Tuberculosis factsheet

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Tuberculosis facts and information

Tuberculosis (TB) can be a serious disease, but it can be cured. It can affect almost any part of the body. Only some forms of the disease are infections (that is, can be passed on to other people).

150 years ago TB caused about one in eight of all deaths in the UK. But by the 1980s, through a combination of detecting the disease early, effective treatments, and better housing and diet, it had become uncommon in this country. However, TB had not been wiped out completely. In fact, it is still one of the major infectious diseases the world faces today. TB can be cured, but last year more people died from the disease than at any time in history - around 5,000 people a day worldwide.

Over the last 20 years, TB has been slowly increasing in the UK. In 2005, more than 8,000 new cases were diagnosed in England, Northern Ireland and Wales - just over one person in every 10,000 of the population. This is an increase of 11% compared with 2004. In Wales there were 191 cases.

The increasing number of cases of TB in some parts of the UK has been associated with changing patterns in how the disease is spread and controlled. Instead of happening across all sectors of the population as it used to, it now mainly affects groups of people with increased risk. Rates are higher in certain communities. This is reflected in the changes to the TB vaccination programme.

This leaflet describes the disease, its symptoms and how it is spread, controlled and treated. The leaflet also provides a picture of where the disease is found both in the UK and around the world. It takes into account the new, targeted recommendations for BCG vaccinations in the UK (see page 5), and it also includes references, a glossary and links to useful websites.

The disease and how to prevent and treat it

What causes TB?

TB is caused by a type of bacteria called Mycobacterium tuberculosis (M. tuberculosis or M.tb for short). It usually affects the lungs (this form of the disease is called pulmonary TB) but it can affect other parts of the body such as the lymph glands, bones, joints and kidneys. It can also cause a serious form of meningitis.

M.bovis is a type of bacteria closely related to M.tb and causes tuberculosis in animals, mostly in cattle (this is called bovine TB). M.bovis can also infect people. It used to be a common cause of TB. However, because milk is pasteurised (sterilised to make it safe to drink) and cattle are tested for TB, the disease is now very rare in the UK.

What are the symptoms of TB?

Because TB can affect almost any part of the body, the symptoms are varied and can include:

- weight loss;
- heavy sweating at night;
- fever;
- loss of appetite; and
- a general and unusual sense of tiredness and feeling unwell.

The most common form of TB is pulmonary TB. As well as the above symptoms, people with pulmonary TB may also experience:

- a cough that lasts for more than three weeks;
- an increase in the amount of phlegm (sputum) their body produces (some people also cough up blood in the later stages).

In babies, the symptoms are likely to be more general and can include:

- general tiredness;
- failing to thrive (to grow or develop well);
- sweating, especially at night;
- fever;
- a cough that lasts more than three weeks;
- feeding poorly.

How does TB develop?

Not everyone infected with TB actually gets the disease. One of three things can happen.

1 The initial infection may be killed off by the body's immune system, and the person will never know that they were infected.

2 The infection may remain latent (or 'asleep'). This is where there are no symptoms but the bacteria stay in the body (called latent TB infection). Again, the person will not be aware they have been infected.

3 The infection becomes the active TB disease over the following weeks or months. These are the people who will experience symptoms.

Most people who are exposed to TB (more than nine out of 10 people) have no symptoms and do not develop the active TB disease. But in around half of these the immune system may not kill off the bacteria completely, but keep them dormant ('asleep') within the body. In these people the bacteria can go on to become active and cause TB later in life. This is most likely if a person's immune system becomes weakened - for example, by old age, certain medical treatments, a serious illness such as HIV or through generally poor living conditions. Only 5% or fewer of infected people develop TB disease soon after they are infected. This is called primary TB, and is more common in children. Primary TB in children usually passes unnoticed and without needing treatment, but can reactivate (arise again) later in life. It can leave a small scar on the lung and affects surrounding lymph nodes that can only be seen by a chest X-ray.

Adults whose immune systems are seriously damaged also usually develop primary TB if infected. This needs to be treated and should be diagnosed as soon as possible.

How is TB spread?

TB can only be spread by people with TB in the lungs or throat. The bacteria are present in tiny droplets that can be spread into the air when someone coughs or sneezes. People who have TB in the lungs are not always infectious.

