	Tuberculosis and COVID-19 in India- double trouble!	lyengar KP	2020	Viewpoint	India	<ul style="list-style-type: none"> 78% drop in the diagnosis of new TB cases in April 2020 compared to the same month in 2019 according to Central Tuberculosis Division Nikshay portal. 	N/A	<ul style="list-style-type: none"> Role of Telemedicine Simultaneous testing for both TB and COVID-19
40	Impact of shelter-in-place on TB case notifications and mortality during the COVID-19 pandemic	Kadota JL	2020	Letter (research)	Uganda	<ul style="list-style-type: none"> The immediate effect of shelter-in-place order caused a 43% decline in reported TB case notifications, which was sustained for at least 5 weeks Projection reveals that the observed 43% reduction in case detection would result in an increase of approximately 14% in TB-related deaths. 	<ul style="list-style-type: none"> shelter-in-place order caused reduction in TB case notifications, which may result in more TB deaths 	<ul style="list-style-type: none"> urgent restoration of normal services, plus an additional emphasis on enhanced active case finding and scale-up of contact tracing, will be essential
41	Resurgence of tuberculosis amid COVID-19 in Peru: Associated risk factors and recommendations	Khan FMA	2021	Letter	Peru	N/A	<ul style="list-style-type: none"> multidisciplinary measures involving the population, health professionals and government bodies are needed education, diagnosis, contact screening and treatment programs are prioritised and given greater financial support. raise awareness in the population about the need for isolation and maintenance of treatment, especially among the most vulnerable populations. 	<ul style="list-style-type: none"> It is vital for building the belief required to convey efficacious TB care and learning. To reach immigrants who exist in terror of recognition, securing trust is supreme. Services and administrations are mainly efficient when they meet public where they live. Ushering mobile vans and X-rays to communities would make it easier for people to get screened. Additional financial support is required for improved diagnostics and feasibility of programmes. Ending TB would necessitate augmented financial support to guarantee that accurate gears and assets are available to those who need them.

42	The COVID-19 pandemic and the true incidence of Tuberculosis in Japan	Komiya K	2020	Letter (research)	Japan	<ul style="list-style-type: none"> Number of patients newly diagnosed TB has significantly decreased from about 1,100 to 800 cases, when comparing March 2019 to March 2020. 	<ul style="list-style-type: none"> Possible underreporting of TB cases rather than true decrease in incidence 	<ul style="list-style-type: none"> physicians need to be aware of the possibility of underestimated tuberculosis infection and carefully examine elderly patients considering the likelihood of tuberculosis infection
43	Tuberculosis During Covid-19 Pandemic: Challenges and Opportunities	Kumar P	2020	Correspondence	Global	N/A	N/A	<ul style="list-style-type: none"> gene expert machines during the COVID-19 pandemic should be used in such a manner that there should be fractional testing for both COVID-19 and TB personnel involved in TB care should be retrained on the importance of universal safety precautions and infection prevention control. mechanism of the door to door drug delivery
44	Effect of COVID-19 on Tuberculosis Notification, South Korea	Kwak N et. al.	2020	Letter (research)	Korea	<ul style="list-style-type: none"> After COVID-19 began, TB notification decreased by 24% 	<ul style="list-style-type: none"> TB notification during the first 18 weeks of 2020 decreased significantly from the same period for each year during 2015–2019. 	<ul style="list-style-type: none"> Adequate measures to diagnose, control, and prevent tuberculosis need to be maintained
45	Reduction in Hospitalizations for Respiratory Diseases during the First COVID-19 Wave in Greece	Kyriakopoulos C	2021	Original article (research)	Greece	N/A	<ul style="list-style-type: none"> Did not observe a statistically significant reduction on admissions for tuberculosis (18 for 2020 vs. 24 for both 2018 and 2019) 	N/A
46	The COVID-19 pandemic and tuberculosis in Taiwan	Lai CC	2020	Letter (research)	Taiwan	<ul style="list-style-type: none"> Total of 2662 confirmed TB cases were reported, which was lower than those of 2019 (n = 3307), 2018 (n = 3512), and 2017 (n = 3563), with a significant slope difference between 2020 and each of prior years 	<ul style="list-style-type: none"> Significant decline of TB activity during COVID-19 outbreak in Taiwan. 	<ul style="list-style-type: none"> TB diagnosis which should not be forgotten by a physician for patients with respiratory symptoms during the COVID-19 outbreak.
