

A QUICK GUIDE TO TUBERCULOSIS (TB)

A Resource for
JOURNALISTS

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www.media4tb.org

The basic science of TB

1. What is Tuberculosis or TB?

TB is an infectious disease caused by a germ called 'Mycobacterium Tuberculosis'. TB mostly affects the lungs (causing pulmonary TB) but can also affect other organs, including bones and joints, kidneys, brain, genitals, urinary tract, spine, lymphatic system, intestines, etc. When TB affects any organ other than the lungs, it is called extra-pulmonary TB.

2. How does TB spread?

TB spreads through air. When someone with pulmonary TB coughs, spits or sneezes, droplets of mucous carrying TB germs may be expelled into the air. Anyone who inhales these droplets could develop an active TB infection.

3. Who can be affected by TB?

Since TB is an airborne disease, anyone who inhales the bacteria can get infected with TB. It can affect people belonging to any age group or economic strata.

4. How do the inhaled bacteria spread to other organs and cause extra-pulmonary TB?

When someone inhales the TB bacteria, it could settle in the lungs and cause pulmonary TB. However, it could also spread to other organs via the blood stream and lymph system and cause an infection in whichever part of the body it settles in.

5. What is the difference between TB disease and TB infection?

Many of us have already inhaled the TB bacteria and carry it within our bodies, often without our knowledge. This is called TB infection. All of us who inhale the TB bacteria do not become ill with the disease. In most people, the normal immune system of the body is able to keep the bacteria well under control. In about 10% of the people who harbour the bacteria, the germs multiply and cause TB disease.

6. What are the risk factors for TB disease?

A Person with TB infection usually develops TB disease when his or her immunity is lowered. Poor nutrition, diabetes and HIV are some of the risk factors for TB, as they all lower a person's immunity. Smoking is also a risk factor as it weakens the immunity in the lungs. Anyone in close contact with a person with pulmonary TB is also at a greater risk of developing TB.

7. If someone has pulmonary TB, what precautions can be taken to ensure that s/he does not transmit the disease to others?

Since TB spreads through the air, the most important measure to control the spread of the disease is for someone with TB to wear a mask or cover her/his mouth with a handkerchief or a cloth while coughing or sneezing. Moreover, once a Person with TB starts treatment, s/he becomes non-infectious within a few weeks. Taking the right medicines – in the right combination and the right dosage – is crucial. It is also important to keep homes well ventilated.

Note: TB only spreads through air. It does not spread by sharing utensils or food and water or through touch.

8. What are the symptoms for pulmonary or lung TB?

- Persistent cough for over two weeks
- Blood in the phlegm (haemoptysis)
- Fever
- Chest pain
- Loss of appetite
- Loss of weight
- Breathlessness
- Night sweats

9. If someone has had a persistent cough for over two weeks, is it TB?

It could be TB. It is important to immediately consult a qualified doctor and get tested for TB.

10. How is pulmonary TB diagnosed?

The best way to diagnose pulmonary TB is via Nucleic Acid Amplification tests (CBNAAT or True NAT) or sputum microscopy test (testing the phlegm that is coughed out) followed by, if necessary, an X-ray of the chest.

11. Can blood tests detect TB?

Serological tests (blood tests) are very often inaccurate and have been banned by the Government of India¹ and the WHO² for the diagnosis of TB. In other words, a blood test will not tell someone if they have TB disease. However, some blood tests like IGRA are used to detect TB infection.

12. What is a Mantoux test?

The Mantoux test is a skin test. A fluid called tuberculin is injected into the skin and if a person reacts to it, it indicates TB infection in the past. However, the Mantoux test cannot be used to determine active TB disease. Therefore, a Mantoux test cannot definitively tell if someone has TB disease or not, particularly in the case of adults. However, in children, the Mantoux test is often used along with other tests to diagnose TB disease.

13. Is there a vaccine for TB? Is it effective?

The BCG (Bacille Calmette Guerin) vaccine is currently the only one available for TB. This is a weakened strain of TB that encourages the body to build immunity against the disease. BCG protects children from severe forms of TB such as meningitis and TB that spreads to whole of the body called disseminated TB, but does not protect children against getting TB infection. It may provide protection up to about 15 years after which, the protective efficacy wanes. BCG also provides a moderate protective effect against leprosy.

