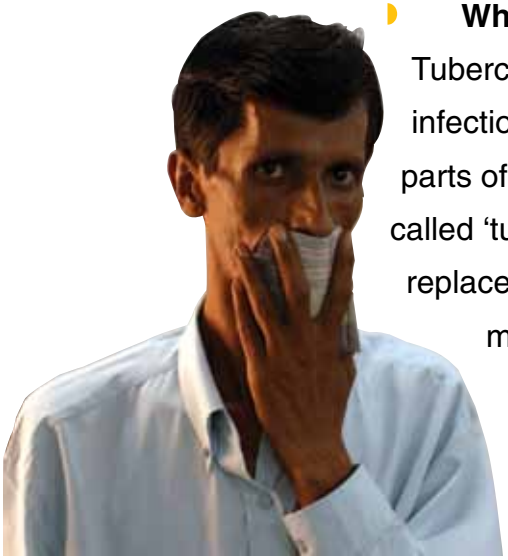
Tuberculosis



What is tuberculosis?

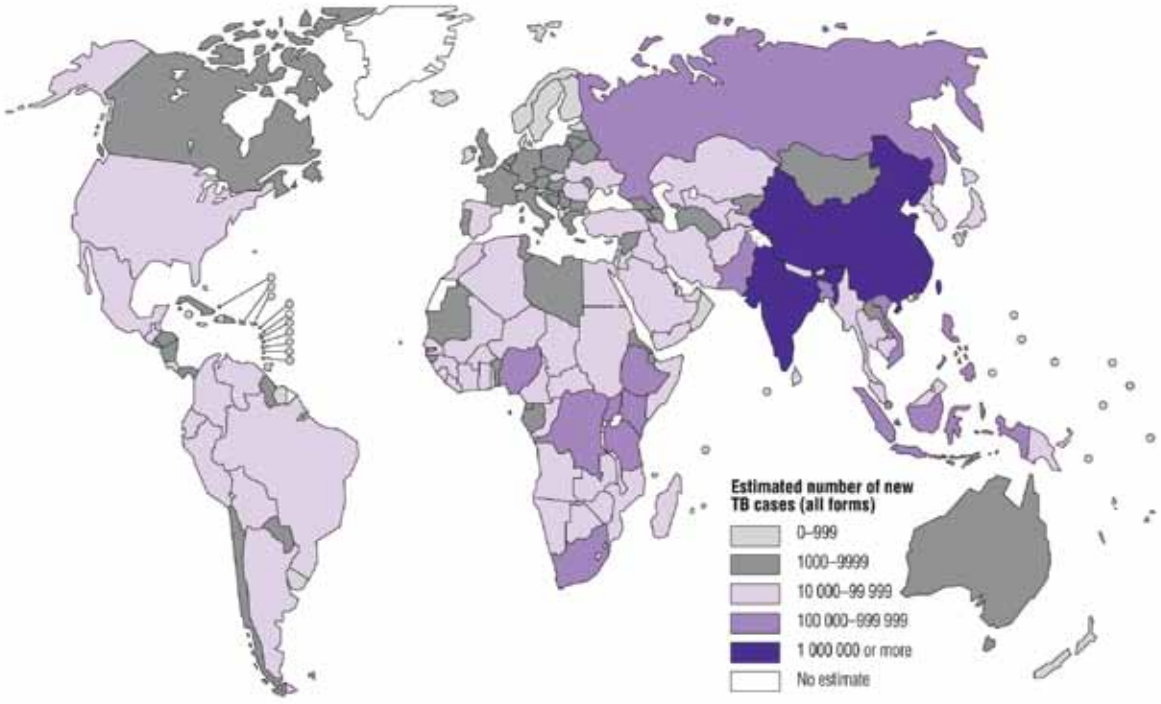
Tuberculosis (sometimes called TB) is a disease caused by an infection commonly in the lungs, although it can occur in other parts of the body. The infection causes lots of small nodules called 'tubercles' to appear in the affected organs, which gradually replace the normal structures and partially destroy the tissues, making holes or 'cavities'. Tuberculosis develops slowly over weeks or months. Without treatment, it will cause death in about half of cases. With the right treatment, it can be cured but may leave scars or deformities within the organs if it is not treated early enough.

