

A QUICK GUIDE TO TUBERCULOSIS (TB)

A Resource on
TUBERCULOSIS

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www.media4tb.org

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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 can be infected and may develop active TB.

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 does 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. 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. Among those who are infected with TB, there is a 10% lifetime risk of developing into active TB disease. This risk increases six times among people living with HIV.

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 lungs. Anyone in close contact with someone who has pulmonary TB is also at a greater risk of developing TB. Other risk factors are overcrowding and indoor air pollution.

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 cover his/her 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 sputum (haemoptysis)
- Fever
- Chest pain
- Loss of appetite
- Loss of weight
- Breathlessness

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?

Pulmonary TB is diagnosed by testing the sputum sample by microscopy, any rapid molecular tests such as Cartridge Based Nucleic Acid Amplification Testing (CBNAAT) or TrueNat or by sputum culture.

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.

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, this indicates that the person is infected with TB. However, the Mantoux test cannot differentiate between TB infection and TB disease. In a country like India, where many people have TB infection (i.e., the bacteria is present in the body) but may never develop active TB disease, the Mantoux test does not have much value. 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 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 disseminated TB. It may provide protection up to about 15 years after which, the protective efficacy wanes. BCG is not effective in prevention of TB in adults.

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

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

Extra-pulmonary TB

14. 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 diarrhoea or in the case of TB of a particular joint, the patient may experience pain and swelling of that area. Besides this, fever in the evenings, loss of appetite and weight loss are also possible.

15. Is extra pulmonary TB contagious?

No, it is not. Only pulmonary TB, which is airborne, is contagious.

16. 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 biopsy, in which a small bit of the tissue is removed through a surgical procedure and examined under the microscope or the sample can be tested by CBNAAT. When a biopsy is not feasible, eg. in the case of the spine, the diagnosis is made with a combination of X-rays, CT or MRI scans and symptoms.

Treating TB

17. Is TB curable?

TB is definitely curable.

18. How is TB treated?

TB is treated with a combination of drugs (Isoniazid, Rifampicin, Ethambutol and Pyrazinamide). Under the Revised National TB Control Programme (RNTCP), the Government of India provides every citizen free diagnosis and treatment for TB. These drugs are available under the RNTCP through fixed dose combination.

19. What is DOTS?

DOTS is Directly Observed Treatment, Short Course - a strategy recommended by the WHO as a cost-effective strategy for controlling the TB epidemic. This was also adopted in the RNTCP.

20. Who is a DOT provider or Treatment Supporter?

A DOT provider is now known as a Treatment Supporter under RNTCP. S/he is someone who has taken on the responsibility of ensuring that the patient takes the medicines on time – it could be a doctor, a pharmacist, a neighbour, a social worker, colleague, 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.

21. What is duration of TB treatment?

The duration of treatment of TB is 6 to 8 months. Some extra-pulmonary forms of TB need to be treated up to one year.

22. Is it necessary to complete the entire course of treatment? Can someone stop taking the medicines if they feel better?

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 body does not become resistant to the anti-TB drugs (and cause a more serious complication, i.e drug-resistant TB). If a patient stops taking medicines before completion of the course, there is a chance of development of drug-resistant TB. The duration of treatment of drug-resistant TB is longer with more side effects.

23. Do patients need to be hospitalised for TB treatment?

No, TB can easily be treated on an outpatient basis. Only severe cases and complicated TB treatment regimes require hospitalisation.

24. Is TB treatment very expensive?

No, TB treatment is available free of cost at all government centres. The government is also ready to provide anti-TB drugs to TB patients who seek care from the private sector. The 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 the six months, depending on the drugs prescribed. For drug-resistant TB, the cost may run to lakhs of rupees in the private sector.

Drug-resistant TB

25. What does drug-resistance mean?

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

26. 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 cases, people directly get MDR-TB by inhaling MDR-TB infected droplets.

27. What are the symptoms of MDR-TB?

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

28. How is MDR-TB diagnosed?

MDR-TB is diagnosed by testing the sputum samples for culture and drug sensitivity. However, it takes anywhere from three to six weeks to get results from culture sensitivity tests* (which involves growing the TB bacteria from the sputum in a laboratory and testing the bacteria's resistance to anti-TB drugs). In recent years, the CBNAAT test has been developed to diagnose TB and help identify resistance to Rifampicin within two hours. Another technology known as Line Probe Assay (LPA) diagnoses drug-resistant TB in 72 hours.

29. What is CBNAAT?

CBNAAT is a 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 TB patients who are resistant to Rifampicin are identified at the beginning itself and given the appropriate course of treatment. The CBNAAT test can give results within two hours, unlike earlier culture sensitivity tests. In 2010, WHO recommended the widespread use of this technology and oversees the roll-out of the CBNAAT technology across the world. The CBNAAT test is now being used across India through the RNTCP and at least one machine is available in most districts.