¹http://www.tbcindia.nic.in/pdfs/WHO_Policy_Serology_2011.pdf

²http://www.who.int/tb/features_archive/factsheet_serodiagnostic_test.pdf

14. What other tests are done alongside testing for TB for someone who has symptoms of TB?

All people with symptoms of TB are tested for HIV and diabetes and vice versa. People with TB are tested for HIV and diabetes; for those with either of these illnesses (known as co-morbidities), TB treatment is ineffective if treatment for HIV or diabetes is also not provided.

15. Do people who live in the households of People with TB need to be screened for TB?

Pulmonary TB is infectious and can spread from one person to another. Family or household members of people with pulmonary TB have a higher chance of being infected with TB and developing TB disease. Hence household members of people with pulmonary TB need to be screened for TB disease and TB infection.

16. Does TB infection need to be treated?

The TB programme in India is rolling out measures to screen household members of people with pulmonary TB for TB infection and treat them. This treatment would ensure that TB infection does not become TB disease. These efforts will speed up the pace at which TB elimination can be achieved.

Extra-pulmonary TB

17. What are the symptoms of extra-pulmonary TB?

In the case of extra-pulmonary TB, the person will develop symptoms that are specific to the affected area. For example, in a case of intestinal TB, the person may experience abdominal pain or diarrhoea or in the case of TB of a particular joint, the Person with TB may experience pain and swelling of that area. Besides this, fever in the evenings, loss of appetite and weight loss are also common for all forms of TB.

18. Is extra pulmonary TB contagious?

No, it is not. Only pulmonary TB, which spreads through air, is contagious.

19. How is extra-pulmonary TB diagnosed?

Extra-pulmonary TB is ideally diagnosed by examining the affected organ or site, eg. lymph node. This is done by means of a FNAC (Fine Needle Aspiration Cytology) or biopsy, in which fluid or a small bit of the tissue is removed through a surgical procedure and examined under the microscope or sent for NAAT testing. When a biopsy is not feasible, e.g. in the case of the spine, the diagnosis is made with a combination of X-rays, CT, MRI or ultrasound scans and symptoms.

Treating TB

20. Is TB curable?

TB is definitely curable.

21. How is TB treated?

TB is treated with a combination of drugs (Isoniazid, Rifampicin, Ethambutol and Pyrazinamide). Under the National TB Elimination Programme (NTEP), the Government of India provides every citizen free diagnosis and treatment for TB.

22. Who is a treatment supporter?

A treatment supporter is someone who has taken on the responsibility of ensuring that the Person with TB takes the medicines on time – it could be a doctor, a pharmacist, a neighbour, a social worker, colleague, a TB Champion, or a community volunteer. Anyone can become a treatment supporter to someone in the neighbourhood. In some cases, family members are also designated as treatment supporters

23. What is the duration of treatment for TB?

The duration of treatment for drug-sensitive TB is six months. This may be extended in case of extrapulmonary TB to achieve complete cure. For people with a drug resistant form of TB, the duration of treatment is much longer, up to two years.

24. Can someone stop taking the medicines if they feel better, and not complete the entire course of treatment?

No, one must complete the full course of treatment. It is likely that someone with TB will feel better in a few weeks after starting treatment but that does not mean s/he is cured. Anti-TB medicines are strong antibiotics and it is essential to complete the course of medicines to ensure that one does not have a recurrence of TB and that the bacteria do not become resistant to the anti-TB drugs and cause a more serious complication, i.e. drug-resistant TB.

25. Do People with TB need to be hospitalised for TB treatment?

No, TB can easily be treated on an outpatient basis. Only people who are severely ill or have drug-resistant TB require hospitalisation.

26. Is treatment for TB very expensive?

No, treatment for TB is available free of cost at all government centres. However, costs in the private sector vary tremendously – a full course of TB treatment, if bought from a pharmacy, can cost between Rs 6,000 to Rs 12,000 for six months, depending on the medicines prescribed. For drug-resistant TB, the cost may run to lakhs of rupees in the private sector.

Drug-resistant TB

27. What does drug-resistance mean?

Drug resistance means that the TB medicines are not able to kill the TB bacteria causing disease. The bacteria have become resistant to some specific drugs, which are therefore no longer effective.