47	Trends in paediatric tuberculosis diagnoses in two South African hospitals early in the COVID-19 pandemic	Lebina L	2020	Correspondence (research)	South Africa	<ul style="list-style-type: none"> The median IQR of children admitted to the surveyed hospitals per month was significantly lower during the COVID-19 lockdown period (252) compared with before the lockdown (705) median TB notification rates per 1 000 paediatric admissions did not differ significantly 	<ul style="list-style-type: none"> Mixed trend in pediatric TB notifications 	N/A
48	Why has the incidence of tuberculosis not reduced in London during the COVID-19 pandemic?	Lewer D	2022	Spotlight (research)	UK	<ul style="list-style-type: none"> an average of 4.1 cases of tuberculosis were diagnosed per day in London during the first lockdown, only slightly lower than 4.7 per day over the previous 12 months However, it may be increasing thereafter 	<ul style="list-style-type: none"> TB cases moderately decreased, owing to the continuity of Tb services Increase may be owing to (1) transmission in private homes during lockdowns; (2) co-infection with COVID-19 increasing infectiousness of TB; (3) COVID-19 infection might increase susceptibility to TB (4) increased help-seeking for more severe or long-term respiratory symptoms due to awareness of COVID-19 	<ul style="list-style-type: none"> Operate TB services during COVID-19 restrictions in high-income settings In low-resource settings, international support is required to continue Tb services
49	Collateral Impact of the Coronavirus Disease 2019 (COVID-19) Pandemic on Tuberculosis Control in Jiangsu Province, China	Liu Q	2021	Brief report (research)	China	<ul style="list-style-type: none"> From January to May, the absolute number of tuberculosis notifications in 2020 dropped 36% and 52% compared to the same 5-month time-period in 2019 (10 620 vs 6749) and 2015 (14 180 vs 6749) 	<ul style="list-style-type: none"> In Jiangsu Province, China, tuberculosis notifications dropped 52% in 2020 compared to 2015–2019. 	N/A
50	The crucial need for tuberculosis translational research in the time of COVID-19	Loh FK	2022	Comment	Global	N/A	N/A	<ul style="list-style-type: none"> scientific and political will can remove barriers and expedite the process, similar to progress observed in COVID-19, with the necessary funding As has been seen for COVID-19, a whole-of-government approach for tuberculosis is needed for the development of effective diagnostic and treatment approaches to stem transmission and save lives.
51	Opportunities from a new disease for an old threat: Extending COVID-19 efforts to address tuberculosis in South Africa	Loveday M	2020	Review	South Africa	<ul style="list-style-type: none"> From pre-lockdown to levels 5 and 4 of the lockdown, TB testing and diagnosis decreased by 50% and 33%, respectively. 	<ul style="list-style-type: none"> health workforce and resources have been redirected away from routine services towards the new disease priority. additional barriers to accessing TB care, with early reports of a decline in TB testing rates. increase the TB burden and TB-related mortality. 	<ul style="list-style-type: none"> By integrating TB case finding into the advanced screening, testing, tracing and monitoring systems established for COVID-19, TB case finding and linkage to care could increase, with many more TB patients starting treatment. integrating knowledge and awareness of TB into the increased healthcare worker and community education on infectious respiratory diseases, behavioural practices around infection prevention and control, and cough etiquette, including destigmatisation of mask use, may contribute to reducing TB transmission.