How difficult is it to catch TB?

TB is quite difficult to catch and will usually involve being in close, lengthy contact with a person with infectious TB, such as living in the same household. Even then, not everyone who is exposed to TB will become infected.

What is the difference between being infected with TB and having the disease?

People with **latent TB infection**:

- cannot spread TB to other people;
- have no symptoms;
- do not feel unwell;
- usually have a positive reaction to a tuberculin skin test (a test used to diagnose TB);
- can develop the TB disease later in life.

People with the **TB disease** ('active TB'):

- have symptoms or signs of the disease as previously described; and
- can spread TB to others if they are infectious.

How serious is TB?

In most healthy adults TB develops slowly. If it is not treated it could kill. Some forms, such as TB meningitis, are more serious than others. TB can be very difficult to treat if it starts to become resistant to the main drugs used to treat it. That is why it is vital that people take any prescribed course of treatment as recommended and complete the full course. If they do not follow the correct instructions or complete their treatment, the drug may become less effective in treating TB.

In the UK, TB causes or contributes to 300 to 400 deaths each year, mainly in elderly people but also in a significant number of younger people. Worldwide, where living conditions and health care are poor, the death rate is higher.

Can TB be prevented by vaccination?

There is a vaccine that has been used for many years to help protect against TB. It is known as BCG (Bacillus Calmette-Guérin) and works best against the most severe forms of the disease in children. It does not prevent the TB infection in all cases so knowing what symptoms to look out for is still important.

In the past, BCG was offered to all children at around 13 years of age in the UK. When the vaccination was introduced in 1953, TB mainly affected young, working-age people. The pattern of TB has changed since then, and the UK has now moved to a more targeted approach to vaccination, aimed at protecting those people who are more at risk.

BCG is offered to babies in areas and communities where they are more likely than the general population to come into contact with someone with TB (currently this is in some larger cities in England). It is also offered to babies and children (up to 15 years old) with a parent or grandparent who was born in a country with a high rate of TB.

Do I need the BCG vaccination if I am travelling abroad?

The BCG vaccination is recommended for people who are going to visit, live or work for more than three months in a country with high rates of TB and who have not been vaccinated before.

The World Health Organisation (WHO) provides a list of countries with high rates of TB (more than 40 cases for every 100,000 people). You can find the list on the internet at www.hpa.org.uk/infections/topics_az/tb/epidemiology/who_table1.htm

The list of countries is updated every year, so you should check it for the most up-to-date information.

The following list shows the countries which had more than 40 cases of TB for every 100,000 people as recorded by WHO in 2006

Afghanistan
Algeria
Angola
Argentina
Armenia
Azerbaijan

Bahrain
Bangladesh
Belarus
Belize
Benin
Bhutan
Bolivia
Bosnia Herzegovina
Botswana
Brazil
Brunei Darussalam
Burkina Faso
Burundi

Cambodia
Cameroon
Cape Verde
Central African Republic
Chad
China
China, Hong Kong (special administrative region)
China, Macao (special administrative region)
Colombia
Comoros
Congo
Côte d'Ivoire
Croatia

Djibouti
Dominican Republic
Democratic People's Republic of Korea (North Korea)
Democratic Republic of the Congo

Ecuador
El Salvador
Equatorial Guinea
Eritrea
Estonia
Ethiopia

Gabon
Gambia
Georgia
Ghana
Guam
Guatemala
Guinea
Guinea-Bissau
Guyana

Haiti
Honduras

India
Indonesia
Iraq

Kazakhstan
Kenya
Kiribati
Kyrgyzstan

Laos (Lao peoples democratic republic)
Latvia
Lesotho
Liberia
Lithuania

Madagascar
Malawi
Malaysia
Maldives
Mali
Marshall Islands
Mauritania
Mauritius
Micronesia
Mongolia
Morocco
Mozambique
Myanmar

Namibia
Nepal
New Caledonia
Nicaragua
Niger
Nigeria
Northern Mariana Islands

Pakistan
Palau
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Portugal

Qatar

Republic of Korea
Republic of Moldova
Romania
Russian Federation
Rwanda

Sao Tome and Principe
Saudi Arabia
Senegal
Sierra Leone
Singapore
Solomon Islands
Somalia
South Africa
Sri Lanka
Sudan
Suriname
Swaziland
Syrian Arab Republic