What causes tuberculosis?

Tuberculosis is caused by a bacterium called *Mycobacterium tuberculosis*. It grows very slowly and is not killed by the antibiotics that are active against most bacteria (for instance against ordinary pneumonia or infections).

Where is tuberculosis most common?

Tuberculosis is present all over the world. It is now rare in industrialised countries but much more frequent in Sub-Saharan Africa, Asia and Eastern Europe.



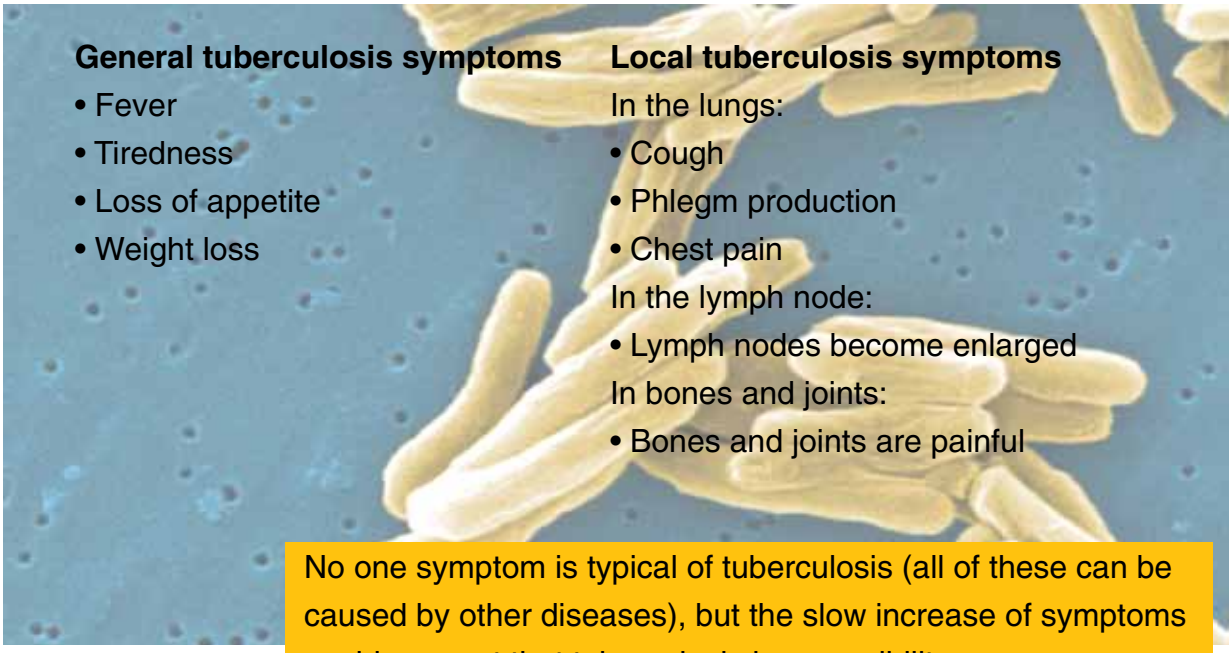
Incidence of TB worldwide (Source - WHO 2006)

Who gets tuberculosis?

Tuberculosis is transmitted from a person with tuberculosis in the lungs to other people. When people with the active disease cough or sneeze, they expel tiny particles containing *Mycobacterium tuberculosis*, which can be inhaled by other people into their lungs. In healthy people, the bacteria are normally trapped and destroyed by the lung's defence mechanisms. However, if the defence mechanism is too slow or not efficient enough, or if there are too many bacteria, the bacteria can grow and cause the disease. Even healthy people can get tuberculosis, but people with weak or damaged immune systems (young children, smokers, diabetics, those receiving immunosuppressive treatment and those living with HIV) have a higher risk of developing the disease if they are exposed to someone with the disease.

What are the symptoms of tuberculosis?

Tuberculosis causes a variety of general symptoms that might be seen in any severe infection. It can also cause symptoms due to the involvement of one or more organs:



General tuberculosis symptoms

- Fever
- Tiredness
- Loss of appetite
- Weight loss

Local tuberculosis symptoms

In the lungs:

- Cough
- Phlegm production
- Chest pain

In the lymph node:

- Lymph nodes become enlarged

In bones and joints:

- Bones and joints are painful

No one symptom is typical of tuberculosis (all of these can be caused by other diseases), but the slow increase of symptoms could suggest that tuberculosis is a possibility.