52	Interrupted time-series analysis of active case-finding for tuberculosis during the COVID-19 pandemic, Zambia	Lungu PS	2022	Original article (research)	Zambia	<ul style="list-style-type: none"> -22% decline in notifications in 2020 (larger decline in HIV positive) Following roll-out of response measures notifications increased by 45% nationally 	<ul style="list-style-type: none"> TB cases decreased during pandemic, but is responsive to immediate public health response measures 	<ul style="list-style-type: none"> Implementation of a coordinated public health response including active tuberculosis case-finding was associated with reversal of the adverse impact of the pandemic and mitigation measure
53	Tuberculosis in Brazil: the impact of the COVID-19 pandemic	Maia CMF	2022	Letter (research)	Brazil	<ul style="list-style-type: none"> Average number of reported TB cases in all regions decreased by 6,501 cases compared to 2017-2019 	<ul style="list-style-type: none"> TB cases decreased nationally 	<ul style="list-style-type: none"> Continuity of TB services
54	Integrated Tuberculosis and COVID-19 Activities in Karachi and Tuberculosis Case Notifications	Malik AA	2022	Original article (research)	Pakistan	<ul style="list-style-type: none"> overall, Karachi reached 90% of the expected case notifications during the COVID-19 pandemic 	<ul style="list-style-type: none"> increased integration of TB and COVID-19-related activities and adaptations can limit the impact of the COVID-19 pandemic on TB case notifications and services and decrease the gap between expected and actual notifications. 	N/A
55	Decreasing routine vaccination rates in children in the COVID-19 era	Maltezou HC	2022	Comment	Global	N/A	<ul style="list-style-type: none"> BCG coverage rate decreasing in many parts of the world Modeling studies predict increase in mortality due to reduction of immunization rates 	<ul style="list-style-type: none"> Multimodal solutions are needed (e.g. mobile vaccination services, campaigns, real-time surveillance)
56	The impact of COVID-19 on TB: a review of the data	McQuaid CF	2021	Review	Global	<ul style="list-style-type: none"> TB centres in Brazil, Kenya, the Philippines, Russia, South Africa, Sierra Leone and Zambia reported relative declines in preventive therapy enrolment of 30–70%. India and Pakistan reported major decreases in relative BCG vaccination coverage of up to 60%, with significant potential consequences for paediatric TB mortality in particular. 	<ul style="list-style-type: none"> Numbers of patients, as well as testing and prevention coverage, have decreased more noticeably than treatment outcomes. 	<ul style="list-style-type: none"> Advocating for additional funding to mitigate the impact of COVID-19 on the global TB burden Allocating available resources efficiently for the TB response.
57	The potential impact of COVID-19-related disruption on tuberculosis burden	McQuaid CF	2020	Letter (research)	Multiple	<ul style="list-style-type: none"> In our worst case scenario, where COVID-19 interventions to reduce social contacts are minimal, but TB health services are badly affected, results suggest an increase in TB deaths of 23,516 (range 18,560-27,940), 149,448 (85,000-233,602) and 28,631 (19,963-40,011) in China, India and South Africa, respectively between 2020-2024, totalling 201,595 (123,523-301,553) additional TB deaths in these three countries alone. increase of 8-14% in cumulative TB deaths for that period 	N/A	<ul style="list-style-type: none"> Interventions necessary to prioritize during disruptions, such as digital adherence technologies to support patient treatment remotely
58	Gauging the impact of the COVID-19 pandemic on tuberculosis services: a global study	Migliori GB	2021	Letter (research)	Global	<ul style="list-style-type: none"> TB disease decreased from 32898 (mean±SD 2742±177 per month) in 2019 to 16396 (1366±308 per month; p<0.0001) in 2020 with a sudden decline in March 2020, concomitantly with the commencement of lockdown in majority of the countries Fewer individuals were diagnosed with TB infection, with a decrease in April 2020 (figure 1h) (363±51 per month in 2019 versus 248±76 per month; p=0.0007). There were fewer tests performed globally in 2020, with two major troughs in April 2020 and in November/December 2020 	<ul style="list-style-type: none"> severe impact of the COVID-19 pandemic on TB services across many countries an urgent need to re-prioritise resources to manage an expected TB resurgence in future. 	N/A
59	Country-specific lockdown measures in response to the COVID-19 pandemic and its impact on tuberculosis control: a global study	Migliori GB	2022	Brief communication (research)	Global	<ul style="list-style-type: none"> Relative declines in preventive therapy, ranging from 30% to 70%, were described in several tuberculosis centers such as in Brazil, Kenya, the Philippines, and Russia. 	<ul style="list-style-type: none"> overall decrease in active tuberculosis, drug-resistant tuberculosis, and latent tuberculosis cases human and financial resources were relocated from tuberculosis services to COVID-19 units, compromising tuberculosis care Tuberculosis testing decreased in some of the countries 	<ul style="list-style-type: none"> increased surveillance for both tuberculosis and COVID-19 adoption of organizational changes was important to the maintenance of consultations for non-COVID-19-related problems use of telehealth/telemedicine may have prevented a reduction of diagnosing tuberculosis

60	Worldwide Effects of Coronavirus Disease Pandemic on Tuberculosis Services, January-April 2020	Migliori GB	2020	Dispatch (research)	Global	<ul style="list-style-type: none"> • new active TB cases decreased in 27 (84%) of the 32 TB centers in the first 4 months of 2020 relative to the same period in 2019 • A total of 22 (75%) of 29 TB centers from 14 countries registered decreased outpatient visits during the lockdowns. • New LTBI outpatient visits at 18 (95%) of 19 TB centers (all except Alvorada) were fewer during the lockdown period 	<ul style="list-style-type: none"> • reductions in newly diagnosed cases of active and latent TB and in total active and latent TB outpatient visits • some centres didn't consider latent TB a high priority during the pandemic • Resources urgently need to be channeled to ensure that TB care continues efficiently despite the ongoing COVID-19 pandemic. 	<ul style="list-style-type: none"> • Lockdowns have favored the increased use of telemedicine.