28. What causes Multi-Drug Resistant TB or MDR-TB?

When someone with TB develops resistance to two of the most important drugs used in the treatment (Isoniazid and Rifampicin), with/without resistance to other drugs, the person is said to have MDR-TB. This could be because his intake of the prescribed medicines has been irregular or that s/he has not completed the full

course of medicines. In such cases, the bacteria might become resistant to these drugs and s/he could then develop MDR-TB. In some instances, people directly get MDR-TB by inhaling droplets containing MDR-TB bacteria.

29. What are the symptoms of MDR-TB?

The symptoms of MDR-TB are the same as 'ordinary' TB – a persistent cough, chest pain, fever, night sweats, loss of appetite and weight. Those, who come into frequent contact with someone who already has MDR-TB or a Person with TB whose treatment has been interrupted, are at a higher risk of developing MDR-TB.

30. How is MDR-TB diagnosed?

Drug resistance can be diagnosed only through lab tests. CBNAAT or True NAT which are used for diagnosis of TB can indicate resistance to one important drug called Rifampicin. CBNAAT and TrueNAT are available in a few public sector labs in every district. There are other tests which are available in a few public sector labs at the state level which help in diagnosing MDR-TB, namely LPA (Line Probe Assay) and liquid culture.

31. What are NAAT tests?

NAAT (Nucleic Acid Amplification test) is a revolutionary recent molecular test that helps to detect the TB bacteria as well as resistance to Rifampicin, a drug used to treat TB. This means that People with TB who have TB bacteria that is resistant to Rifampicin are identified at the time of diagnosis and given the appropriate course of treatment. There are two major type of NAAT machines that are used widely. One is CBNAAT (Cartridge Based Nucleic Acid Amplification test) and the other is TrueNAT. The NAAT can give results within two hours, unlike earlier culture tests. These tests are now being used across India through the NTEP with at least one NAAT machine available in all districts.

32. What is Universal Drug Sensitivity Test (UDST)?

For all People with TB where a sample is available for testing, the sample is subject to NAAT testing and LPA. NAAT tests are able to detect if Rifampicin would be effective in a Person with TB - i.e. it gives us the Rifampicin sensitivity status. LPA is also a molecular test which gives the sensitivity status for Rifampicin and Isoniazid, the two medicines very important to cure someone of TB.

NTEP has made UDST mandatory for all People with TB to ensure that People with TB (PwTB) who are resistant to Rifampicin or Isoniazid are identified right at the beginning and given the appropriate course of treatment if they have drug resistant TB.

33. Is MDR-TB curable?

Yes, MDR-TB is curable although the treatment period is considerably longer than that of 'ordinary' drug-sensitive TB. However, cure rates are poorer than 'ordinary' TB, at only about 50% - 60%. Until very recently, people diagnosed with MDR-TB were initiated on a two-year long conventional regimen with injectable medications. At present, people diagnosed with MDR-TB receive either a nine to 11 month short-course regimen with injections or an 'all oral longer regimen' which is 18 to 20 months long without injections.

34. What is Extensively drug-resistant TB or XDR-TB?

XDR-TB is an advanced stage of MDR-TB in which, the bacteria, in addition to being resistant to Isoniazid and Rifampicin, are also resistant to two of the most potent drugs used to treat MDR-TB, i.e., fluoroquinolone and injectable medications. Since someone with XDR-TB is resistant to most of the core drugs used to treat TB, treatment options are limited and have many side-effects.

TB in India

35. Is TB a serious disease in India?

TB is one of India's biggest public health challenges. According to the Global TB Report 2019, the incidence of TB in India was approximately 26 lakh cases, accounting for a quarter of the world's TB burden. The mortality or deaths due to TB are estimated at over four lakh deaths every year (excluding deaths related to TB-HIV). This translates to over 1200 deaths every day due to TB. Although the number of people who are affected by TB every year in India is declining, the pace at which this number is declining is 2% to 3% per year. To achieve elimination of TB, the number of new people who are diagnosed should decrease by at least 10% per year.

36. What is the role of the government in TB prevention and care?

The Indian government has had a National TB programme since 1962; however, after reviewing its effectiveness, the Revised National TB Control Programme (RNTCP) was rolled out in phases from 1998. RNTCP was renamed as NTEP in the year 2020 in line with India's ambitious target of eliminating TB by 2025. Through the NTEP, the government provides high-quality free diagnosis and treatment at TB centres throughout the country.