Tajikistan
Thailand
Timor-Leste
Togo
Turkmenistan

Uganda
Ukraine
United Republic of Tanzania
Uzbekistan

Vanuatu
Venezuela
Vietnam

Yemen

Zambia
Zimbabwe

Source: WHO, Global Tuberculosis Control: Surveillance, Planning, Financing, WHO Report 2006, Geneva, WHO/HTM/TB/2006.362. See: www.who.int/tb/publications/global_report/

What is the BCG vaccine?

BCG contains a weakened strain of Mycobacterium bovis, the type of bacteria that causes TB in cattle. The bacteria in the vaccine are alive but have been modified (changed) so that they do not cause disease (except in people with a weaker immune system, for example, due to the HIV infection).

BCG is given as a single injection into the skin (intradermal). This is usually on the upper, outer part of the left arm.

Why do some people have a skin test before the BCG vaccine?

Some people will have a skin test before the BCG vaccine. This is needed for people aged six and over (and also some younger children in certain circumstances) and is done to find out if the immune system already recognises TB. It involves injecting a small amount of tuberculin (a type of protein found in the TB bacteria) into the skin. 48 to 72 hours later, a specially trained doctor or nurse will look at the part of the body that was injected to check how the person has reacted to the test.

The test is positive when the an area of skin around where the needle was injected is raised slightly. If the test is positive, the BCG vaccine should not be given as the person has already come into contact with TB or other similar bacteria and their immune system has already responded. If there is a large raised, red sore area it can mean there is a strong positive response and the person may need to be examined as they may be infected with or have TB.

How is TB treated?

In almost every case TB can be cured, but ONLY if the person takes the full course of treatment they have been prescribed. People with TB rarely go into hospital for treatment although they may be admitted very briefly to confirm the diagnosis and start their treatment. **However, throughout their treatment, people with TB should always be very closely supervised by the nurse responsible for TB in their area. This is to make sure people take the treatment correctly and that any problems are dealt with as early as possible so that the treatment is not interrupted**.

The standard treatment for TB is a combination of antibiotics for at least six months. This usually means taking four antibiotics for the first two months and then two antibiotics for another four months. The four main antibiotics for treating TB are called isoniazid, rifampicin, pyrazinamide and ethambutol. They are always prescribed in combination to reduce the risk of the bacteria becoming resistant to one or more of the drugs. Even so, resistance to these drugs is growing. This is mainly as a result of people not completing the full course of treatment, either because the drugs were not prescribed or not taken correctly or because treatment was interrupted. For convenience, two or more drugs are often combined in one tablet. The treatment will be made up of several tablets each day. Sometimes longer courses of treatment are needed for example, for TB meningitis, or if the bacteria are resistant to one or more of the usual antibiotics and different drugs need to be used.

Once treatment has started, most people are no longer infectious after about two weeks and begin to feel better after two to four weeks. However, people need to take the **full course** of treatment to cure the disease.

If the treatment is not completed, the person will continue to be at risk of developing TB again in the future. There is also a higher risk that this TB would be more likely to be resistant to the normal TB antibiotics and be more difficult to treat.

What should I do if I have been in contact with a person with TB?

If someone is diagnosed with TB, the nurse responsible for TB in the area and the doctor treating that person will assess the risk he (or she) presents to other people. If they are infectious, or if a child has developed TB, close contacts will be invited for screening. Close contacts are people living in the same household and close family members. Sometimes casual contacts (for example, work colleagues and friends) may be invited for screening, but this is often not necessary.

It is extremely rare for children with TB disease to be infectious - but their TB suggests they have recently been in contact with an infectious adult.