61	Impact of COVID-19 Pandemic on the National PPM Tuberculosis Control Project in Korea: the Korean PPM Monitoring Database between July 2019 and June 2020	Min J	2021	Original article (research)	Korea	N/A	<ul style="list-style-type: none"> • Test coverages of sputum smear (P = 0.622) and culture (P = 0.815), and drug susceptibility test (P = 0.750) at the national level were not significantly different during the study period. 	N/A
62	Impact of COVID-19 on TB services in Korea	Min J	2021	Letter (research)	Korea	N/A	<ul style="list-style-type: none"> • Reduced frequency of outpatient visits for patients with drug-susceptible TB • Reduced number of newly diagnosed TB patients who visit outpatient clinics • Decreased proportion of TB patient management and care in the overall work • Lack of supplies necessary for TB patient management (e.g., mask) 	<ul style="list-style-type: none"> • referral systems for TB patients who require hospitalisation • a system that can support non-face-to-face management such as new digital technologies (e.g., video-observed therapy) • teleconferences or virtual workshops are good alternatives for training medical staff and monitoring and evaluating TB patient management at the local hospitals.
63	Concern over a COVID-19-related BCG shortage	Namkoong H	2020	Correspondence	Global	N/A	<ul style="list-style-type: none"> • Unnecessary BCG vaccination as a treatment for COVID-19 could lead to a supply shortage for infants, increasing their chances of TB infection and threatening their survival. 	<ul style="list-style-type: none"> • learn how to manage the flow of information so we remain open to the opportunities presented by new research (and can rigorously assess these), but do not put at risk established interventions for public health.
64	Impact of the COVID-19 pandemic on tuberculosis laboratory services in Europe	Nikolayevskyy V	2021	Letter (research)	Europe	<ul style="list-style-type: none"> • Laboratory operations seemed to be most severely affected in April when 17/30 laboratories (56.7%) defined the impact as "very significant" and "significant". 	<ul style="list-style-type: none"> • R&D and training activities are being de-prioritised in favour of other activities seen as essential during a pandemic • Nearly all NRLs across Europe experienced a sharp reduction of workload in both primary and reference activities, including drug susceptibility testing 	<ul style="list-style-type: none"> • Sustainable support from national healthcare authorities and international bodies is urgently needed to preserve TB reference capacity, and maintain personnel and skills, to minimise medium- and long-term negative effects of the COVID-19 pandemic on TB diagnostic capacity.