NSP 2017-2025: In line with the goal of ending TB by 2025, the government has rolled out the National Strategic Plan (NSP) for TB elimination (2017–25). The NSP, which is an eight-year strategy document, serves as a framework to guide the activities of all stakeholders, including the national and state governments, development partners, civil society organizations, international agencies, research institutions, private sector, and others, whose work would be relevant to TB elimination in India.

³<http://www.tbcindia.nic.in/rntcp.html>

⁴<https://tbcindia.gov.in/WriteReadData/NSP%20Draft%2020.02.2017%201.pdf>

Daily Drug Regimen: In 2017, the government changed the treatment strategy for TB, switching from a thrice-weekly regimen to daily fixed dose combinations (FDC) of first-line anti-tuberculosis drugs in appropriate weight bands. For both categories of People with TB, newly diagnosed and previously treated, the treatment in intensive phase (IP) will consist of eight weeks of Isoniazid, Rifampicin, Pyrazinamide and Ethambutol in daily dosages as per five weight band categories. Pyrazinamide will be stopped in the Continuation Phase (CP), while the other three drugs will be continued for another 16 weeks as daily dosages. The treatment lasts for a period of six months and it may be extended after the medical officer undertakes a clinical assessment. The treatment is usually extended in case of extrapulmonary TB such as bone TB, joint TB, TB of the brain etc.

Structure of India's Health System: India's health system is broadly divided into primary, secondary and tertiary levels in order to ensure that services for common illnesses are available closer to the people. This system has an in-built two-way referral system to ensure quality services are available at all levels without over-burdening at any one level. Testing and treatment for drug sensitive TB is available in the primary level at most Primary Health Centres (PHC) across the country and all the health facilities that are above the level of PHCs.

Structure of NTEP: The National TB Elimination Programme has structures and staff at the central, state and district levels to support the health system in carrying out all activities pertaining to TB.

Central TB Division: The structure at the national level is Central TB Division (CTD). The CTD plans, supervises, monitors and evaluates programme activities throughout the country. The CTD is also responsible for the development of all guidelines that are used across in the TB programme in the country.

State TB Cell: The State TB Officer (STO) based at the State TB Cell is administratively answerable to the State Government and technically follows the instructions of the CTD, and coordinates with CTD and the districts for executing the plans of the TB programme.

District TB Cell: The TB activities in a district are headed and governed by the District TB Officer (DTO) who is trained in all aspects of the functioning of the NTEP. The DTO at the DTC has the overall responsibility of physical and financial management of NTEP at the district level.

Tuberculosis Unit: The Tuberculosis Unit (TU) covers a population of approximately 2.5 lakhs. The TU is responsible for the treatment initiation and provision of support necessary for treatment adherence for all People with TB who are residing under the geographical jurisdiction of the TU, irrespective of whether they were initiated on treatment in the public or the private sector. A TU has a team comprising of a specifically designated Medical Officer – TB Control (MO-TC), Senior Treatment Supervisor (STS) and Senior Tuberculosis Laboratory Supervisor (STLS).

Public Health Institution

In the context of NTEP, a PHI is a health facility with at least one Medical Officer. All private health facilities with practicing medical officers which provide TB services are also called Peripheral Health Institutions. Each PHI is required to maintain a record of all PwTB from the concerned PHI in the TB notification register.

Designated Microscopy Centres

The Tuberculosis Units have one Microscopy Centre for every 1 lakh population referred to as the Designated Microscopy Centre (DMC). DMC is the facility where sputum collection and testing happen. DMCs also ensure transportation of samples to the nearest NAAT facility.

TB forums: TB forums are structures for engagement of the community within NTEP. The vision for the creation of these forums is to create a seat for the affected community at the table and to encourage active participation by community actors at all levels. Each state and district has a TB forum which is composed of multiple stakeholders and meets once in 6 months.

Nikshay Poshan Yojana: In April 2018, the government initiated the Nikshay Poshan Yojana⁵ – a scheme for nutrition support to People with TB. The scheme provides a financial disbursement of Rs. 500 to each notified Person with TB through Direct Benefit Transfer for the duration for which the person is on anti-TB drugs. All People with TB notified on or after April 1, 2018 are eligible to avail of this benefit. The first instalment of Rs. 1000 is credited at the time of diagnosis, the second instalment of Rs. 1000 is credited at the end of two months of treatment and the last instalment of Rs. 1000, at the end of treatment. In case of People with DR-TB, the disbursement for nutritional support is provided throughout the duration of treatment.