30. Is MDR-TB curable?

Yes, MDR-TB is curable although the treatment period is considerably longer and often at least two years. However, cure rates are poorer than with 'ordinary' TB, at only about 50%. Recently, two new drugs, Bedaquiline³ and Delamanid⁴ have been conditionally approved by the FDA (Food and Drug Administration) and EMA (European Medicines Agency) for treating MDR-TB and WHO has issued guidelines for their usage. In India, Bedaquiline was first introduced for use in five states and has now been expanded to other states as well. The process of making Delamanid available is underway and the drug will soon be available to drug-resistant TB patients.

³<http://www.who.int/tb/challenges/mdr/bedaquiline/en/>

⁴<http://www.who.int/tb/publications/delamanid-in-mdr-tb-treatment/en/>

31. 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, flouroquinolones and the injectables. Since someone with XDR-TB is resistant to most of the core drugs used to treat TB, treatment options are limited, highly expensive and have many side effects.

TB in India

32. Is TB a serious disease in India?

TB is one of India's biggest public health challenges. According to the Global TB Report 2017, the incidence of TB in India was approximately 28 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 1,100 deaths every day due to TB.

33. 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)⁵ was rolled out in phases from 1998. Through the RNTCP, 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)⁶ for TB elimination (2017–25). The NSP, which is an eight-year strategy document, will serve 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.

⁵<http://www.tbcindia.nic.in/rntcp.html>

⁶<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 new TB cases, the treatment in intensive phase (IP) will consist of eight weeks of Isoniazid, Rifampicin, Pyrazinamide and Ethambutol in daily dosages as per four weight band categories. There will be no need for extension of IP. Only Pyrazinamide will be stopped in the Continuation Phase (CP), while the other three drugs will be continued for another 16 weeks as daily dosages.

For previously treated cases of TB, the IP will be of 12 weeks, where injection Streptomycin will be stopped after 8-weeks and the remaining four drugs (INH, Rifampicin, Pyrazinamide and Ethambutol) in daily dosages as per weight bands will be continued for another 4 weeks. There will be no need for extension of IP. At the start of CP, Pyrazinamide will be stopped while the rest of the drugs – Rifampicin, INH and Ethambutol will be continued for another 20 weeks as daily dosages in the CP.

The NSP also proposes the use of information technology (IT) enabled treatment adherence support system for TB patients.

Nutrition Support: In April 2018, the government initiated the Nikshay Poshan Yojana⁷ – a scheme for incentives for nutrition support to TB patients. The scheme provides a financial incentive of Rs. 500 to each notified TB patient through Direct Benefits Transfer for the duration for which the person is on ant-TB drugs. All TB patients notified and registered on the Nikshay portal on or after April 1, 2018 and existing TB patients on treatment are eligible to avail of this benefit.

Read more at <https://tbcindia.gov.in/>

⁷<https://tbcindia.gov.in/showfile.php?lid=3318>

34. 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. Private practitioners may follow their own system of treating TB, although they do have the option of participating in the RNTCP programme and providing access to free diagnosis and treatment for their patients.

Private providers should:

- Notify all TB patients to the nodal person in the district
- Use microbiology tests for diagnosis of TB
- Use fixed dose combination daily anti-TB drugs as per STCI
- Coordinate with the government to provide free diagnosis and free treatment to patients
- Get all TB patients tested for HIV and drug susceptibility testing
- Facilitate treatment adherence support to ensure completion of treatment
- Report treatment outcome of TB patients
- Help patients to get benefit of NIKSHAY Poshan Yojana

35. What is gazette notification for TB?

In an effort to quantify the burden of the disease, track TB cases better and ensure that patients complete treatment, the government made TB a notifiable disease in May 2012⁸. This means all public and private clinics, health providers, NGOs and private practitioners will have to report every TB case 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 notification⁹ 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).

⁸<http://www.tbcindia.nic.in/pdfs/TB%20Notification%20Govt%20%20Order%20dated%2007%2005%202012.pdf>

⁹<http://egazette.nic.in/WriteReadData/2018/183924.pdf>

TB as a social disease

36. 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 patients are often not able to support their family. In many cases, stigma could mean that TB patients are ostracised by their employers or families. TB affects those in the productive age group and may lead to loss in income for the family. Many patients are still taking treatment in the private sector with considerable out-of-pocket expenditure.

37. 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.

38. Do those with TB experience any stigma?

TB patients 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.

39. Do women experience stigma differently from men?

Stigma among TB patients is prevalent irrespective of their gender or social backgrounds. However, stigma has impacted women more 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.

40. How does TB impact someone psychologically?

The stigma surrounding TB and the misconceptions about TB have a psychological impact on patients. There have been instances of TB patients committing suicide as a result of isolation and depression. It is extremely vital that a TB patient is given counselling and social support. Family and friends also play an important role in this. The treatment for TB generally lasts for 6 months or more. During this period, a patient needs the support of family, friends, well-wishers and community members. A good support system can help prevent the patient from spiralling into depression and giving up the treatment.

Notes

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