65	The need to prioritise childhood tuberculosis case detection	Nkereuwem E	2021	Comment	LMICs	N/A	<ul style="list-style-type: none"> • Absence of large-scale contact screening and provision of tuberculosis preventive therapy to eligible children • Given the demonstrated ability to develop effective COVID-19 vaccines rapidly, it is no longer justifiable to not equally invest in the development of tuberculosis vaccines. 	<ul style="list-style-type: none"> • Efforts to prioritise case detection will also benefit from innovative community-based approaches to case finding, such as the need for enhanced screening for tuberculosis in children presenting at general child health services in LMICs. • Given that many children with presumptive tuberculosis present to maternal and child health clinics and private care providers in LMICs, a close interaction between tuberculosis programmes and these services is needed. • Development of non-sputum biomarker-based tests for diagnosis of tuberculosis, especially in children who are typically paucibacillary
66	Coronavirus Disease 2019 Diagnosis in Low- and Middle-Income Countries: The Big New Bully Disrupting TB and HIV Diagnostic Services	Nyaruhirira AU	2022	Perspective	Global	N/A	<ul style="list-style-type: none"> • Integrated laboratory systems require mapping laboratory networks, assessing needs for each infectious disease, and identifying resources. • diagnostic capacity for one infectious disease may displace another. • Not all aspects of optimal diagnostic networks fit all infectious diseases, but many efficiencies can be gained where integration is possible. 	N/A

67	Decreased notification of TB cases during the COVID-19 pandemic	Ortiz-Martinez Y	2022	Correspondence (research)	Colombia	<ul style="list-style-type: none"> In 2020, incidence of all forms of TB per 100,000 people was the lowest reported in the last 6 years 	<ul style="list-style-type: none"> TB case notification decreased, which is associated with COVID-19 lockdown measures 	<ul style="list-style-type: none"> TB-COVID bidirectional screening Enforce TB surveillance by 1) participation of clinicians, microbiologists, epidemiologists and others in fortifying national and local surveillance programmes, 2) improved access to health services for vulnerable populations, 3) the universal availability of PPE for healthcare workers and TB patients, 4) early isolation of presumed TB cases, and 5) community engagement to provide sources of information about both diseases.
68	GeneXpert for the diagnosis of COVID-19 in LMICs	Rakotosamimanana N	2020	Correspondence	Madagascar	N/A	<ul style="list-style-type: none"> optimising the use of the GeneXpert MTB/RIF platform for the surveillance of SARS-CoV-2 in low-income and middle-income countries is relevant and achievable and should be considered in settings with difficult access to laboratories and an already existing GeneXpert MTB/RIF network. 	N/A
69	Ending the tuberculosis syndrome: is COVID-19 the (in)convenient scapegoat for poor progress?	Rangaka MX	2022	Comment	Global	<ul style="list-style-type: none"> US\$104 billion was spent on COVID-19 research and development in the first 11 months of the pandemic, in contrast to \$5.5 billion on tuberculosis research and development in the past decade. Less than \$60 billion has been spent on tuberculosis activities over this period. Current research funding gap, US\$900 million annual expenditure against a target of \$2 billion 	<ul style="list-style-type: none"> A well-funded, multidisease framework to guarantee resilient systems and better preparedness for future extrinsic threats. 	<ul style="list-style-type: none"> Access to SARS-CoV-2 vaccines has since improved, but when these reach countries in need, roll-out is often hindered by vaccine hesitancy and operational challenges, a poignant lesson in preparedness for novel tuberculosis vaccines and products.
70	Effect of COVID-19 pandemic on tuberculosis notification	Ravindra N	2022	Correspondence	India	N/A	N/A	<ul style="list-style-type: none"> TB-COVID Bidirectional screening and research contact tracing of all notified TB cases door-step collection of samples wherever required continued services at laboratories for providing both TB & COVID services along with continuous drug supply of anti-tubercular therapy.
71	Impact of the COVID-19 pandemic on tuberculosis services	Rodrigues I	2022	Original article (research)	Portugal	<ul style="list-style-type: none"> half of the respondents believed that there were delays in diagnosing active disease in the 1st State of Emergency, increasing to 68.8% after 1 year. During the 1st State of Emergency, only 31.3% reported using DOT with all patients (either face-to-face or video call); 25% report using it only in high-risk patients; 25% used it 1-3 days of the week, via phone call, or with the help of family member; and 18.7% did not use DOT at all. Contact screening for risk individuals was not performed routinely in 41.9% of OTBC during the 1st State of Emergency, decreasing to 9.7% after 1 year 	<ul style="list-style-type: none"> Contact tracing and screening were negatively impacted during the 1st State of Emergency, but significantly improved after one year. delays in diagnosing active disease and not using DOT in both periods. overall decrease in the number of patients seeking or referred to the OTBC. TB diagnostic delays were described in both periods. 	<ul style="list-style-type: none"> More awareness of TB should be sought during the pandemic, and emphasis placed on active case finding and fast referral. Hiring more staff for centres struggling to use DOT is a possible solution acquisition of cameras for more widespread use of Video Observed Therapy, which seems to be as effective as DOT.
