## What is tuberculosis?

Tuberculosis (simply called TB) is an infectious disease primarily caused by Mycobacterium tuberculosis. TB mainly affects the lungs (“pulmonary TB”) but can attack any part of the body (“extra-pulmonary TB”).

Like the common cold, TB spreads through the air. Only people who are sick with pulmonary TB are infectious. When infectious people cough, sneeze, talk, spit, laugh or sing they propel the TB germs (known as bacilli) into the air. If a healthy uninfected person inhales air containing the TB bacilli they can become infected themselves.

Infection with TB generally occurs during close contact over a period of time with someone with TB disease. Overcrowding in the home or at the workplace is thus considered to be an important predisposing factor for catching TB.

## What is the difference between TB infection and TB disease?

Someone who is infected with the TB bacilli has the TB germ in their body but for most people their immune system protects them from developing TB disease and becoming sick. They also do not spread the disease to other people. People infected with the TB germ generally have a 5–15% lifetime risk of developing TB disease and becoming ill.

Someone who develops TB disease following infection is sick and at risk of death. If not properly treated, they can also spread the disease to other people.

## Who can get TB?

Anyone can get TB. It strikes people of all races, ages and income levels.

The following factors are associated with a higher risk of becoming infected:

close contact with people with active TB disease

HIV infection

poverty

malnutrition

homelessness.

The risk of an individual developing active disease is mainly related to their immune system capacity. Some conditions, such as AIDS, diabetes or long-term therapy with corticosteroids, can severely impair the immune system, thus increasing the chance of developing TB disease. In addition, some behaviours (such as injecting drug use) can also impair the immune system.

## What are the symptoms of TB?

A person with pulmonary TB may have any, all or none of the following symptoms:

persistent cough

weight loss

fever

loss of appetite

tiredness

night sweats

shortness of breath

coughing up blood.

A person with extra-pulmonary TB may have the following general symptoms:

weight loss

fever

night sweats.

Other symptoms will depend on the organ or organs affected, and might include for example:

swelling of the lymph nodes

joint pain and swelling

headache, fever, neck stiffness and drowsiness due to TB meningitis.

## Who should be tested for TB?

People should be tested for TB if:

they have spent time with someone who is known or thought to have infectious TB disease;

they were born in or frequently travel to countries where TB disease is common;

they live or are employed in a large group setting where TB is more common – such as a homeless shelter, prison or nursing home;

they are a health care worker who cares for patients with TB disease;

they are living with HIV; or

they are a child who may have been in contact with someone with TB disease – children, especially those under 5, have a higher risk of developing TB disease once infected and it is therefore very important to test for TB infection in children who may have been in contact with someone with TB disease.

## How can TB be tested for?

WHO has recently published updated guidance on recommended approaches to testing for TB – including among populations at high risk. The guidance identifies key populations to be prioritized for TB screening using a range of methods. These include screening for symptoms, chest radiography, computer-aided detection software, WHO-approved molecular diagnostic tests and tests for C-reactive protein in the blood.

## What is the treatment for TB?

TB disease is curable and can be treated by a combination of antibiotics. Commonly used drugs include rifampicin and isoniazid. In some cases, the TB bacterial strain involved does not respond to the standard drugs and the patient is considered to have “drug-resistant TB” (see below). The treatment of drug-resistant TB is longer and more complicated than it is for TB that is susceptible to the commonly used drugs.

A course of TB drugs is provided to the patient along with information, supervision and support from a health worker or trained volunteer. Without such support, patients can find that sticking to the treatment can be difficult. Where a treatment course is not properly completed, the bacterial strain responsible for the infection can become drug resistant and spread.

In the case of TB infection – where the patient is infected with the TB bacterium but is not ill – preventive treatment can be given to stop the disease from starting. This preventive treatment uses the same drugs used for disease treatment but for a shorter time. Recent advances in preventive treatments have shortened the length of time needed to only 1–3 months for some patients, compared to 6 months in the past.

## What if I have HIV?

All people with HIV should be tested to find out if they have TB infection or TB disease, and should be treated where necessary. If you test positive for TB and you have HIV, you should start treatment for TB as soon as possible.

People living with HIV are about 18 times more likely to develop active TB disease than people without HIV. There are several effective TB treatment regimens available for people with HIV for preventing or treating both TB infection and TB disease.

## What is multidrug-resistant TB and how do we manage it?

Multidrug-resistant TB (MDR-TB) is classified as TB that does not respond to at least rifampicin and isoniazid – the two most powerful TB drugs. There are a number of ways in which MDR-TB can emerge and spread – including through the mismanagement or partial completion of TB treatment followed by person-to-person transmission of drug-resistant TB. Drug resistance can emerge due to the inappropriate or incorrect use of TB drugs, the use of ineffective drug formulations (such as single-drug formulations or formulations that use poor quality or badly stored medicines) and/or prematurely stopping treatment. MDR-TB can then be transmitted, especially in crowded settings such as prisons and hospitals. Most people with TB are cured

only by strictly following a 6-month drug regimen with the required support and supervision. When this is not done correctly, the TB bacterium can develop resistance to the drugs being used to cure the disease.

In some countries, it is becoming increasingly difficult to treat MDR-TB. Treatment options are limited and expensive, with the recommended medicines not always available. In addition, patients may experience several adverse side-effects from the drugs. In some cases, even more severely drug-resistant TB strains may develop. However, testing for drug-resistant TB is becoming more effective due to the development of more-rapid WHO-recommended molecular diagnostic techniques. Such techniques (for example, Xpert MTB/RIF) can provide results within hours and have been successfully implemented even in low-resource settings. In addition, for many patients, treatment duration is now shorter than it used to be in the past, thus making it easier for patients to complete the whole course of treatment and increase the probability of a successful treatment outcome.

The new WHO guidance mentioned above aims to speed up detection and improve treatment outcomes for MDR-TB through the use of such molecular diagnostic testing and a shorter treatment regimen. At less than US$ 1000 per patient, this new regimen can be completed in 9–12 months for certain patients and patient groups. Not only is it less expensive than current regimens, but it is also expected to improve outcomes by improving adherence to treatment.

The main approaches to preventing or managing MDR-TB are:

to provide prompt access to services for the diagnosis of TB and drug-resistant TB;

to successfully treat the patient the first time around;

to ensure adequate infection prevention and control measures in facilities where patients are being treated; and

to ensure the appropriate use of recommended drugs for drug-resistant TB.

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