Screening is done to identify people who may have been infected with TB or who have the active disease. Screening can involve a skin test and in some cases a chest X-ray. In the UK, people's skin tests will often be mildly positive (a raised bump on the part of the body the needle was injected into) as a result of having had a BCG vaccination in the past. If the skin test is strongly positive a chest X-ray will be needed to look for signs of TB disease. If the doctors identify signs that the person is infected (latent TB) or has the active TB disease the person will be referred to a specialist doctor and may be treated with a course of anti-TB drugs. Treating latent TB is often recommended as there is an increased risk of developing active TB in the future. Treating latent TB reduces this risk. It involves taking a combination of antibiotics similar to those used to treat active TB, but the course of treatment is shorter (chemoprophylaxis). If you have latent TB there is no reason to stop your normal daily activities, unless your symptoms suggest you may have TB in the respiratory tract and you have discussed this with your doctor.

The UK picture

Isn't TB a disease of the past?

No. Although cases of TB reduced steadily during most of the 20th century, the disease never went away - there were still over 5,000 cases a year in the UK in the late 1980s when TB was at its lowest.

Throughout the 19th and early 20th century, TB (known in the past as 'consumption' because of the way it appeared to consume the body) was common in the cities of Europe and North America. London was one of the worst affected areas. TB once caused about one in eight of all deaths in the UK. The drop in the number of cases has been achieved through a combination of:

- better housing and diet;
- isolating people who have become infected with TB;
- pasteurising milk;
- detecting infection and disease early;
- developing antibiotics to treat TB; and
- improved TB services.

How common is TB in the UK today?

Cases of TB in the UK fell from roughly 50,000 a year in 1950 to around 5,000 in 1987, the lowest recorded level. Since then, the numbers in the UK have been rising again and during 2005 there were 8,113 cases of TB reported (notified) throughout England, Wales and Northern Ireland. In London, the numbers have doubled and now account for around 3,500 people, 43% of the national total.

There were 191 reported cases (notifications) of TB in Wales in 2005. Nearly a third of these cases were in Cardiff.

Two-thirds of TB cases in the UK are found in people who were born abroad.

Each year about 420 people in Britain die from TB.

Why is the number of cases of TB increasing in the UK?

Like most countries, the UK is affected by the increasing cases of TB across the world. As a disease that travels with infected individuals, no part of the world can be isolated. The number of cases in the UK has begun to rise due to a combination of factors. These include increasing numbers of people migrating from areas of the world where TB is more common than in the UK and the fact that people in the UK are travelling and moving around more. An ageing population and the rise of HIV have also added to this increase.

Who is most at risk from TB?

Anyone can get TB, but some people are more at risk.

The increase in TB in the UK is happening mainly in London and other major cities in England where the risks are bigger because there are more people in higher risk groups.

In the UK, the people most at risk of developing latent TB (and possibly the TB disease):

- are close contacts of someone who is infected;
- have visited, lived or worked for a long time in countries with a high rate of TB;
- are children who have a parent or grandparent who comes from a country with a high rate of TB (see page 6);
- are homeless, living in poor or overcrowded conditions or undernourished;
- are elderly (as they may have been exposed to TB when they were young, when the disease was more common in this country); or
- have been in prison.

Other people who are more at risk of getting TB if they become infected include:

- those who have a weakened immune system due to disease or treatment (HIV is a particular risk); and
- people who are addicted or misusing drugs or alcohol.

Young children and elderly people are more at risk of TB because their immune systems may be weak. Young children's immune systems are still developing and old age can weaken an immune system that used to be strong.

What is being done to control TB in Wales?

The number of reported cases (notifications) of TB in Wales ranged from 208 in 1999 to 191 in 2005.

The aim of our TB programme is to:

- reduce illness and deaths associated with tuberculosis; and
- prevent drug-resistant TB from developing and spreading.

We do this by:

- promptly recognising and treating people who have the disease;
- making sure that people who have the disease complete their treatment as directed (not fully completing the prescribed course of treatment or not following the appropriate directions closely not only fails to control the disease but also contributes to the disease becoming more able to resist drugs);
- offering BCG vaccinations to people who are more at risk of being infected;
- taking a co-ordinated and consistent approach to controlling TB;
- promoting good health and educating and raising awareness about TB;
- concentrating activities on people who are most at risk; and
- reducing the stigma and embarrassment some people seem to feel about the disease.