72	Case finding strategies under National Tuberculosis Elimination Programme (NTEP)	Saini V	2020	Review	India	N/A	<ul style="list-style-type: none"> Need for prioritization of case finding in different settings with involvement and active participation Role of health education in an individual, general public and health care worker in the context of case finding 	N/A
73	Impact of the COVID-19 pandemic on TB infection testing	Schiza V	2022	Letter (research)	UK	<ul style="list-style-type: none"> 41% of expected TB infection tests were not performed during the intermittent pandemic lockdowns from April 2020 to August 2021. 	<ul style="list-style-type: none"> most severe disruption in TB infection testing occurred from April to June 2020, when the first lockdown was introduced. 	<ul style="list-style-type: none"> modifying TB guidelines to address the need for continued TB infection screening during any future lockdowns.
74	Prioritizing infants in a time of Bacille Calmette-Guérin vaccine shortage caused by premature expectations against COVID-19	Senoo Y	2020	Letter	Global	N/A	N/A	<ul style="list-style-type: none"> several professional medical societies in Japan as well as the World Health Organization have expressed concern regarding the off-label use of BCGV and alerted clinicians to discontinue BCGV inoculation against COVID-19. Japan BCG Laboratory, the exclusive supplier of BCGV in Japan, rapidly increased their shipment volume of BCGV

75	Impact of COVID-19 Disruptions on Global BCG Coverage and Paediatric TB Mortality: A Modelling Study	Shaikh N et. al.	2021	Comment (research)	Global	<ul style="list-style-type: none"> • Decline in global average of BCG immunization (25%) • 33,074 pediatric TB deaths with 6 months service disruption with no catch-up 	<ul style="list-style-type: none"> • Decline in global average of BCG, which may lead to excess TB death, if left un-intervened 	<ul style="list-style-type: none"> • Catch-up programs • Political incentives for BCG vaccine production
76	Economic impact of tuberculosis mortality in 120 countries and the cost of not achieving the Sustainable Development Goals tuberculosis targets: a full-income analysis	Silva S	2021	Original article (research)	Global	<ul style="list-style-type: none"> • From 2020 to 2050, based on the current annual decrease in tuberculosis deaths of 2%, 31.8 million tuberculosis deaths (95% uncertainty interval 25.2 million–39.5 million) are estimated to occur, corresponding to an economic loss of US\$17.5 trillion (14.9 trillion–20.4 trillion). • COVID-19-related disruptions add \$290.3 billion (260.2 billion–570.1 billion) to this cost. 	N/A	N/A
77	Impact of COVID-19 on TB diagnosis in Northeastern Brazil	Souza CDF	2020	Letter (research)	Brazil	<ul style="list-style-type: none"> • In March 2020, there was a sharp decrease in the notification of cases with –49.0%(May) and –48.5% (July) • Reduction in TB diagnosis was observed 48.4% municipalities, with 11.3% not registering any cases in the first 7 months of the 2 years analysed. 	<ul style="list-style-type: none"> • Reduction in TB diagnosis 	<ul style="list-style-type: none"> • urgent need for research that elucidates the relationship between COVID-19 and TB, • strengthening of strategies to ensure the diagnosis of TB during the pandemic period
78	The Potential Impact of the Covid-19 Response on Tuberculosis in High-Burden Countries: A Modelling Analysis.	Stop TB Partnership	2020	Technical document (research)	India, Kenya, Ukraine	<ul style="list-style-type: none"> • Globally, a 3-month lockdown and a protracted 10-month restoration could lead to an additional 6.3 million cases of TB between 2020 and 2025, and an additional 1.4 million TB deaths during this time. • global TB incidence and deaths in 2021 would increase to levels last seen in between 2013 and 2016 respectively – implying a setback of at least 5 to 8 years 	<ul style="list-style-type: none"> • Although COVID-19 responses may only last months, they have a lasting impact on TB in high-burden settings. 	<ul style="list-style-type: none"> • Active case-finding, contact tracing, promoting awareness of the importance of recognizing and responding to symptoms suggestive of TB, using digital technology and other tools. • Securing access to an uninterrupted supply of quality assured treatment and care