What can I do to avoid the disease?

The risk of tuberculosis can sometimes be decreased by the standard BCG (Bacillus Calmette-Guérin) vaccine. This vaccine offers limited protection to small children but it is no longer recommended for adults. It is hard to know if you have tuberculosis but if you find out that you do have the disease, you should avoid risk factors, such as smoking, to avoid the disease worsening. Relatives who cough, particularly if they have had a cough for a long time, associated with fever, night sweats and weight loss, should be encouraged to visit a doctor and have appropriate examinations to detect tuberculosis. This is particularly important if they have a condition which reduces their immunity or if they have come from a country where tuberculosis is common. Family members of tuberculosis patients should also be examined to detect whether they have the disease. Patients who are receiving treatment for tuberculosis should be regularly checked by a doctor to see if their condition has improved and to detect possible side-effects or complications.

WHO 'Stop TB' Strategy

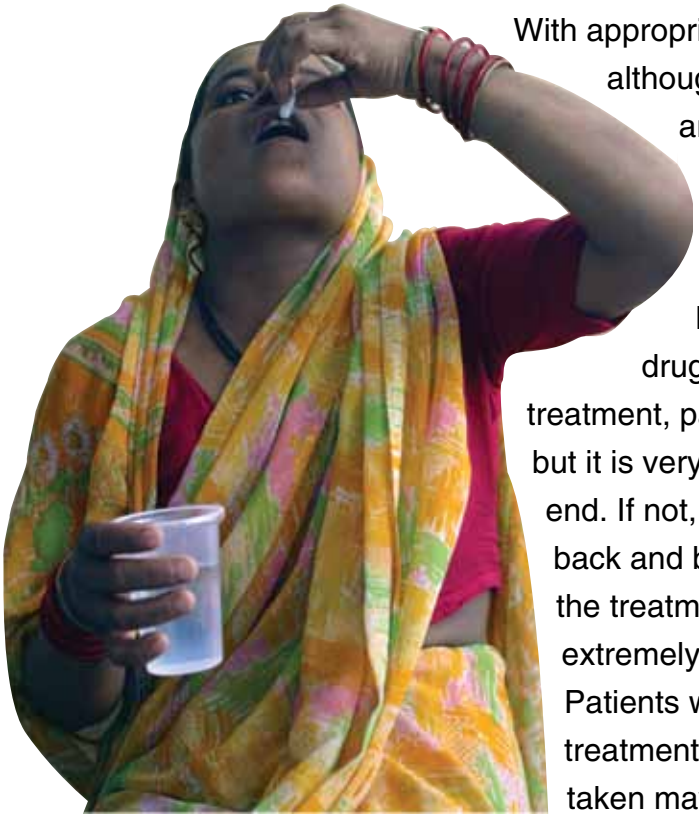
The World Health Organization (WHO) has developed a strategy called 'Stop TB' to try to achieve a tuberculosis-free world. It aims to reduce the amount of tuberculosis sufferers in the world by 2015 by:

- providing patients with high-quality diagnosis and treatment
- reducing the amount of people who suffer from tuberculosis and its associated problems
- protecting vulnerable, high-risk groups from developing tuberculosis and other associated infections
- developing new tools that may improve tuberculosis treatment

How will I know if I have tuberculosis?

People with suspected tuberculosis symptoms (long-lasting cough, weight loss, night sweating) should have a medical examination including a chest X-ray and an examination of phlegm if the chest X-ray is not normal. In some cases, further examinations (CT-scans, bronchoscopy) may be necessary to confirm the diagnosis. The earlier the disease is spotted, the greater the chance of a complete cure.

What should I do if I have the disease?



With appropriate treatment, tuberculosis can be cured, although the treatment is long (at least 6 months) and complex (the patient has to take 4 drugs for 2 months and 2 drugs for a further 4 months to be cured with certainty).