37. What is the role of the private health care sector in TB prevention and care?

Various studies have estimated that over 60% of people in India go to the private healthcare sector for diagnosis, care and treatment. This is also true in the case of TB.

In an effort to quantify the burden of the disease, track the TB burden better and ensure that People with TB complete treatment, the government made TB a notifiable disease in May 2012⁶. This means all public and private clinics, health providers, NGOs and private practitioners will have to report people diagnosed with TB to their designated local authority. However, this directive was often not adhered to. In order to mitigate inadequate reporting, in March 2018, the government issued a gazette notification⁷ as per which doctors, health practitioners and pharmacists failing to report cases of TB could face a jail term of up to two years under sections 269 and 270 of the Indian Penal Code (IPC).

People with TB who are treated by a private practitioner are eligible to avail services in the public sector such as NAAT testing, Nikshay Poshan Yojana, contact screening among household members and TB Preventive Treatment.

⁶<https://tbcindia.gov.in/showfile.php?lid=3318>

⁷<http://www.tbcindia.nic.in/pdfs/TB%20Notification%20Govt%20%20Order%20dated%2007%2005%202012.pdf>

⁸<http://egazette.nic.in/WriteReadData/2018/183924.pdf>

TB as a social disease

38. Why is TB often called a social/socio-economic disease?

Like other long-drawn out illnesses, TB affects an individual in multiple ways. Apart from the physical symptoms, TB also has an effect on the earning capacity of an individual and People with TB are often not able to support their family. In many cases, stigma could mean that People with TB are ostracised by their employers or families.

39. What is the connection between TB and poverty?

Traditionally, TB has always been perceived as a disease affecting only the poor. But, that is not always true – TB is airborne and can affect anyone with low immunity. Those living in poverty are probably at a greater risk, due to their economic status which affects their lifestyle/surroundings – for instance, overcrowded homes, poorly-ventilated surroundings or low immunity caused by malnutrition.

40. Do those with TB experience any stigma?

People with TB face a certain amount of stigma and risk being isolated or ostracised. Moreover, TB continues to be associated with various age-old myths and misconceptions that worsen the stigma. For instance, many people believe that TB is hereditary – it is not. As a result of such misconceptions, many women who are diagnosed with TB keep their diagnosis a secret from even their families. Some people stand the risk of losing their jobs, their homes and incomes because of stigma.

41. Is TB a gendered disease?

Although more men are affected by TB, women and transgender persons experience the disease differently. Gender differences and inequalities play a significant role in how people of all genders access and receive healthcare in the public and private sectors.

42. Do women and transgender people experience stigma differently from men?

Stigma among People with TB is prevalent irrespective of their gender or social backgrounds. However, stigma has impacted women differently when compared to men. Men generally face loss of employment and income and struggle to make ends meet, experiencing poverty and occasionally isolation. A majority of women, on the other hand are isolated and shamed by their own families, friends and in-laws. Married women are sometimes driven out of their homes. Women are often forced to take their treatment secretly and they live with the constant fear of people around them finding out about their condition. Studies have shown that while men find it hard to cope with the physical effects of TB, women considered it most difficult to deal with stigma associated with the disease.

Transgender people experience stigma differently than men and women. Stigma for them can be threefold — stigma of being socially discriminated as a transgender person, as a transgender person with TB and as a transgender Person Living with HIV and TB or presumed to have HIV. Their social distance from the health system and poor access to health services compounds the challenges they face due to stigma

43. How does TB impact someone psychologically?

The stigma surrounding TB and the misconceptions about TB have a psychological impact on People with TB. There have been instances of People with TB committing suicide as a result of isolation and depression. It is extremely vital that a Person with TB is given counselling and social support. Family and friends also play an important role in this. The treatment for TB generally lasts for six months or more. During this period, a Person with TB needs the support of family, friends, well-wishers and community members. A good support system can help prevent the Person with TB from spiralling into depression and giving up the treatment.

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This document is intended as a one-stop resource for journalists who are reporting on TB for the first time or for those who wish to improve their understanding of TB. This document will remain a work in progress and will be updated as and when there are new scientific or social developments. If you spot any errors, or wish to suggest any additions, please feel free to email us at media@reachindia.org.in

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