79	Thinking about tuberculosis in times of COVID-19	Teixeira RC	2021	Letter (research)	Paraguay	<ul style="list-style-type: none"> • Adult TB suspects in the country between the period March-August 2019 and at the same period in 2020, we found an alarming decrease of 80.8% in notifications of respiratory symptoms and a 42.4% reduction in patients with confirmed TB. 	<ul style="list-style-type: none"> • Decline in TB cases may be sign of failure to diagnose new cases of TB, as well as treatment failures. The eventual interruptions in therapy may facilitate the probable increase/appearance of multi-drug resistant cases 	N/A
80	COVID-19 and TB: a progression-regression conundrum	Teo AJK	2021	Editorial	Global	N/A	N/A	<ul style="list-style-type: none"> • capitalise on the heightened public awareness of case finding and contact tracing and its indistinguishable importance and relevance to TB response. • Public campaigns and efforts to destigmatise COVID-19 should also be sustained to encourage early TB healthcare seeking, minimise discrimination, and its negative effect on the wellbeing of the affected communities. • innovative care models such as community mobilisation in TB case finding and referrals and technology use in the care cascade • momentum in innovations to test, prevent, treat and care • Investments should extend beyond short-term relief, and instead focus on developing a robust and resilient healthcare and pandemic preparedness system that is equipped to protect its people when the next health crisis hits.
81	Impact of COVID-19 on extrapulmonary TB and the benefit of decentralised TB services	Tinoco EM	2022	Correspondence (research)	Portugal	N/A	<ul style="list-style-type: none"> • slight increase in EPTB diagnosis and treatment delay • able to maintain their TB response in a country where TB remains a public health problem 	<ul style="list-style-type: none"> • decentralising care from hospitals, and giving TB outpatient clinics the ability to diagnose, treat and follow up patients and persons at risk

82	Anticipating the impact of the COVID-19 pandemic on TB patients and TB control programmes	Togun T	2020	Review	UK, Africa	<ul style="list-style-type: none"> • Nigeria announced that 300 GeneXpert machines in the country will be diverted to efforts to scale-up COVID-19 diagnosis Laboratories are likely to be overwhelmed with analyses of respiratory specimens sent for COVID-19 • GeneXpert platforms will be seconded for COVID-19 diagnostics. • Families are reluctant to bring unwell children to the hospitals for investigation as everyone is discouraged from using health services at this stage, unless severely unwell. • provision of preventive therapy (IPT) for TB infection in the community, which requires resources to contact trace, screen and eventually implement drug therapy. These services are rudimentary in LMICs at the best of times. 	<ul style="list-style-type: none"> • TB control will focus on TB disease rather than prevention 	<ul style="list-style-type: none"> • galvanize global attention and advocacy right now to substantially increase their investments toward the provision of universal health care, and to comprehensively strengthen their national health systems, with a particular focus on the primary health care and provision of essential diagnostics to the poorest and the least advantaged in society.