If the bacteria are resistant to one or more drugs, the treatment is longer. With proper treatment, patients feel better after a couple of weeks, but it is very important to continue the treatment until the end. If not, there is a risk that the disease may come back and become resistant to certain drugs. Sticking to the treatment and regular medical checks are therefore extremely important.

Patients who are at risk of forgetting their regular treatment or who are confused about the drugs to be taken may be helped by regular assistance from a healthcare worker. This is particularly important if the treatment is longer or more complex than usual (multidrug-resistant tuberculosis).

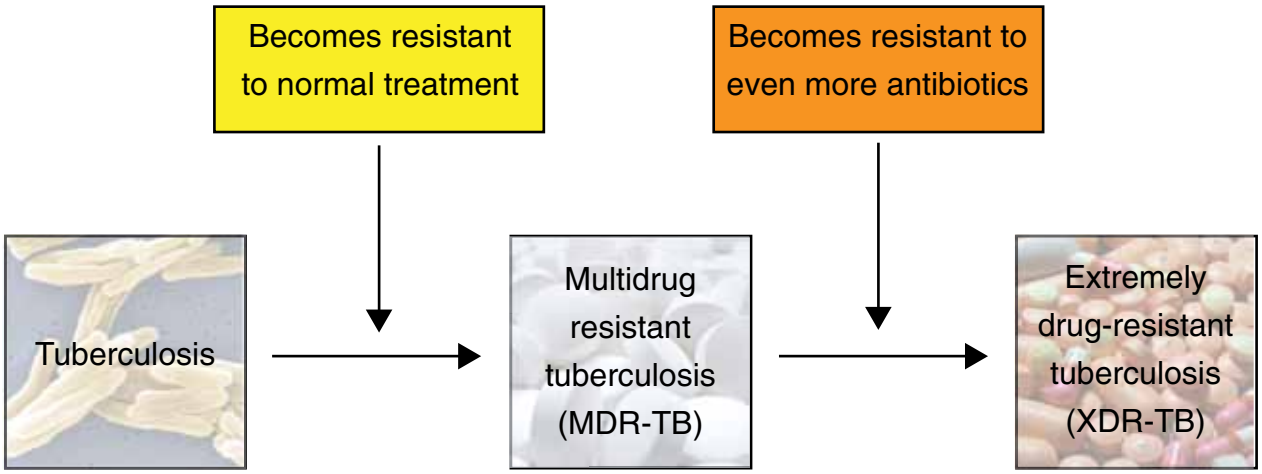
Types of tuberculosis

All forms of tuberculosis are caused by the same bacterium, but as some bacteria develop resistance there are different treatment schedules for the management of the disease. People with a drug-resistant strain may transmit it to other people, who will develop a resistant form of tuberculosis from the beginning.

Bacteria can become resistant to antibiotics if:

- a patient is given the wrong treatment
- a patient takes the wrong dose
- a patient does not complete the full course of drugs

Patients in this situation need to be treated with a different combination of antibiotics and it may take up to 2 years for the patient to be cured.



Once bacteria become resistant to certain drugs, patients with these strains are very difficult to treat, but a cure is still possible with careful selection of the drugs and very regular treatment. Resistance can be avoided by prescribing the most appropriate drugs to patients and making sure they take them correctly and for the full amount of time.

Useful Links

1. TB Alert - www.tbalert.org
2. International Union Against Tuberculosis and Lung Disease - www.iuatld.org/index
3. The Stop TB Partnership - www.stoptb.org
4. The World Health Organization, Tuberculosis -www.who.int/tb/en/
5. The International Standards for TB care, patients charter - www.who.int/tb/publications/2006/patients_charter.pdf

EUROPEAN LUNG FOUNDATION

TB PAN NET

The ELF is the public voice of the European Respiratory Society (ERS), a not-for-profit medical organisation with more than 8,000 members in more than 100 countries. The ELF is dedicated to lung health throughout Europe, and draws together the leading European medical experts to provide patient information and raise public awareness about respiratory disease. TB PAN-NET is a new European network of TB experts who will try to tackle the threat of drug-resistant TB in Europe.

This material was compiled with the help of ERS tuberculosis expert, Dr Jean-Pierre Zellweger. Images are courtesy of the World Lung Foundation, the World Health Organization and the Public Health Image Library.