The worldwide picture

TB caused 100 million deaths in the last century and was declared a global health emergency by the World Health Organisation in 1993. It is estimated that a third of the world's population is infected and there are almost nine million new cases every year. Someone is newly infected with TB every second.

Most people's immune systems are able to keep the infection under control and they do not go on to develop active TB. Even so, TB causes around 5,000 deaths worldwide every day. Of these deaths, 98% happen in the developing world and particularly in South Asia and sub-Saharan Africa. TB kills more women and creates more orphans than any other infectious disease.

What is being done to tackle TB across the world?

TB can only be tackled by a worldwide effort. Controlling TB in any one area of the world depends on it being controlled elsewhere.

The World Health Organisation promotes a worldwide strategy called DOTS (Directly Observed Treatment, Short Course) and is working with individual countries to tackle TB.

Glossary

Antibiotics - medicines, used to treat infections, that work either by killing bacteria or stopping them multiplying.

Bacteria - single-cell micro-organisms (germs), some of which cause disease. Others are essential for our bodies to work properly.

BCG (Bacillus Calmette-Guérin) - the vaccine that helps protect against TB, named after the two scientists who developed it. Although it does not work in all cases, it is most effective against the more severe forms of disease in children, such as TB meningitis.

Chemoprophylaxis - using antibiotics to prevent latent TB infection becoming the active TB disease.

DOTS strategy - 'Directly Observed Treatment, Short Course', or DOTS for short, is the name given to the World Health Organisation's strategy to get TB under control worldwide. It focuses on recognising the need to supervise every patient with TB until they have completed their treatment. (The strategy is not commonly used in the UK.)

Drug-resistant TB - TB caused by strains of Mycobacterium tuberculosis (the germ that causes TB) that are able to resist the effects of one of the usual TB antibiotics, meaning different types of treatment may be needed. Multidrug-resistant (MDR) TB is able to resist at least isoniazid and rifampicin, the two main drugs used against TB, and is particularly difficult to treat.

Immune system - the body's system for fighting infectious diseases.

Latent TB - some bacteria can live in the body for many years without causing any disease. They are kept latent ('asleep') by a healthy immune system. They may later cause active TB if the individual's immune system becomes weakened.

Lymph nodes - parts of the lymphatic system of the body that collect lymphatic fluid, filter it and return it to the blood stream. They also contain special types of white blood cells that destroy bacteria and viruses.

Mycobacterium tuberculosis (M.tb) - the type of bacteria (germs) that causes TB.

Pulmonary TB - TB affecting the lungs. People with pulmonary TB can be infectious if the TB bacteria can be seen in their phlegm (sputum) when it is examined under a microscope.

Screening - a process where people are checked to see if they are already infected with TB. This can include a tuberculin skin test or a chest X-ray (or both). In some circumstances a blood test may be used.

TB meningitis - the lining of the brain swelling as a result of a TB infection.

Tuberculin - the solution used to perform the skin test (see 'screening' above).

More information

For more information on protecting yourself, your family and friends against TB, you can contact the following.

- NHS Wales Direct on 0845 46 47
- The nurse responsible for TB at your local chest clinic or hospital
- Your GP, health visitor or practice nurse
- TB Alert, a charity committed to raising awareness about the disease and fighting it worldwide.

You can contact them at:

22 Tiverton Road
London NW10 3HL.
Phone: 0845 456 0995
E-mail: info@tbalert.org
Registered charity number: 1071886

You can also visit the following websites.

www.nphs.wales.uk
The National Public Health Service for Wales (NPHS)

www.who.int
The World Health Organisation (WHO)

www.hpa.org.uk
The Health Protection Agency (HPA)

www.tbalert.org The TB Alert charity

www.dh.gov.uk
The Department of Health (DH)

www.immunisation.nhs.uk
The NHS immunisation website

NHS Wales Direct Interactive - this is a service that provides general health information. It is available on digital satellite TV by pressing the interactive button on the remote control.

Electronic versions of this leaflet (along with translated material) will be available at: www.wales.gov.uk/immunisation

Further copies of the leaflet can be ordered from the Welsh Assembly Government Publication Centre by e-mail: assembly-publications@wales.gsi.gov.uk or telephone: 029 2082 3683 (between 8.00am - 5.00pm, Monday - Friday).