83	Effect of COVID-19 on tuberculosis notification in Johor Bahru, Malaysia	Tok PSK	2022	Letter (research)	Malaysia	<ul style="list-style-type: none"> • 14.6% decline in total TB notifications during 2020 when compared to previous years (2015–2019) in the Johor Bahru district, Malaysia. 	<ul style="list-style-type: none"> • Decrease in TB notifications 	<ul style="list-style-type: none"> • (Malaysian experience) online appointment system for clinical services, drive-through sputum collection, enhancement of mobile radiography tools (to alleviate overcrowding at health facilities), as well as screening for TB among COVID-19 cases
84	Impact of the COVID-19 pandemic and associated non-pharmaceutical interventions on other notifiable infectious diseases in Germany: An analysis of national surveillance	Ullrich A	2021	Original article (research)	Germany	<ul style="list-style-type: none"> • TB cases decreased -12% 	<ul style="list-style-type: none"> • TB cases decreased during pandemic 	<ul style="list-style-type: none"> • Public health communication on the safety of health services
85	COVID-19 and syndemic challenges in 'Battling the Big Three': HIV, TB and malaria	Velavan TP	2021	Perspective	Global	N/A	<ul style="list-style-type: none"> • Access to diagnostic TB tests will likely be limited because of the stigma associated with coughing or malaise. • This stigma might be enhanced during the current pandemic, driving individuals with TB to hide their disease and delaying access to healthcare facilities until disease and infectivity have progressed 	N/A
86	Global TB report 2021	WHO	2022	Technical document	Global	<ul style="list-style-type: none"> • a large global drop in the number of people newly diagnosed with TB and reported. (from 7.1 million in 2019 to 5.8 million in 2020) Best estimates for 2020 are 1.3 million TB deaths among HIV-negative people (up from 1.2 million in 2019) and an additional 214 000 among HIV-positive people (up from 209 000 in 2019) 	<ul style="list-style-type: none"> • The COVID-19 pandemic has reversed years of progress in providing essential TB services and reducing TB disease burden • Reduced access to TB diagnosis and treatment has resulted in an increase in TB deaths. 	<ul style="list-style-type: none"> • immediate priority is to restore access to and provision of essential TB services such that levels of TB case detection and treatment
87	Information note, COVID-19: Considerations for tuberculosis (TB) care	WHO	2020	Technical document	Global	N/A	<ul style="list-style-type: none"> • TB cases decreased -12% • urgently maintain continuity of essential services for people affected with TB during the COVID-19 pandemic 	<ul style="list-style-type: none"> • need to be intentional and thoughtful when communicating on social media and other communication platforms, showing supportive behaviours around COVID-19, as well as older diseases like TB
88	Impact of the COVID-19 pandemic on TB detection and mortality in 2020.	WHO	2021	Technical document	Global	<ul style="list-style-type: none"> • The relative shortfall in TB case notifications (2020 vs. 2019) was 21%. • In the group of 10 high-burden countries with the largest shortfalls compared with 2019, the overall shortfall was 28%. 	N/A	N/A
89	WHO Immunization data : Bacillus Calmette–Guérin (BCG) vaccination coverage	WHO	2021	Website database	Global	<ul style="list-style-type: none"> • 88% in 2019 • 85% in 2020 	N/A	N/A
90	Decrease in Tuberculosis Cases during COVID-19 Pandemic as Reflected by Outpatient Pharmacy Data, United States, 2020	Winglee K	2022	Original article (research)	US	<ul style="list-style-type: none"> • Pharmacy data projected patient counts showed large decrease in 2020 compared with 2019 	<ul style="list-style-type: none"> • TB cases decreased 	N/A

91	Impact of the COVID-19 pandemic on the detection of TB in Shanghai, China	Wu Z	2020	Letter (research)	China	<ul style="list-style-type: none"> • TB notification rate decreased by 47.8% compared to pre-lockdown, rising when lockdown was lifted 	<ul style="list-style-type: none"> • TB notification rate decreased, possibly owing to diagnostic delays and lack of medical resources 	N/A
92	Integrating health planning and primary care infrastructure for COVID-19 and tuberculosis care in India: Challenges and opportunities	Yadav P	2022	Perspective	India	N/A	<ul style="list-style-type: none"> • disruption of routine TB programmes, inability to access health care and TB drugs has led to an exacerbation of the already ongoing TB epidemic in high burden countries like India. 	<ul style="list-style-type: none"> • Primary healthcare manpower capacity building • a unified inclusive primary care delivery model which integrates care for both TB and COVID-19 at the level of surveillance, diagnosis, management, and preventive care
93	Decline in TB incidence during the COVID-19 pandemic	Zamani S	2021	Correspondence (research)	Iran	<ul style="list-style-type: none"> • (modeling analysis) Difference between the predicted and real value of TB incidence rate of about 3.18/100,000 • Observed increase of 7% (from 54.9% to 62.2%) between 2019 and 2020 in severe TB 	<ul style="list-style-type: none"> • significant reduction in TB incidence in 2020 compared to 2019 • There was a significant downward trend in TB incidence from 2011 to 2020, which means that at least part of the reduction in 2020 was predictable 	N/A